

Effect of Capital Adequacy on Insurance Penetration in Kenya

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Abstract: According to Third Medium Term Report, Health insurance coverage in Kenya is generally low 19%. The general objective of the study was to analyze the relationship between capital adequacy and insurance penetration in Kenya. The study is based on Efficient Structure Theory. The study was based on positivists' research philosophy. This study adopted longitudinal research design and targeted all the 26 registered life insurance firms in Kenya, which were operational from 2011 to 2022 and had filed their audited financial statements with the insurance regulatory authority for the period (IRA, 2020). There were only 18 Life Insurance Firms that met the criteria for the study where such have been operated since the year 2011 which is the period of the study. The study therefore purposively took the 18 companies as the sample size suitable to attain the set objectives. Primary data was collected using a questionnaire while secondary data was collected using a secondary data collection schedule. Data was analyzed using panel data regression based on Hausman Test which was used to choose between fixed and random model. The study established that capital adequacy had a significant relationship with insurance penetration. The study concluded that policies and initiatives aimed at promoting insurance penetration in Kenya should consider not only the characteristics of individual consumers but also the characteristics of firms, particularly their state of capital adequacy.

Keywords: Capital Adequacy, Insurance, Insurance penetration, Capital, Health insurance

I. Introduction

As part of the general financial system, insurance companies provide unique financial services to the growth and development of every economy. Such specialized financial services range from the underwriting of risks inherent in economic entities and the mobilization of large amount of funds through premiums for long term investments (Nwosa & Mustapha, 2017). The risk absorption role of insurers promotes financial stability in the financial markets and provides a sense of peace to economic entities. The business world without insurance is unsustainable since risky business may not have the capacity to retain all kinds of risks in this ever changing and uncertain global economy (Ehiogu, Eze & Nwite, 2018).

Insurance companies sell protection to policyholders against many types of risks: Property damage or loss, health and casualty, financial losses, etc according to Varenik, Pestovskaya, and Opaliichuk (2016). In return for this risk protection, insurance companies receive a premium from the policyholder that is used to cover expenses and the expected risk. For longer-term risk protections, part of the premiums is invested to get higher yields. Hence, Insurers need to have sufficient equity or buffer capital to meet their obligations in adverse conditions when their losses on the diversified portfolio exceed the expected losses (Hartwig, Niehaus & Qiu, 2020).

Global figures show that insurance penetration is 6.28 percent, with 11.03 percent in Latin America, 6.73 percent in Europe, 5.73 percent in Asia, 5.6 percent in Oceania and 3.65 percent in Africa (Biener, Eling, & Wirfs, 2016). The average penetration for Europe in 2013 is 6.82 percent while Africa's is 3.65 percent (Mutege, 2018). India's insurance penetration is lower than the world average of 6.28 percent in 2013, compared to 5.2 percent in India (Ilyas & Rajasekaran, 2021). While Indian insurance penetration is high at 5.2%, it is lagging behind other Asian countries such as Japan (9.9%), South Korea (10.4%) and Singapore (6.8%). In the US, the penetration of life insurance (total premium \$as a share of

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GDP) in the United States in 2010 was 3.5 (compared with 9.5 in the United Kingdom, 7.4 in France and 8.0 in Japan) (Mutegi, 2018).

While insurance penetration in Africa is still poor, Olayungbo and Akinlo (2016) argue that insurance companies play a crucial role in deciding African nations' economic development. These are the results of their research, which took place between 1970 and 2013 in eight African countries. One of the strategies that African countries can adopt to increase insurance penetration, according to Olayungbo and Akinlo (2016), is through the establishment of effective insurance regulations. The findings from these studies show the relevance to the insurance industry of insurance regulation. However, the effect of complex legislation on insurance penetration is not illustrated in these studies.

Algeria's insurance penetration has decreased to 0.68 percent, which used to be 0.68 percent for Egypt, 3.41 percent for Kenya, 5.84 percent for Mauritius, 0.36 percent for Nigeria, 15.4 percent for South Africa, 1.76 percent for Tunisia, and 1.5 percent for Zimbabwe. In my view, the relationship between the purchasing of insurance plans and the monetary boom in the selected countries is therefore better studied given the large variants of insurance plan penetration among the sample countries (Suhaimia, & Matb, 2018).

