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Abstract

Purpose: The general objective of the study was to determine how macroeconomic variables affected the financial performance of insurance firms listed on the Nairobi Securities Exchange. The study's specific goals were to identify how inflation, interest rates, exchange rates and gross domestic product affected those same companies' financial performance.

Methodology: A descriptive survey research design was used for the investigation. All the six insurance companies listed on the Nairobi Securities Exchange made up the study's target group hence a census-style analysis. The panel regression model was used in the investigation and relied on secondary information that was gathered using a data collection sheet. The five-year period covered by the data was from 2017 to 2021.

Findings: According to the report, insurance is severely impacted by inflation. There was a general increase in exchange rates and there was a fluctuation in the economic growth. From the findings, the study concludes that the insurance companies were operating on economic conditions that became increasingly challenging as shown by increasing inflation rates. The CBR and lending rates showed a general downward trend in the five years' period, the exchange rates in the Kenyan economy were changing rapidly, there were major changes in the economic performance of the Country emanating from various occurrences including global oil crisis and

COVID-19 pandemic. Despite the harsh economic conditions, the NSE listed insurance companies posted healthy financial performance as shown by ROA values above 5%.

Unique contribution to theory, practice and policy: The study recommends that the NSE listed insurance companies to make ample adjustment for inflation so that during seasons of high inflation the firms do not run at a loss. The study also recommends the NSE listed insurance companies firms to employ strategies where they can purchase more futures contracts on government bonds or interest rate futures in order to be able to lock-in interest rate and hedge their various portfolios. The NSE listed insurance companies are also recommended to mitigate the exchange rate risks by hedging the foreign exchange risk by purchasing spot contract to cushion against any negative swing. The government through line ministries of finance and planning should undertake measures to ensure good performance of the economy.

Key Words: *Inflation, Interest Rates, Exchange Rates, Gross Domestic Product, and Financial Performance*

Background of the Study

The insurance sector is crucial in the economy because it facilitates the taking up of risky but profitable ventures. Insurance is based on the concept of pooling of risks in order to ensure that investors can participate in their activities without much worry. As a result, the stability of the sector is of paramount importance to economic development. According to Skipper and Barfield (2018) the insurance industry plays an important role towards improvement of business due to risks acceptance. Insurance companies accept risks in return for premium (Zweifel & Breuer, 2016). In this regard, insurance firms must limit their activities in such a manner that risks are accepted within reasonable bounds. Since the settlement of insurance premiums is their primary liability, the viability of insurance companies is critical. The financial success of insurance firms can be examined at both the micro and macroeconomic levels, as it is influenced by both internal and external influences, such as the company's basic characteristics and the macroeconomic climate (Burca & Batrinca, 2017). The insurance sector's stability is determined by a country's current macroeconomic policy. Macroeconomic considerations include actual Gross Domestic Product (GDP), unemployment rate, interest rate, inflation rate, and exchange rate, both of which are important indices of economic growth and can influence the insurance sector's stability. Microeconomics factors such as demand and factors of production are controllable and the effect of which can easily be anticipated and controlled, however, macroeconomic variables are beyond the control of the firm, therefore, the need for businesses to predict the heterogeneous effect of these macroeconomic variables on future firm performances (Broadstock, Shu & Xu, 2011).

Changes in macroeconomic variables present opportunities as well as threats to the industry players concurrently; those prepared for the changes, shall realize gains from opportunities that arise thus fostering their financial performance, while those who are unprepared might suffer

from the threats and might in turn impact their financial performance negatively. Inflation is defined as a long-term increase in the general level of prices for goods and services in a given economy. When prices rise, each unit of currency buys fewer goods and services; as a result, inflation results in a loss of money's buying power - a loss of real value in the economy's internal medium of exchange and unit of account (Ehiogu & Eze, 2018). The rate charged by commercial banks on their credit is known as the interest rate. The central bank uses the bank rate as a tool to influence the economic activity. Lower bank rates can assist to extend the economy by lowering the cost of assets for borrowers, while higher bank rates can help to rein in the economy when it is expanding faster than it should (Mutemi & Makori, 2019). The exchange rate is highly important since it displays the rate of exchange with another currency. As a result, it has a direct influence on both the affordability of foreign goods and the price of local goods in international markets (Klein & Linnemann, 2021). Exchange rate fluctuations may go either way, therefore dealers in foreign currency exchange must guarantee that they take steps to maximize their profits while minimizing their losses. Different traders use varied methods to cope with exchange rate swings, and these tactics are implemented differently by each trader, resulting in different financial returns for each trader (Bussière, Gaulier & Steingress, 2020).

Microeconomics factors such as demand and factors of production are controllable and the effect of which can easily be anticipated and controlled, however, macroeconomic variables are beyond the control of the firm, therefore, the need for businesses to predict the heterogeneous effect of these macroeconomic variables on future firm performances. The insurance sector is crucial in the economy because it facilitates the taking up of risky but profitable ventures. It is crucial in the economy because it facilitates the taking up of risky but profitable ventures. Insurance is based on the concept of pooling of risks in order to ensure that investors can participate in their activities without much worry. As a result, the stability of the sector is of paramount importance to economic development. According to Skipper and Barfield (2018) the insurance industry plays an important role towards improvement of business due to risks acceptance. Insurance companies accept risks in return for premium. In this regard, insurance firms must limit their activities in such a manner that risks are accepted within reasonable bounds. Since the settlement of insurance premiums is their primary liability, the viability of insurance companies is critical. The financial success of insurance firms can be examined at both the micro and macroeconomic levels, as it is influenced by both internal and external influences, such as the company's basic characteristics and the macroeconomic climate. The insurance sector's stability is determined by a country's current macroeconomic policy. General insurance remains the largest contributor to insurance industry activity, with motor and medical insurance contributing to more than half of the industry's gross premium income. The life insurance industry has also grown, with a marked increase in demand for life insurance products. Pensions and life assurance businesses remain the biggest contributors to the life gross premium income under long-term insurance business. Insurers are also engaging in asset management and investment, in an attempt to increase their

revenue. Kenya's insurance market is one of the continent's fastest growing. However, the sector is confronted with a host of issues that must be tackled in collaboration with all stakeholders (Insurance Regulatory Authority, 2019).