Locally, Kenya's insurance plan penetration was very poor at just 2.54 percent of Gross Domestic Product (GDP) compared to 2.57 percent in 2005 (AKI, 2019). A penetration ratio (GDP) compared to 2.57 percent in 2005 was reported by long-term (life) insurance. Long-term (life) insurance reported a penetration ratio of 0.76 percent, compared with 1.78 percent for general insurance. Kenya's insurance sector also faced a daunting monetary landscape in 2011, with a penetration of 3.02% compared to 3.1% in 2010. Insurance penetration in Kenya in 2014 was estimated at 3.44% (Mutegi, 2018) compared to Malaysia, which had an estimate of 41% of the population included in some form of lifestyle insurance. The penetration ratio shows the insurance market's current coverage and growth challenges in a given region.

As mentioned, insurance penetration in Kenya is estimated at 2.34 percent, which is very low considering that Kenya's population now stands at over 40 million and is much lower than both the continent and the global penetration of 3.6 percent and 6.28 percent respectively (AKI, 2019). Nevertheless, with the gross written premiums of the industry, there is notable and steady growth in the insurance industry. Though gross written premiums grew 5.3% to Ksh 228 billion compared to Ksh 216 billion by the end of the same period in 2018 (Kenya Institute for Public Policy Research and Study, 2019), insurance penetration growth remained low. There is a great deal of experimentation with different insurance plans targeted at the mass market, but the use of these goods is still very limited.

Between 2006 and 2015, insurance penetration in Kenya was below 4 percent overall (IRA, 2015). Insurance penetration in Kenya was 2.5 percent in 2006. It rose in 2007, 2008 and 2010, to 2.6 percent, 2.7 percent and 2.98 percent respectively. It then decreased to 2.96 percent and rose to 3.29 percent and 3.4 percent respectively in the 12 months of 2011, 2012 and 2013. It decreased to 2.9 percent in the year 2014 and to 2.8 percent in the year 2015, respectively. As mentioned, the latest statistics indicates that insurance penetration declined further to 2.34 percent in 2019 being below the global average of 7.2 percent. This is according to the Annual Economic Surveys of the GOK and the Annual Reports of the Insurance Regulatory Authority for the respective years (IRA, 2019).

Capital adequacy is the calculation of the amount of core capital of Life Insurance Companies expressed as a percentage of weighted credit exposures of their assets. Shabani, Morina and Misiri (2019) argued that the criteria for capital ensure that banks have enough capital at stake for them. Sufficient CAR helps banks withstand unexpected shocks and therefore suggests that the financial institution can continue to meet its responsibilities. Siddika and Haron (2019) discovered that capital adequacy essentially dictates how well their balance sheets can cope with shocks from financial institutions. Therefore, the Capital Adequacy ratio is used to assess the financial institution's capacity to meet time obligations, as well as other threats such as credit risk and operating risk. Capital adequacy is also a key factor that can influence insurance penetration and therefore was of interest to the current study.

II. Statement of the Problem

In Kenya, insurance penetration has fallen to 2.34%, the lowest in the last 15 years (Kenya Insurance Industry Survey, 2019), compared to South Africa, whose penetration is 16.9% with a population of 53.2 million (National Insurance Commission, 2018). In the last five years, 10.7 percent in the year 2015, 13.2 percent in the year 2016, 6.3 percent in the year 2017, 3.5 percent in the year 2018 and 6.1 percent in the year 2019, the Gross Direct Premium in Kenya was on the downward trend (IRA, 2019). The current research examined firm capital adequacy characteristics from insurance companies since different scholars have already studied the impact on results of specific factors from companies. While businesses operating in the same sector have different levels of financial performance and deal with the same external

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variables, studies have shown that internal factors influence firm performance. Firm size, financial leverage, liquidity, investment efficiency, capital adequacy are among the main internal factors (Zablon & Ariemba, 2015). Lwaminah (2017) examined the impact of asset quality, liquidity, investment quality, capital adequacy and firm size on the financial performance of commercial banks in Kenya in a further empirical analysis of company specific factors. In addition, the general lack of a savings culture, insufficient tax incentives and a perceived industry reputation crisis in the public eyes, especially with regard to the settlement of claims, were cited as likely causes for a low penetration of insurance in Kenya (Gakeri, 2015). Insurance penetration in Kenya is still poor and this is due to a low degree of consumer awareness of its advantages and the belief that insurance is only for wealthy members of society. The researcher identifies this as the research gap that will be of interest to insurance policy holders (IRA), the practice of insurance coverage in Kenya (the insurance providers) and the insurance plan clients. Since the low insurance penetration is a recorded problem in Kenya based on insufficient literature hence the need of empirical research that examines the relevant factors, economic environment and insurance penetration of companies in Kenya. The study examined the moderating effect of economic environment on the firm financial characteristics and the penetration of insurance in Kenya in order to fill this gap.

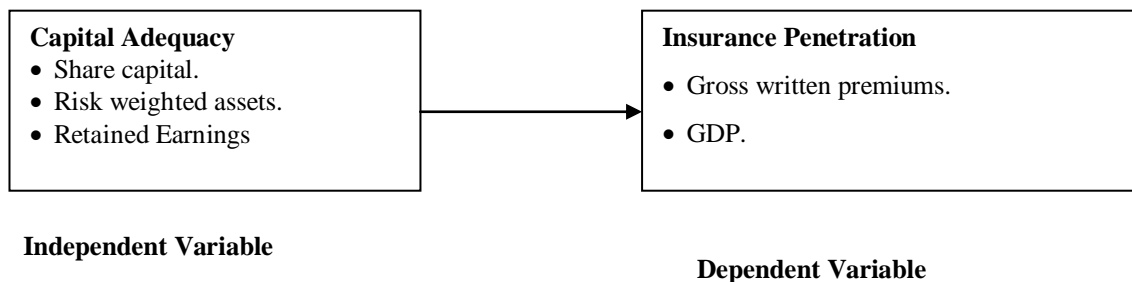
III. Purpose of the Study

The study sought to examine the effect of capital adequacy on insurance penetration in Kenya

IV. Hypothesis of the Study

H₀ Capital adequacy has no statistically significant effect on insurance penetration in Kenya

1. Conceptual Framework



V. Efficient Structure Theory

Demesetz (1973) established the performance structure hypothesis. It is the belief that more competitive firms can perform better, expand and grow in size, resulting in an increase in the degree of concentration of the industry. The hypothesis also implies that high profitability can be achieved by such companies while holding high market shares. Therefore, according to this hypothesis, the higher the degree of market concentration, the more productive the market is supposed to be.

A research conducted by Yoshiro (2013) to test the hypothesis of efficiency systems in Japanese banks found that companies do not reduce costs in a concentrated market. Banks expand but reduce productivity, which supports the quiet-life hypothesis, in line with the efficiency hypothesis. Throughout the life cycle of banks, these results indicate that there is an interesting growth-efficiency trend that indicates that the efficiency hypothesis dominates the quiet-life hypothesis in terms of economic effects. The requirements preceding the principle of the efficiency structure are to have sufficient resources to be used in goods and services procurement. Capital adequacy, in line with the scale strategy, allows banks to purchase services in bulk due to the availability of funds and this minimizes unit costs that eventually affect the bank's efficiency. On the other hand, through the role played by organizational management in lowering operating costs that ultimately affect bank efficiency, the X efficient approach is applicable.

The Efficient Structure Theory, also known as the Efficient Market Hypothesis (EMH) in finance, remains relevant in understanding the behavior of financial markets and the allocation of resources. Malkiel (2003) provides an overview of the Efficient Market Hypothesis and critiques raised against it. Malkiel discusses the implications of market efficiency for investors, including the challenges of outperforming the market, the role of market anomalies, and the limits of informational efficiency. Fama (1991) revisits the Efficient Market Hypothesis and discusses its implications for empirical research, market anomalies, and the efficiency of different information sources. The paper provides insights into the challenges and limitations of testing market efficiency and interpreting empirical evidence in financial markets. Fama, & French (1993) extends the Efficient Market Hypothesis by introducing the three-factor model, which incorporates size and value factors in addition to market risk. The paper highlights the empirical regularities in asset returns and the implications for asset pricing and portfolio management.