Statement of the Problem

Kenya's insurance market is one of the continent's fastest growing (Insurance Regulatory Authority, 2019). However, due to market undercutting in a sector where players are facing increasingly difficult competition, the contribution of the insurance sector in Kenya has fallen to 2.43% of GDP in 2021 from a peak of 3.44% of GDP in 2013 (Association of Kenya Insurers, 2019). The Return on capital fell from 10.4% in 2019 to 4.41% in 2020, indicating the industry's declining returns (AKI, 2022). ROE for insurance firms in 2016 was 9.9%, which reduced to 9.7% in 2017, and further 4.9% in 2018. 2020 recorded the lowest level of ROE at 3.9%. ROI for the insurance firms dropped to 3.2% in 2017 from 3.6% in 2016, which later dropped to 1.8% in 2018. In 2020, the firms recorded the lowest level of ROI at 1.3%. In the year 2016, the underwriting loss for the sector was Kshs 112.1 million in 2018, Kshs 123.02Million in 2019, Kshs 124.5 million in the year 2020, Kshs 136.1 million in the year 2021 and Kshs 131.1 million in 2022. The return on assets has also been decreasing for instance, in the year 2018 the ROA was 3.6%, which decreased to 3.2% in the year 2019, 2.3% in 2020, 2.3% in 2021 and 1.75% in 2022. This indicates that the insurance industry has struggled to capitalize on the expanding economy's insurance opportunities. According to Wanyama and Olweny (2013) several insurance firms have as well collapsed such as the Blue Shield Insurance Company, Invesco Assurance, United Insurance Company, Standard Assurance and others being put under receivership. The insurance industry plays a critical role as a back born for other sectors in an economy (Sambasivam & Ayele, 2017). Only surprises in certain variables relevant to the aggregate economy are associated with a firm's returns. Furthermore, macroeconomic trends remain the most significant structural risk factors for most businesses (Reshid, 2015). As a result, depending on the type of the variable, the action of macroeconomic factors has a positive or negative impact on firm results.

Nzuve (2016) evaluated the financial success of microfinance institutions in Kenya as a result of macroeconomic conditions and found that economic growth, interest rates and inflation determined MFI financial performance. Ndung'u (2019), who discovered a strong correlation between financial performance and inflation, exchange rates, interest rates, public debt, and the legal and regulatory environment, examined the link between macroeconomic factors and the financial performance of companies listed on the Nairobi Securities Exchange. Karanja (2018) looked at the impact of a few macroeconomic factors on Kenya's banking industry's financial results. In addition, it was discovered that none of the independent variables (interest rates, economic growth, exchange rates, and inflation rates) were statistically important in understanding the financial success of Kenya's banking sector, but the variables had a joint

impact on financial performance. Omondi (2017) investigated the impact of micro-insurance on insurance firms' financial performance in Kenya and discovered that overall premiums, total claimants, and total expenses on an annual basis were not statistically significant predictors of financial success. The results of the analyzed research on the impact of macroeconomic factors on financial output were mixed. Furthermore, the studies barely explored how macroeconomic factors affected the financial performance of the insurance industry. By analyzing the effects of macroeconomic indicators on the financial performance of insurance businesses listed on the Nairobi Securities Exchange, this study aimed to close the existing gaps.

Research Hypothesis

$H0_1$: There is no significant effect of inflation on financial performance of insurance firms listed in the Nairobi Securities Exchange.

$H0_2$: There is no significant effect of interest rate on financial performance of insurance firms listed in the Nairobi Securities Exchange.

$H0_3$: There is no significant effect of exchange rate on financial performance of insurance firms listed in the Nairobi Securities Exchange.

$H0_4$: There is no significant effect of gross domestic product rate on financial performance of insurance firms listed in the Nairobi Securities Exchange

LITERATURE REVIEW

Theoretical Review

Purchasing Power Parity Theory

Gustav Cassel (1916) proposed the theory. Purchasing power parity (PPP) is an exchange rate theory and a method of comparing the average costs of products and services between nations. According to Rogoff (1996), two nations' exchange rates in their currencies are considered to be in equilibrium only when their buying power is equal. This means that the two nations' exchange rates should be equal to the ratio of total prices of a defined basket of goods and services. As a result, when a country's price level rises, its exchange rate must devalue in order to maintain the price of fixed goods in a basket. The hypothesis, however, has been challenged because of the assumptions it makes. There are no transaction expenses and no prohibitive taxes between the two nations, according to the assumptions. This is not feasible since most nations have tariffs and embargoes that have an impact on purchasing power parity (Shapiro, 2006). The theory is crucial to the research because it predicts that changes in the average price of goods and services in one nation will have a greater or lesser impact on exchange rates between nations than changes in the average price of goods and services in the other country. Because this would have a significant impact on the exchange rate between the two countries, investors are on the watch for policies and events that will affect the general level of pricing of goods and services in one nation. The

theory thus guided the study in establishing the effect of inflation on financial performance of insurance firms listed in the Nairobi Securities Exchange.

Classical Theory of Interest

The classical theory of interest which is also known as the capital theory of interest was proposed by economists Ricardo, J. S. Mill, Marshall and Pigou in 1980s (Fabio, 2021). According to this theory, interest is a real phenomenon and the rate of interest is determined exclusively by the real factors, i.e., the supply of and demand for capital under perfect competition. The classical theory of interest is based upon the assumptions that perfect competition exists in the factor market; the theory assumes full employment of resources; economic agents act rationally, i.e., they are motivated by self-interest and want to maximize economic benefit; the price level is assumed to be constant- in case of changes then the economic agents do not suffer money illusion, i.e., savers and investors react to changes in the real interest rates and not the changes in the money interest rates and that money is neutral and serves only as a medium of exchange and not as a store of value. According to Carlo, Bidard, Klimovsky and Rebeyrol (2014), the factors behind the demand for savings and supply of savings were variously interpreted but the idea common to all classical writers was that both the demand and supply of savings are interest-elastic. Some classical authors laid stress on the 'waiting' or 'abstinence' found necessary for saving. They held the rate of interest to be an inducement for the act of saving and the supply of saving.

According to Smets and Wouters (2003) when capital demand equates to availability, a balanced interest rate is calculated. Savings determine interest rates, and if we presume the income level is stable, the present interest rate would lie if the capital demand curves corresponding to different interest rates cross the curves between sums saved from income given corresponding to different interest rates, but this is not the case (Bharadwaj & Schefold, 2017). Since physical capital is purchased with nominal funds, the annual rate of return over money capital invested in physical capital assets is taken to be the rate of interest in a money economy. According to the theory, various financial institutions have different levels of liquidity, and high-liquid institutions should charge low interest rates on loans to attract more borrowers, whereas low interest rates on deposits should discourage saving. This implies that interest rate spreads on heavily liquid financial institutions may be higher than those on less liquid financial institutions. Financial results on comparatively high liquid institutions should be higher than low liquid institutions, according to Yao, Haris and Tariq (2018). Since many insurance companies retain securities such as long-term bonds, the potential cost of buying bonds at a cheaper rate over time rises as interest rates rise. The hypothesis thus leads the research in determining the impact of interest rates on the financial performance of insurance firms.