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The Efficient Market Hypothesis (EMH), also known as Efficient Structure Theory, has faced several critiques from economists, investors, and researchers. Critics argue that empirical evidence often reveals market anomalies and patterns that contradict the predictions of the EMH. These anomalies include phenomena such as stock price bubbles, momentum effects, value and size premiums, and calendar anomalies, which suggest that asset prices may deviate from their fundamental values and exhibit predictable patterns over time. Critics contend that the presence of these anomalies challenges the notion of market efficiency and implies that investors can potentially earn abnormal returns by exploiting inefficiencies in financial markets.

Critics of the EMH argue that it fails to account for the role of psychological biases and irrational behavior in driving market dynamics. Behavioral finance research has documented various cognitive and emotional biases, such as overconfidence, loss aversion, herding behavior, and anchoring, which can lead to systematic mispricing of assets and create opportunities for arbitrage and speculation. Critics contend that these behavioral biases can undermine market efficiency by distorting investors' perceptions of risk and return and contributing to market bubbles and crashes.

Critics argue that even if market inefficiencies exist, various institutional and practical constraints may prevent arbitrageurs from exploiting them effectively. These constraints include short-selling constraints, transaction costs, borrowing costs, liquidity risk, information asymmetry, and regulatory restrictions. Inefficient markets may persist if the costs of arbitrage exceed the potential profits, leading to mispricing and inefficiency in asset prices.

Critics argue that the EMH overlooks the presence of information asymmetry in financial markets, where insiders or informed traders may possess superior information that is not fully reflected in market prices. Information asymmetry can lead to adverse selection and moral hazard problems, undermine market transparency and integrity, and create opportunities for insider trading and market manipulation. Critics contend that the existence of information asymmetry challenges the notion of market efficiency and suggests that markets may not always incorporate all available information into asset prices.

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Some researchers propose alternative theories, such as the Adaptive Market Hypothesis (AMH), which combines elements of market efficiency and behavioral finance. The AMH suggests that market efficiency can vary over time and across different market conditions, depending on the adaptability and sophistication of market participants. According to this view, markets may exhibit periods of relative efficiency and inefficiency, driven by changes in investor behavior, information processing capabilities, and competitive dynamics.

Overall, while the Efficient Market Hypothesis has been influential in shaping our understanding of financial markets, it continues to provoke debate and scrutiny among economists and researchers. Critics argue that market efficiency is a nuanced and context-dependent concept, influenced by factors such as investor behavior, institutional frameworks, market structure, and regulatory environment. As such, the debate surrounding the EMH remains an active area of research in financial economics. Therefore, this principle formed the basis for the study on analyzing the effect of capital adequacy on insurance penetration in Kenya.

VI. Capital Adequacy and Insurance penetration

Rahman, Yousaf & Tabassum (2020) studied Bank-Specific and Macroeconomic Determinants of Profitability: A Revisit of Pakistani Banking Sector under Dynamic Panel Data Approach. This study examined the effect of the bank-specific and macroeconomic determinants of profitability for the banking sector of Pakistan. To incorporate the issues of endogeneity, unobserved heterogeneity, and profit persistence, the study applied a generalized method of moments (GMM) technique under the Arellano–Bond framework to a panel of Pakistani banks that covers the period 2003–2017. The results of a dynamic panel data approach reveal that capital adequacy accelerates the profitability of the banking sector in Pakistan. Capital adequacy helps the financial system to absorb any negative shock by reducing the number of bank failures and losses. Conversely, this study empirical investigation reveals that the liquidity ratio, business mix indicators, interest rates, and industrial production deteriorates the bank profitability. Liquidity risks enhance the probability of default risks and transmit into the unpaid loans and hence the lower return. This study empirical evidence

further reveals that Pakistani banks are not getting any benefit of the economies of scale in terms of financial performance.

Mohamed & Toobae (2017) studied the risk-sensitivity of bank capital requirements: the moderating effects of capital regulation and supervisory power. This study examined the moderating effects of capital regulation and supervisory power on the risk-sensitivity of bank capital requirements. Using two-step system generalized method of moments (GMM) estimator, the study worked on the international sample of 222 banks chartered in 30 countries. The finding suggests that asset volatility is a critical variable in explaining the risk-sensitivity of banks. The results indicate that stricter capital regulatory regimes and higher supervisory power enhance the risk sensitivity of capital requirements. Moreover, the capital regulation was found to moderate the relationship between asset volatility and risk-sensitivity while supervisory power was found not to exert any impact on the level of risk of the banks. Another interesting result is that governments with a higher debt to gross domestic product ratio tend to over-regulate the other banks' investments compared to government bonds. This is the first study that investigates the moderating effects of capital regulation and power of supervision on the risk sensitivity of capital requirements. The results of this study show that the efficiency of risk-based capital requirements depends on the stringency of capital regulation in different countries.

In an effort to understand the state of the banking sector to help launch effective policies, Nguyen, Thanh and Nguyen (2018) researched the determinants of the profitability of 13 commercial banks in Vietnam from 2006 to 2015. Scale, liquidity, capital adequacy, ownership structure, credit risk and cost to income ratio are the bank-specific variables that were analyzed. GDP and inflation were the macroeconomic variables investigated. Nguyen et al (2018) found, based on their empirical study, that capital structure was positively linked to NIM and liquidity was positively related to ROE. Kamau (2018) tried to find out the drivers of Kenya's splendid success in the banking industry between 1997 and 2011. They concentrated primarily on figuring out whether the performance of the bank was influenced by the structure of the bank or operational efficiency. They established that the Kenyan banking sector's source of superior performance emanated from structure and collusive control, not productivity.

Frank & Amankwa (2011) in a study on an analysis and assessment of customer satisfaction with service quality in insurance industry in Ghana sought to assess and analyze customer satisfaction with service quality in the insurance industry of Ghana. Specifically, it examined the determinants of satisfaction and the effects of customer satisfaction on behavioral intentions of consumers in Ghana's insurance industry (GII), as well as the influence of background data on the relationship between satisfaction and behavior intention. The study was a cross-sectional survey that used self-administered structured questionnaire to the target population of customers of insurance companies in Ghana. Out of the one thousand and one hundred questionnaire administered, one thousand and fifty-one usable questionnaire were obtained constituting 87.6% for analysis. Structural Equation Modelling (SEM) approach was used to analyze and test relationships among variables. The study found that Reliability and Responsiveness are Functional quality dimensions that were found to have significant impact on customer satisfaction in GII. Again, Technical quality, Price, and image quality were found to be factors that do not significantly affect customer satisfaction determination in GII. Moreover, customer satisfaction was found to have significant and positive impact on behavior intentions such as likelihood to recommend, switching intention and repurchase intention. Furthermore, demographic characteristics such as gender, age, education, and income levels were found to have no significantly impact on the relationship between customer satisfaction and behavior intentions. The implications of the study to management and theory are discussed and recommendations for future research have been made. The limitations of the study are also noted.

Onyango (2018) studied the effect of capital adequacy on the financial performance of deposit taking savings and credit societies in Meru County, Kenya. The study noted Savings and Credit Cooperatives are financial institutions formed to enhance the economic well-being of their members by mobilizing savings and granting loans. According to a report published by the World Cooperative Monitor by the year 2017, there were more than 1.2 billion persons globally who belonged to one of the 3 million co-operatives in the world. Kenya has one of the largest SACCO movements in the world with the members mobilizing more than Kshs. 400 billion in savings which are approximately 33% of the national savings. Over the years the Savings and Credit Cooperatives have expanded significantly and have even started offering front-office services. As the significance of the cooperatives has grown so have the risks associated with their failure. Due to the risk posed by the possible failure of these cooperatives to the economy, the government through the Savings and Cooperatives Act of 2008 and subsequent regulations have made an effort to regulate these cooperatives. The purpose of this research project was to investigate the effect of capital adequacy requirements on the financial performance of deposit-taking savings and credit cooperatives in Meru County, Kenya. The study was anchored on the propositions put forward in the Anticipated Income Hypothesis, Capital Buffer Theory, and Moral Hazards Theory. The study used a non-experimental research design. The study used secondary data collected from the audited annual financial statements of the 14 deposit-taking savings and credit cooperatives in Meru County, Kenya. The study used

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panel data regression analysis to evaluate the effect of the dependent variables on the independent variables. The regression equation was estimated using STATA 14.0 software. The study established that the ratio of core capital to total assets had a negative and statistically significant effect on return on assets. The study determined that the ratio of core capital to total deposits had a negative but statistically insignificant effect on return on assets. The study established that the ratio of institutional capital to total assets and size had a positive and statistically significant effect on the return on assets. The study recommended that the statutory level of core capital required should be reduced as it was impairing the financial performance of the firms.