Post-Keynesian Theory of Exchange Rates

Harvey (1991) developed the Post-Keynesian Theory of exchange rates. Post-Keynesian exchange rate theory states that currency prices are set almost entirely by autonomous financial capital flows. If international investors' forecast of profit from dollar-denominated assets improves, they buy dollars and the dollar appreciates. The assumption of post Keynesian theory is firms are assumed to behave with respect to their uncertain knowledge about aggregate demand (demand as a whole), and that they can only achieve an uncertain share of this aggregate demand. As per Bresser-Pereira (2012), the Post Keynesian approach to exchange rates is premised on the belief that, in today's market, currency prices are driven by portfolio capital flows. In support of the Keynesian Theory, Harvey (2009) opined that the strongest link between trade flows and exchange rates tends to be via the capital market, when international investors take the periodic announcements of trade balances as a sign of future asset deprecation or appreciation. As agents come to prefer one country's assets to another's, the money issued by the former appreciates at the expense of the latter's. Harvey (2007) argues that because the real side of the economy does not adjust sufficiently in the short run, the financial sector must take up the slack. The financial sector, and in particular the exchange rate, overshoots its long-run equilibrium, only to return once the real sector has had time to adjust. Foreign currency prices increase when supply is insufficient to meet demand. De Paula, Fritz and Prates (2017) pointed that the price of foreign currency will decrease if there is less demand than there is supply (Kanamori & Zhao, 2006). The payments' debit and credit items, respectively, cause demand for and supply of foreign currency. In contrast to weak currencies with little value, stable denominations allow purchasers to acquire goods at relatively inexpensive costs. As a result, the present research used the theory to determine the impact of exchange rates on the financial performance of insurance companies listed on the Nairobi Securities Exchange.

Neo-Classical Growth Theory

Robert Solow and Trevor Swan first introduced the neoclassical growth theory in 1956. The key argument in these approaches was that underdevelopment is not the result of the predatory activities of the developed countries and the international agencies but was rather caused by the domestic issues arising from heavy state intervention such as poor resource allocation, government-induced price distortions and corruption (Meier, 2000). The theory states that economic growth is the result of three factors—labor, capital, and technology. While an economy has limited resources in terms of capital and labor, the contribution from technology to growth is boundless. As a response to public sector inefficiency, economists of the counter-revolution thinking, for example Bauer (1984), Lal (1983), Johnson (1971), and Little (1982), focused on promoting free markets, eliminating government-imposed distortions associated with protectionism, subsidies and public ownership. The other school of the neoclassical free market is the traditional neoclassical growth theory, which originated from the Harrod–Domar and Solow models. Expanding the Harrod–Domar formulation, Solow neoclassical growth model stresses the importance of three factors of output growth: increases in labor quantity and quality

(through population growth and education), increases in capital (through savings and investments) and improvements in technology (Solow, 1956). In Solow's model, technological change is provided exogenously, therefore, with the same provided rate of technological progress, the growth rate would be expected to converge across countries. By opening up national markets, developing countries can draw additional domestic and foreign investments, thus increasing the rate of capital accumulation and returns on investments. Consequently, developing countries tend to converge to higher per-capita income levels (World Bank, 2000). Microeconomics factors such as demand and factors of production are controllable and the effect of which can easily be anticipated and controlled, however, macroeconomic variables are beyond the control of the firm, therefore, the need for businesses to predict the heterogeneous effect of these macroeconomic variables on future firm performances. Neoclassical economists advocate free market as a way out for the developing countries. Accordingly, the central elements of the national development agenda include policies of liberalization, stabilization and privatization foreign trade, private international investments and foreign aid flowing into the developing countries are expected to accelerate economic efficiency and economic growth of these countries. However, the growth rates per capita have diverged among countries (Azariadis and Drazen 1990). With weak and inadequate legal and regulatory framework, free market in developing countries fails to stimulate economic development (World Bank, 2000).

Conceptual Framework

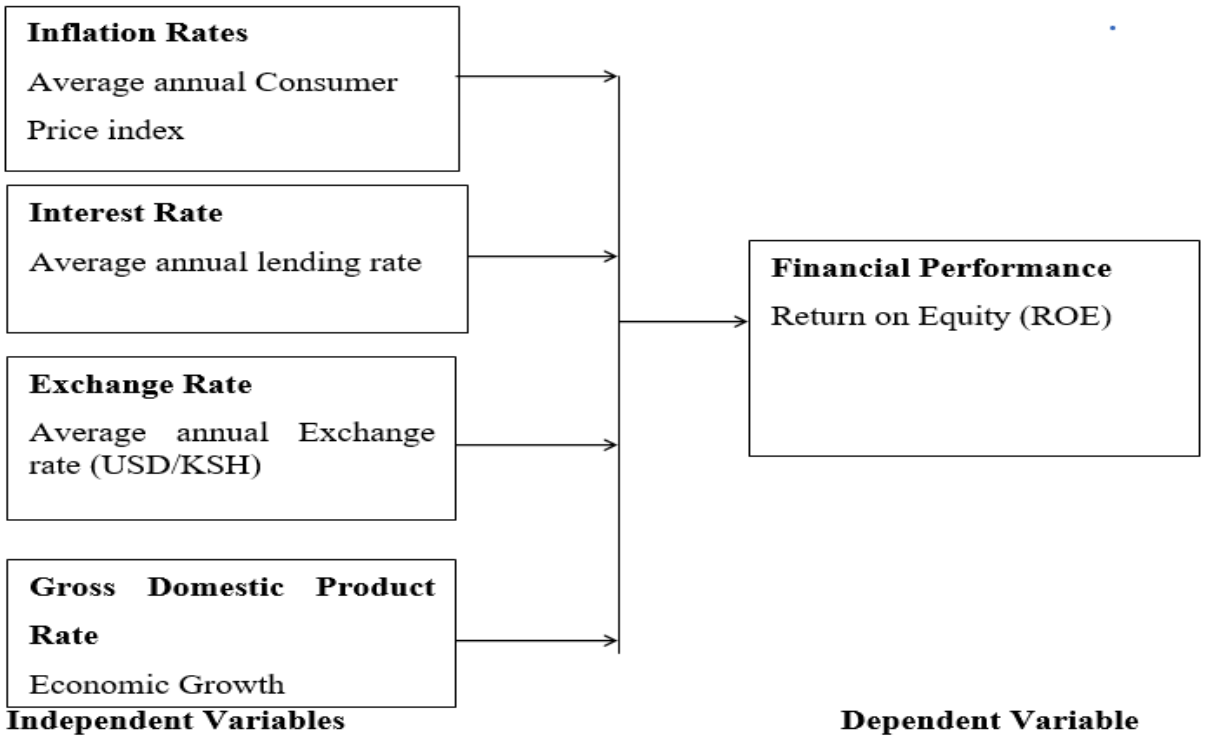

Figure 1: Conceptual Framework

Inflation Rates

Inflation rates refer to a sustained rise in an economy's aggregate or general price levels (Miyogo, 2018). The Consumer Price Index was used to calculate inflation. CPI is the total change in price of a set of consumables, goods, and professional services over a certain period for urban consumers. The CPI is a method for measuring the degree of inflation or deflation throughout the entire economy. It was calculated by dividing the cost of the market basket in year t (Ct) by the cost of the same market basket in the base year (C0).

Interest Rate

Interest rates refer to the rate of interest that a borrower is required to pay to a bank or any other financial institution when a borrower money from them that is, the price for borrowing (Khan & Sattar, 2017). The term "interest rate" describes how much is charged each period as a proportion of the amount lent, deposited, or borrowed. In this study, interest rate was calculated using base lending rate and average yearly lending rate.

Exchange Rate

Refers to the range of conversion of a certain form of monetary value and represented in another. This can also be described as the rate at which one currency can be transformed into another

(Quiviger, 2020). This is the numerical relationship between two currencies of a certain nation or system. Since it is used to determine how much different currencies are worth in relation to one another, the exchange rate is important in shaping the dynamics of trade and capital flow.

Gross Domestic Product Rate

GDP measures the total market value of all the completed goods it produces in a given period. The entire amount spent on finished products and services. The GDP estimates the outputs as well as the revenue from those outputs. The country's GDP for the five-year period (2017-2021) was compiled, according to World Bank statistics.

Financial Performance

Refers to the ability of meeting the needs of shareholders and stakeholders as measured in terms of profitability (Burca & Batrinca, 2017). Financial performance is a numerical indicator of how effectively a business uses its resources and makes profits. Based on a company's assets, liabilities, income, expenses, equity, and profitability, financial performance assesses the stability of its financial position. The most common financial statistic for evaluating a company's financial success is return on equity. It provides a comprehensive reflection of the fundamentals of business performance by taking into consideration both the income statement performance and the equity required to run a corporation. In this study, ROE was used as the measure of financial performance of insurance companies.

Research Methodology

Research Design

The study utilized a descriptive research methodology. According to Bhattacherje (2012), descriptive research entails getting obtaining information on an existing status of an event or phenomenon to describe ‘what is existing’ in relation to the variables conditions in an event without manipulating the variables. This design was used because it offers room for feasible results’ evaluation. This study used a descriptive survey as it involves gathering of information on the prevailing situation for the purpose of description and interpretation. This study was also a longitudinal survey since it sought to investigate a situation by taking repeated measures over time.

Target Population

Bryman (2013) describes the population as a collection or group of objects, individuals, articles, cases and items having common characteristics or attributes. According to Collis and Hussey (2014) a population consists of all items in any field or ground of inquiry. A target population is a group of elements to which the researcher is interested in making inferences for the study and make conclusion on the characteristic of the whole population (Creswell, 2014). All six of the

insurance companies listed on Kenya's Nairobi Securities Exchange included the study's target audience.

Census

The study was a census since the population was small, easily accessible and manageable. Census is a non-probability method where the entire population will participate in the study as respondents. According to Mugenda and Mugenda (2003) census is used when the target population does not exceed 100 subjects. The population comprised of the six (6) insurance companies listed in the NSE by 2021.

Data Collection Instruments

The study relied on secondary data that was collected with a data collection sheet. The data collected was for five (5) years from 2017 to 2021. A better way to assess the patterns of the macroeconomic indicators and their effects on the financial performance of the insurance business was over a five-year period. The IRA reports were used to collect secondary information about the insurance companies' financial performance. Macroeconomic indicators data was obtained from the CBK and KNBS websites and reports.

Data Processing and Analysis

The data was collected from several firms and for five (5) years, which necessitated the use of panel regression analysis. Data that was collected was edited and corded to have the required quality and accuracy. It was entered into STATA software for generation of the required outputs. Descriptive and inferential analysis techniques were used to accurately establish the effect of inflation, interest rates, exchange rates and economic growth on financial performance of the listed insurance firms. A panel regression model used in the study comprised of four independent variables and one dependent variable.

Analytical Model

The relationship between macroeconomic indicators and financial performance of insurance firms listed in the NSE was presumed to be linear. A linear regression analysis was used to estimate the coefficients of a linear equation and the independent variables that best predict the value of the dependent variable. The regression model was as follows:

$$Y_{it} = \beta o + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + e_{it} \ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Where:

Y represents Financial Performance of firm i at time t

$\beta 0$ represents Y intercept. This is a constant

β_1, β_2, β_3 &β_4 represents Beta coefficients of variables X_1, X_2, X_3 and X_4

X_1 represents Inflation rate

X_2 represents Interest rate

X_3 represents Exchange rate

X_4 represents Gross Domestic Product rate

ε represents Composite Error term

The presentation of the analyzed data was in form of tables.

Findings of the Study

Descriptive Statistics

Descriptive Analysis of Inflation Rates

To assess the role of inflation on financial performance of insurance firms listed in the NSE, secondary data was selected from secondary sources. From the results depicted in Figure 2, there was a drastic drop in Consumer Price Indices from 2017 to the lowest dip in 2018 followed by a gradual general increase between years 2018 and 2021. According to Table 1, the highest level of Consumer Price Index was 8.01% recorded in 2017 while the lowest was 4.69 recorded in 2018. The average Consumer Price Index within the five years under investigation was 5.89% while the deviation was 1.15. These results imply that the insurance companies were operating on economic conditions that became increasingly challenging as shown by increasing inflation rates. This is in line with Moyo and Tursoy (2020) who recapped that inflation rates, which result in loss of money's buying power, have a significant effect on the profitability of insurance companies. The results on inflation rates over the five years period (2017- 2021) are presented in Table 1.

Table 1: Inflation Rates in Kenya for 2017- 2021

Indicator(s)	CPI (in %)	Change
2017	8.01	-
2018	4.69	-3.32
2019	5.24	0.55
2020	5.4	0.16
2021	6.11	0.71
Mean	5.89	-
Std. Dev	1.15	-
Min	4.69	-
Max	8.01	-