Mutumira (2019) studied the effect of capital adequacy on the financial performance of insurance companies in Kenya. The purpose of this study was to examine the effect of capital adequacy on the financial performance of insurance companies in Kenya. A survey research design was adopted in this study. The target population of the study constituted 54 insurance companies that were licensed to carry out business in Kenya between the periods 2014 to 2018. Secondary data was used from the annual audited financial statements of the insurance companies. Purposeful sampling technique was adopted in selecting a sample of 46 insurance companies. Only those insurance companies with complete financial statements for the 5 years, were selected to participate in the study. Panel data was used in analyzing the data collected. The research findings were presented in tables and figures. The study established that insurance companies in Kenya have positive ROA an indication that they are able to generate at least 20 percent profit from the assets they have. The insurance companies also maintained good quality assets between the periods 2014 to 2018 thus enabling them to generate significant income. A significant variation in the total assets possessed by insurance firms was evident with some firms accumulating huge volume of assets and others having small volumes of assets. A statistically significant positive correlation exists between cash flow and asset quality of the insurance companies in Kenya. The results provided evidence that among the three determinants of capital adequacy only cash flow had a statistically significant relationship with the financial performance of the insurance firms. Capital adequacy has a statistically significant effect on the financial performance of insurance companies in Kenya.

Obuba, Mwangi, Nyamute & Angima (2020) studied risk-based capital and investment returns of insurance companies in Kenya: moderating effect of firm size. The study noted that the link between risk-based capital and investment returns remains unclear due to divergence in findings. Mixed findings can be attributed to operationalization of study variables, selection of variables and control variables, the choice of econometric models, and contextual differences which give rise to conceptual, methodological, and contextual gaps. This paper focuses on the moderating effect of firm size on the relationship between RBC and investment returns. Risk-based capital was computed by incorporating market, insurance, credit and operational risk charges. The firm size was measured using gross written premium, while investment returns were measured using investment income ratio. The study population comprised of 63 insurance companies licensed by Insurance Regulatory Authority from 2014 to 2018, where a longitudinal panel design was adopted. Multiple linear regression was used to evaluate the nature of the relationship among variables based on the hypothesis in the study and at a significance level of 5%. The findings confirmed that firm size, both gross written premiums and total assets, had a moderating effect on the relationship between risk-based capital and investment returns. Insurance companies who intend to hold a reasonable risk-based capital so as to ensure stability in times of financial crisis should consider their size either in asset base or the gross premium written. Firms can strive to underwrite more insurance business and increase their asset base in order to safeguard themselves from a one in two-hundred-year crisis and concurrently maximize the investment returns.

Mugambi (2020) studied effects of macroeconomic factors on financial performance of listed manufacturing firms in Kenya. The purpose of this study was to investigate the effect of macroeconomic factors on the financial performance of listed manufacturing firms in Kenya. To achieve this objective, the study was guided by the following specific objectives: To examine the effect of inflation rate on financial performance of listed manufacturing firms in Kenya; to investigate the effect of interest rate on the financial performance of listed manufacturing firms in Kenya; and to establish the effect of exchange rate on financial performance of listed manufacturing firms in Kenya. The study used explanatory research design. The study used explanatory design because it developed a model and applied regression analysis to determine the effects of inflation rates, interest rates and exchange rates on return on equity. The independent variables were inflation rate, interest rate and exchange rate while the dependent variable was the return on equity. The target population of the study was the nine (9) listed manufacturing firms. The study employed census sampling technique. The study used secondary data which was obtained from the KNBS and CBK reports between 2009 and 2018. The return on equity was calculated by obtaining the net income and dividing it by equity from the financial statements of individual firm. The inflation rate was measured using the consumer price index, the interest rate was measured using the lending interest rate and the exchange rate was based on the KES/US Dollar. The first objective investigated the effect of inflation rate on financial performance of listed manufacturing firms in Kenya. The results revealed that the