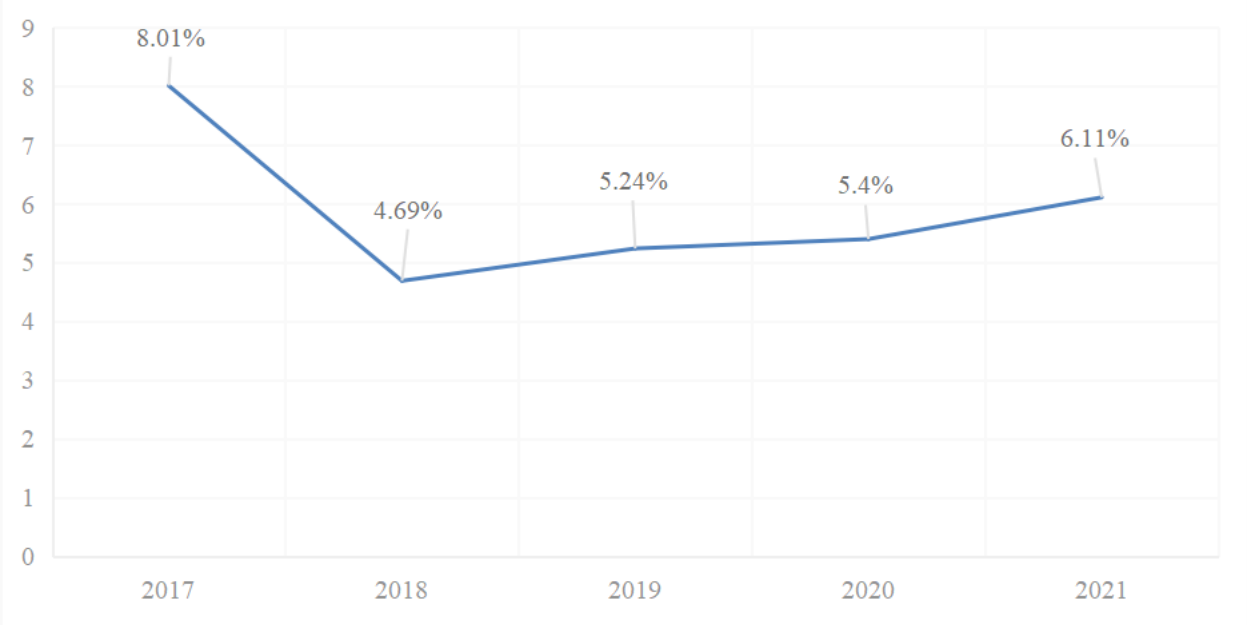

Figure 1: Trend of Inflation Rates Between Years 2017 and 2021

Descriptive Analysis of Interest Rates

Table 2 shows the aggregate annual lending interest rates by commercial banks and Central Bank Rates between year 2017 and year 2021. According to Table 2, the central bank of Kenya maintained a relatively lower CBR as compared to the lending rates offered by the commercial banks. During the five years under review, the lending rates ranged between 12.00% corresponding to year 2020 and 13.67% tallying with year 2017. On the other hand, the least CBR was 7.0% reported in year 2021 and the highest was 10.0% recorded in year 2017. The highest variance between CBR and lending rates was 3.52 in 2019 and the largest variance was 5.08 corresponding to year 2021. According to Figure 3, CBR and lending rates showed a general downward trend in the five years' period while the variance between the CBR and lending rates increased between years 2017 and 2018 before decreasing till year 2019 and later increasing steadily between years 2019 and 2021. These results are an indication of a generally favourable monetary transactions environment provided by the financial institutions. A favourable lending environment enhances access to financial resources from the financial institutions, which supports operations of insurance companies. These results concur with the findings by Mutemi and Makori (2019) that lower bank rates can assist to extend the economy by lowering the cost of assets for borrowers, while higher bank rates can help to rein in the economy when it is expanding faster than it should.

Table 2: Interest Rates in Kenya for 2017- 2021

Indicator(s)	Annual lending rates (%)	Central Bank Rates (%)	Margin
2017	13.67	10.00	3.67
2018	13.06	9.33	3.73
2019	12.44	8.92	3.52
2020	12.00	7.23	4.77
2021	12.08	7.00	5.08
Mean	12.65	8.50	-
Std. Dev	0.63	1.18	-
Min	12.00	7.00	-
Max	13.67	10.00	-

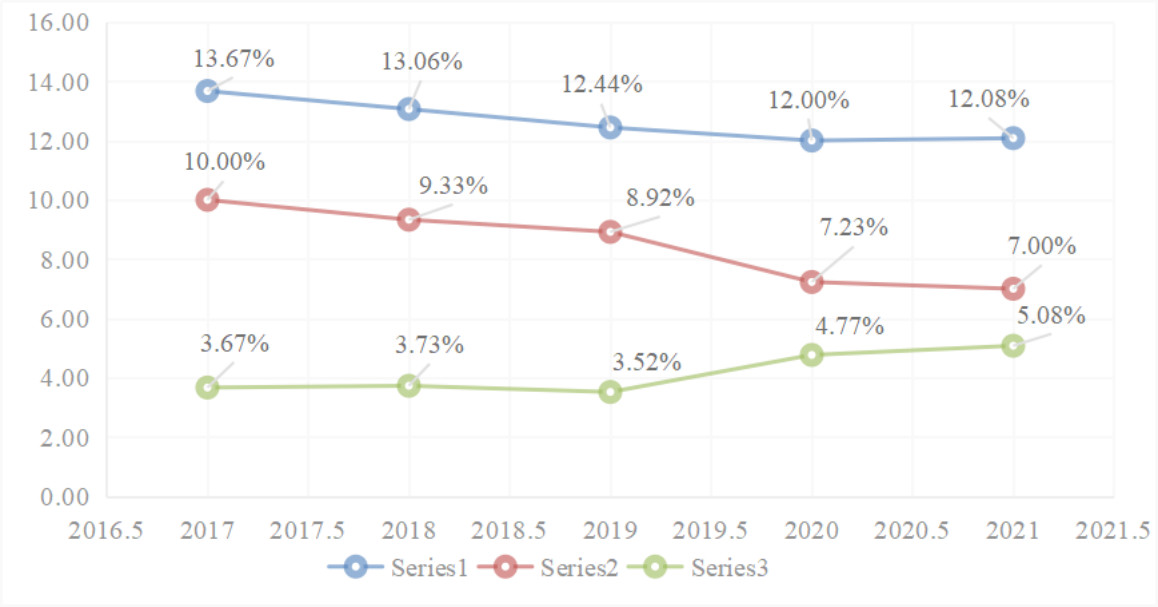

Figure 2: Trend of Interest Rates between Years 2017 and 2021

Descriptive Analysis of Exchange Rates

The results depicted in Table 3 reveal that there was a general increase in exchange rates from a low of 101.29 in 2018 to the highest of 109.67 in 2021. The average exchange rate was 104.57 and the standard deviation was 3.11. Over the five years' period, the maximum change in exchange rate was experienced between years 2019 and 2020, which amounted to an increase of 4.50, and the least change was 0.7 recorded between years 2018 and 2019. According to these trends, the exchange rates in the Kenyan economy were changing rapidly making the acquisition of goods and services among the insurance companies costly. This could in turn affect the cost of operations and consequently their financial performance. These results concur with Klein and

Linnemann (2021) who established that exchange rate is highly important since it displays the rate of exchange with another currency. As a result, it has a direct influence on both the affordability of foreign goods and the price of local goods in international markets. These results are further shown in Figure 4.

Table 3: Exchange Rates in Kenya for 2017- 2021

Indicator(s)	Kshs to USD	Change
2017	103.39	
2018	101.29	-2.10
2019	101.99	0.70
2020	106.49	4.50
2021	109.67	3.18
Mean	104.57	-
Std. Dev	3.11	-
Min	101.29	-
Max	109.67	-

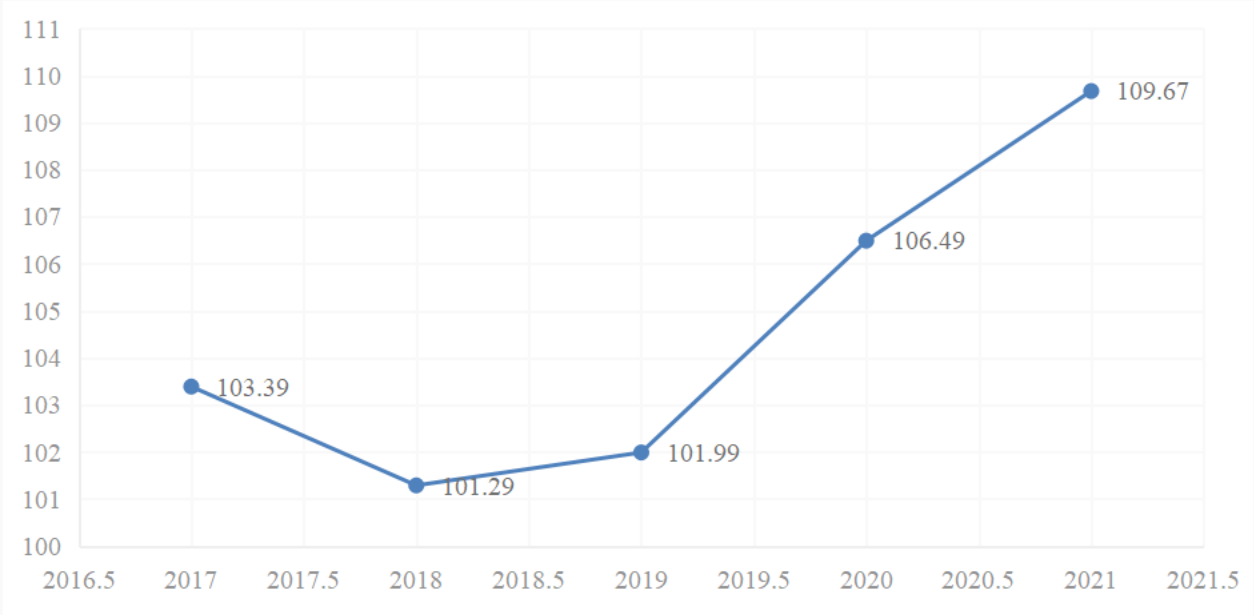

Figure 5: Trend of Exchange Rates Between Years 2017 and 2021

Descriptive Analysis of Gross Domestic Product Rate

Table 4 shows the GDP growth rate between years 2017 and 2021. As indicated in Table 4, the lowest GDP was -0.32 recorded in year 2020 and the highest was 7.23 reported in year 2021. The average GDP growth rate was 4.27, the largest growth in the Country's GDP was observed

between years 2020 and 2021. However, the slowest growth was reported between years 2018 and 2019. From Figure 6, there was a fluctuation in the economic growth. This was shown by a drastic rise between year 2017 and 2018, followed by a slight decrease between 2018 and 2019 and then a sharp decrease between 2019 to the deepest point in 2020. The final phase was characterized by a sharp rise between year 2020 and 2021. According to these findings, there has been major changes in the economic performance of the Country emanating from various occurrences including global oil crisis and COVID-19 pandemic. These economic changes have a direct implication on the operational efficiency of insurance companies both in Kenya and beyond. This is a reflection of the sentiments by Nyangor (2020) that changes in the Country's economy have had significant influence on financial firm's collective investments. The size of the economy as a whole increases with faster GDP growth, which also improves fiscal conditions for firm's efficiency in investment.

Table 4: GDP Growth Rates in Kenya for 2017- 2021

Indicator(s)	GDP Growth Rate	Change (+/-)
2017	3.82	-
2018	5.63	1.81
2019	4.98	-0.65
2020	-0.32	-5.3
2021	7.23	7.55
Mean	4.27	-
Std. Dev	2.55	-
Min	-0.32	-
Max	7.23	-

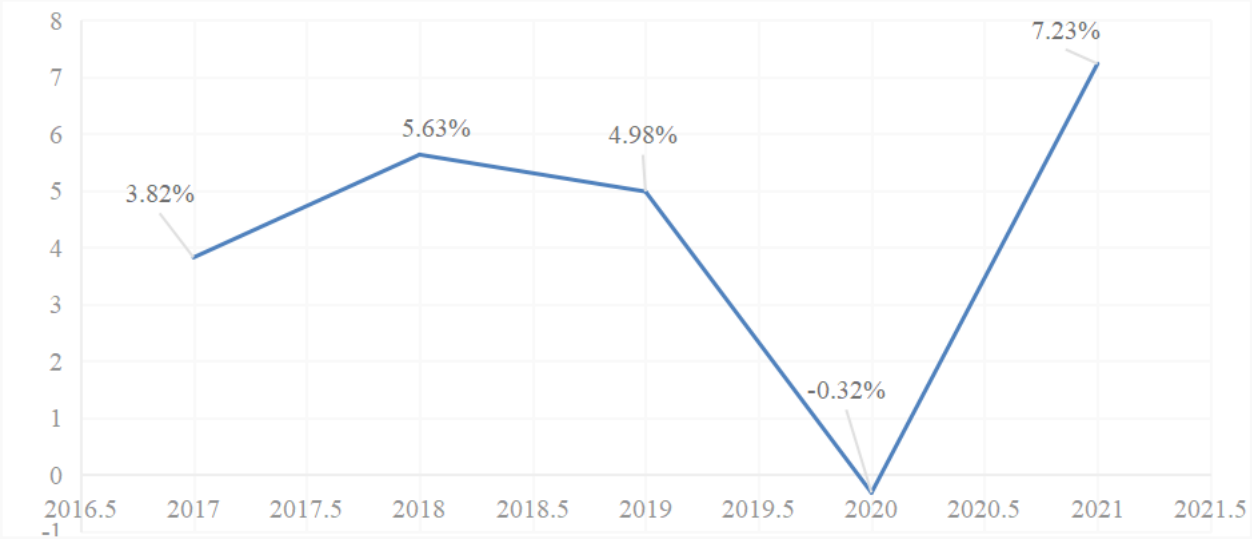

Figure 6: Trends in GDP Growth Rates between Years 2017 and 2021

Financial Performance of NSE Listed Insurance Companies

The dependent variable of this study was financial performance as measured using Return on Equity (ROE). This variable was investigated by gathering and calculating the ratio of Net Income to Total shareholder's Equity as outlined in Table 5. As per the results depicted in Table 5, the mean annual net income reported by the NSE listed insurance companies was Kshs. 106.163 million; the deviation on net income was Kshs.25,699 million; the maximum net income was Kshs. 136,869 million reported in 2019 while the minimum was Kshs. 64,006 million. The amount of total shareholders' equity over the five years averaged at Kshs. 15,3865 million; the dispersion from the calculated mean was Kshs. 10.286 million; the maximum worth of total shareholders' equity was Kshs. 1,716,019 million shown in year 2019 whereas the minimum was Kshs. 1,429,467 million recorded in year 2020. The mean of ROE in the five years period was 6.8% and the standard deviation was 1.31%. The maximum ROE was 8.0% corresponding to year 2019 while the minimum ROE was 4.5% reported in year 2020. According to Figure 7, there was a general rise in net income, total shareholders equity and ROE between year 2017 and 2019 followed by a slight drop in 2020 and finally a gradual increment until year 2021. These results imply that despite the harsh economic conditions, the NSE listed insurance companies posted healthy financial performance as shown by ROE values above 5%. This is in line with Association of Kenyan Insurers (2020) that the insurance industry experienced a decline in returns with Return on Capital falling from 10.4% in 2017 to 4.41% in 2018, indicating that the insurance industry has struggled to capitalize on the expanding economy's insurance opportunities.