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inflation rates fluctuated over the years. The lowest inflation rate was recorded in 2010 at 4.32% and the highest was recorded in 2011 at 14.02%. The largest percentage increase was recorded between 2010 and 2011 with an increase of 9.7%. The correlation results from the study showed that a negative non-significant relationship exist between inflation rate and financial performance of manufacturing firms ($r = -0.176$, $p=0.104$). The R-square was 3.1 percent and the P-value was 0.104. The results from regression indicated that an increase in one unit of inflation rate leads to a decrease in ROE by 12.4 units. The second objective examined the effect of interest rate on financial performance of listed manufacturing firms in Kenya. The results indicate that the interest rates have slightly remained stable with slight displacements. However, in 2012 the interest rate recorded a high value of 19.65% and a low of 13.67% in 2017. The largest percentage rise was recorded between 2011 and 2012 at 4.6%. The results from the Pearson correlation indicated that there is positive significant relationship between interest rate and return on equity of manufacturing firms ($r = 0.229$, $p=0.008$). The R-Square was 5.2 percent and the P-Value was 0.008. The regression results showed that an increase in one unit of interest rate leads to an increase in ROE by 14.1 units. The third objective investigated the effect of exchange rate on financial performance of listed manufacturing firms in Kenya. The results from the trend analysis showed that the exchange rate between KES against the US Dollar has been rising in most of the years. In 2017 the exchange rate hit the highest value of 103.39KES/USD as compared to its lowest year 2009 when it was 77.3 KES/USD. The largest increase was observed between 2015 and 2016 when the exchange rate rose by 10.62KES/USD. The correlation results show that a negative relationship exist between exchange rate and return on equity however it is non-significant ($r = -0.071$, $p=0.516$). The R-Square was 0.5 percent and the P-Value was 0.516. The regression analysis results indicate that an increase in 1 unit in the exchange rate produces a decrease of 0.015 units in the ROE of manufacturing firms. The study concluded that interest rate had a positive effect on financial performance and statistically significant effect on listed manufacturing firms. Inflation rate and exchange rate had a negative and statistically insignificant effect on the financial performance of listed manufacturing firms. The study recommends that the government should put in place sound monetary policies that can see stable interest rates that are not too high to hurt the manufacturers and not too low to hurt the commercial banks.

Indria, Smaoui & Akram (2023) studied the effect of capitalization on the competition-stability Nexus: Evidence from dual banking systems. Pacific-Basin. The purpose of this study was to investigate how bank capitalization affects the relationship between competition and bank stability in dual banking systems. Using bank-level and country-level data from 17 countries over the period 2000–2019, the evidence shows a U-shaped relationship between competition and bank stability highlighting the dual importance of the franchise value and the risk-shifting paradigms in dual banking systems. The comparative analysis between conventional banks (CBs, hereafter) and Islamic banks (IBs, hereafter) reveals that, compared to CBs, competition is more detrimental to the stability of IBs. Importantly, our analysis reveals that higher bank capitalization moderates the negative effect of competition on bank stability and that the magnitude of the effect is similar between CBs and IBs.

Eling, Hoyt and Schaper (2020) studied the impact of capacity on price and productivity change in insurance markets. The study noted that as reflected in annual assessments produced each year by many business consultants, underwriting cycles in insurance remain a critical factor in insurance firm performance and consumer surplus. In spite of this, to date neither the academic nor the business literature has reached a definitive conclusion on the causes of underwriting cycles. In this study, we find evidence for the capacity-constraint hypothesis in a newly constructed sample of firm-level data for the German non-life insurance market over an extended period (1954–2016). Moreover, we show empirically that the impact of capacity on price is complex and depends on various exogenous factors (interest rate change, catastrophes, GDP growth, and regulation). We also find that firm capacity has a negative impact on productivity change. The dual impact of capacity is important since both price and productivity change determine firm profitability. Our results yield important implications for the understanding of underwriting cycles and re-emphasize the role of capacity in the business of insurance.