Table 3: Financial Performance of NSE Listed Insurance Firms for 2017-2021

Indicator(s)	2017	2018	2019	2020	2021	Mean	Std. Dev	Min	Max
Av. Annual Net Income (Mn)	92108	113464	136869	64006	124368	106163	25699	64006	136869
Av. Annual Total Equity (Mn)	1460976	1501875	1716019	1429467	1584932	15386538	10286	1429467	1716019
Agg.Annual ROE	6.3	7.6	8.0	4.5	7.8	6.8	1.31	4.5	8.0

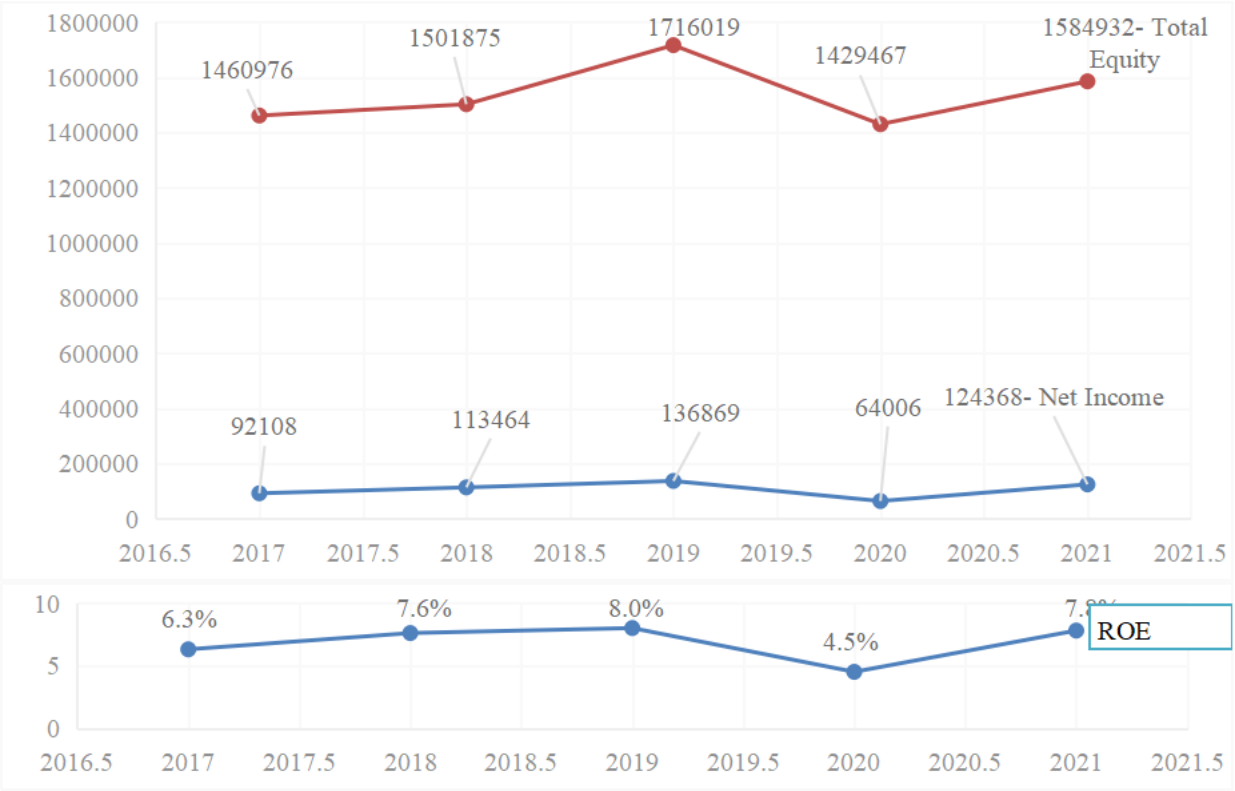

Figure 7: Trend of Total Equity, Net Income and ROE between 2017 and 2021

Inferential Statistics

Model Summary

This section shows the model summary findings, which is a representation of the coefficients of determination as a contribution of the predictors towards the dependent variable. From the Model Summary Table 6, the R-squared coefficient of determination depicts how changes in the predictor variables affect the response variable. As per the results above, the R-square value is 0.7775, suggesting that macroeconomic factors (inflation rates, interest rate, exchange rate and economic growth) account for 77.75% of the financial performance of insurance firms listed in the NSE. This summary is shown in Table 6.

Table 6: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.8817	0.7775	0.762	0.293

Analysis of Variance

An analysis of variance (ANOVA) was conducted to see if the entire regression model matched the data well and if inflation rates, interest rate, exchange rate and economic growth were significant predictors of the dependent variable. The results shown in Table 7 indicate that the relationship between the study variables as well as the reliability of the model. The model was tested at 5% significance level with a 2-tailed test. The F-value, which is calculated at 5% significance level, was 3.362 with the significance value of 0.010, which is less than the critical value at 5% level derived from a 2-tailed test. The F calculated (3.362) in this model is greater than the F critical (at 4, 25, F critical= 2.76). Table 7 shows the results of ANOVA Test.

Table 7: ANOVA (b)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.4944	4	1.8736	3.362	.010(a)
Residual	2.145	25	0.0858		
Total	9.6394	29			

Panel Regression Analysis

Panel regression analysis was applied with the fixed effect model being used based on the Hausman specification test. The panel regression were computed and the results are as summarized in Table 8. The panel data regression model was tested for all firms through time. The coefficients in Table 8 were used complete the regression equation relating the dependent and the independent variables. The panel model estimated ($Y_{it} = \beta_0 + \beta_{it1}X_{it1} + \beta_{it2}X_{it2} + \beta_{it3}X_{it3} + \beta_{it4}X_{it4} + \varepsilon$) therefore became.

$Y_{it}=0.954 -0.784X_{it1}-0.986X_{it2}-0.795X_{it3}+0.873X_{it4}$

Based on the output obtained coefficients of inflation rates variable was -0.954, interest rate variable had -0.784, exchange rate variable had -0.986, and economic growth variable had 0.873. From these results, interest rate contributes the most to the financial performance of insurance firms listed in the NSE followed by economic growth, then exchange rate while inflation rates contribute the least.

Table 8: Panel Regression Analysis

Y	Coefficients	Std. Error	Z	P>|z|	[95% Conf.	Interval]
Inflation rates	-0.764	0.57232	-5.08	0.000	0.4456	0.0148
Interest rates	-0.986	0.64847	-6.53	0.000	0.2106	0.0521
Exchange rates	-0.795	0.49461	-5.60	0.014	0.3284	0.0421
Gross Domestic Product rate	0.873	0.54983	6.47	0.019	0.1649	0.0362
Const.	0.954	0.58759	6.47	0.003	0.4335	0.0243

R-sq:within = 0.5184

between = 0.4540

overall = 0.452

Wald $chi^2(4) = 44.46$

Prob > $chi^2 = 0.0000$

Hypothesis Testing

The chi-square tests were undertaken for to test the null hypotheses as proposed in the study. The study tested four null hypotheses and the results obtained are as shown in Table 9.

Table 9: Chi-Square Tests on Macroeconomics and Financial Performance

Variables	Value	df	Asymp. Sig. (2-sided)
Inflation rates and financial performance	32.348 (a)	4	0.034
Interest rates and financial performance	17.832(a)	4	0.004
Exchange rates and financial performance	13.383(a)	4	0.014
Gross Domestic Product rate and financial performance	26.469(a)	4	0.002

H_{01}: There is no significant effect of inflation on financial performance of insurance firms listed in the NSE.

According to the findings in Table 10, the chi -square analysis showed a value of 32.348 at 4 degrees of freedom. This value was more than P value of 0.034. As a result, the null hypothesis was disproved. As a result, it was determined that there is a link between inflation rates and the financial performance of insurance firms listed in the NSE.

H_{02}: There is no significant effect of interest rate on financial performance of insurance firms listed in the NSE.

At four degrees of freedom, the chi-square analysis yielded a value of 17.832. P values of 0.004 were less than this figure value. As a result, the null hypothesis was rejected, and it was determined that interest rates and financial performance are linked.

H_{03}: There is no significant effect of exchange rate on financial performance of insurance firms listed in the NSE.

The chi-square statistic from Table 10 was 13.383. Since this is greater than p-value of 0.014, it was concluded that there was a statistically significant relationship between the two categorical variables hence the null hypothesis was rejected. Thus, exchange rates affect the financial performance of insurance firms listed in the NSE.

H_{04}: There is no significant effect of gross domestic product on financial performance of insurance firms listed in the NSE.

From the chi- square results in Table 10, a Pearson Chi-square value of 26.469 was established at p = 0.002. The chi-square value was more that the p value hence the null hypothesis was rejected.

These chi-square results depicted significant relationships between macroeconomic factors and financial performance of insurance firms listed in the NSE. These results echoed the findings by Moyo and Tursoy (2020) who established that the financial performance of insurance firms in many developing nations is significantly influenced by the inflation rates, exchange rates, gross domestic product, and interest rates. The decision to accept or reject the null hypotheses is based on the foregoing chi-square test. The results for the hypothesis testing are summarized on Table 10 showing the decision rule for each hypothesis statement.

Table 10: Summary Table of Hypothesis

Hypothesis	Decision Rule
H_{01}: There is no significant effect of inflation on financial performance of insurance firms listed in the NSE	Reject H_{01}
H_{02}: There is no significant effect of interest rate on financial performance of insurance firms listed in the NSE	Reject H_{02}
H_{03}: There is no significant effect of exchange rate on financial performance of insurance firms listed in the NSE	Reject H_{03}
H_{04}: There is no significant effect of gross domestic product on financial performance of insurance firms listed in the NSE	Reject H_{04}

Conclusion

Inflation Rates

The study concludes that there was a general increase in the inflation rates in the country. The insurance companies were operating on economic conditions that became increasingly challenging as shown by increasing inflation rates. As the cost of claims for homeowners losses covers the full cost of the home, both the consumption and the investment portions, this discrepancy further removes the CPI from an appropriate measure of insurance costs. With increased inflation, there is a decline in ROE of the insurance companies listed in the NSE.

Interest Rates

The study deduces that the CBR and lending rates showed a general downward trend in the five years' period while the variance between the CBR and lending rates increased during the period under review. The lower bank rates assisted in extending the economy by lowering the cost of assets for borrowers. Accordingly, interest rates has been volatile with a negative impact on the ROE and its impact on the performance indicators influences the variation in ROE of insurance firms.

Exchange Rates

The study also concludes that the exchange rates in the Kenyan economy were changing rapidly making the acquisition of goods and services among the insurance companies costly. This in turn affected the cost of operations and consequently their financial performance. From the study, exchange rate had a direct influence on both the affordability of services in the service markets.

Gross Domestic Product Rate

The study further deduces that there has been major changes in the economic performance of the country emanating from various occurrences including global oil crisis and COVID-19 pandemic. These economic changes have a direct implication on the operational efficiency of insurance companies both in Kenya and beyond. These changes in the country's economy have had significant influence on financial firms collective investments.

Financial Performance

The study established that there was a general rise in net income, total assets and ROA between year 2017 and 2019 followed by a slight drop in 2020 and finally a gradual increment till year 2021. Despite the harsh economic conditions, the NSE listed insurance companies posted healthy financial performance as shown by ROA values above 5%. Interest rate contributes the most to the financial performance of insurance firms listed in the NSE followed by economic growth, then exchange rate while inflation rates contribute the least.

Recommendations of the Study

From the findings and conclusions, inflation rate was found to be dynamic and it has a negative effect on a financial performance of NSE listed companies in terms of ROE. It is therefore necessary for the NSE listed insurance companies to make ample adjustment for inflation so that during seasons of high inflation the firms do not run at a loss. Effort should also be put in place to reduce the level of inflation in Kenya so that it can have significant effect on insurance penetration in the country. The study found that interest rates has been fluctuating resulting in negative effect on ROE. Therefore the NSE listed insurance companies firms can employ strategies where they can purchase more futures contracts on government bonds or interest rate futures in order to be able to lock-in interest rate and hedge their various portfolios. The study established that was exchange rates negatively affect ROE of the NSE listed companies. As such, the NSE listed insurance companies may mitigate the exchange rate risks by hedging the foreign exchange risk by purchasing spot contract to cushion against any negative swing. The Central Bank should undertake effective mechanisms to ensure that inflations rate, exchange rates and money supply do not have adverse effects on financial performance of firms. The stability of the macroeconomic indicators are of paramount importance to economic development. The action of macroeconomic indicators has a positive or negative impact on firm results.

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