Abor (2005) studied the effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. This study aimed at investigating the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five-year period. Regression analysis is used in the estimation of functions relating the return on equity (ROE) with measures of capital structure. The results reveal a significantly positive relation between the ratio of short-term debt to total assets and ROE. However, a negative relationship between the ratio of long-term debt to total assets and ROE was found. With regard to the relationship between total debt and return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity. The research suggests that profitable firms depend more on debt as their main financing option. In the Ghanaian case, a high proportion (85 percent) of the debt is represented in short-term debt.

Karakacha & Ndede (2020) studied capital structure formation and investment performance of the general insurance companies in Kenya. This study sought to investigate the effect of capital structure formation on investment

performance of the general insurance companies in Kenya. The study was anchored on the pecking order, trade-off and agency cost theories. Firm size tested the moderation effect in the relationship. The descriptive research design was employed whereas the panel regressions and correlation analysis tested the relationships strength and direction in the study models. The study target population comprised of seventy-two insurance companies. The sample consisted of thirty-nine general insurance companies purposively sampled. Secondary data was collected using customized schedules. The study revealed that long-term debt had a significant positive effect on return on assets whereas it showed a significant negative relationship with return on equity. The total debt had a significant negative relationship with the return on assets and equity. The total equity had a significant negative relationship with the return on equity. The firm size had a positive moderating effect on the return on assets and equity. The study recommended the use of long term debt to achieve improved investment performance. Further studies focusing on life and composite insurance companies can use longer period panel data on short term debt and staff productivity to facilitate comparisons.

The study by Rufo and John (2017) aimed to investigate the effect of credit risk on the adequacy of capital. The study sample consisted of 567 banks in the Philippines. Findings relating to this current study have shown that the adequacy of capital has no major effect on the profitability of banks in the Philippines. In the years 2005 to 2014, Yahaya, Mansor and Okazaki (2016) aimed to research the effect of the capital adequacy ratio on the financial output and economic results of 64 Japanese banks. The findings showed that there are different signs of relationships with a small difference from the previous empirical work between study variables. Ali (2016); Rufo's, and John (2017) and Nusaibah and Kazuhiro (2016) studies were carried out in Asia, creating a literature gap that will be filled by the current study by analyzing the impact of capital adequacy on Kenya's life insurance companies' insurance penetration.

VII. Research Methodology

7.1 Research Design

The study was anchored on positivism philosophical foundation. Moreover, the study applied longitudinal research design. The main objective of a longitudinal research design is to collect and generalize numerical data through groups of people or to clarify a particular phenomenon (Kothari & Garg, 2014). The target population for this study included all of the 26 licensed Life Insurance Companies in Kenya that were operational between 2011 and 2022 and filed their audited financial statements with the insurance regulatory authority for the period (IRA, 2020). The analysis intentionally took 18 insurance companies as the acceptable sample size to achieve the set goals.

8.2 Data Collection Instruments

A research instrument is described by Parahoo (2014) as a tool used to gather data. An instrument is a system designed to test perception, attitude, and abilities. The analysis used secondary data from the audited financial statements of 18 Life Insurance Companies and economic environment (GDP, inflation and interest rate) from the Kenya Economic Survey through 2011 - 2022. A secondary data collection template was used to collect secondary data which was quantitative in nature. There is a need to build a data collection method to help with data collection, according to Kothari (2011). Primary data which is qualitative in nature was also collected using a questionnaire.

VIII. Study Findings

8.1 Capital Adequacy Ratio

The study further sought to determine the effect of capital adequacy on insurance penetration in Kenya. The Capital Adequacy Ratio (CAR) is a crucial financial measure used to assess the financial health, solvency, and risk management capability of insurance firms. It provides insight into whether an insurance company has sufficient capital to cover its potential losses and risks. CAR is particularly important in the insurance industry, where companies face various risks related to underwriting, investment, and market fluctuations. Table 1 presents a summary descriptive statistics of average capital adequacy ratio of insurance firms in Kenya.

Table 1: Descriptive Statistics of Capital Adequacy Ratio

| Descriptive Statistics | Capital Adequacy Ratio |
|------------------------|------------------------|
| Minimum | 0 |
| Maximum | 20.078 |
| Mean | 2.6808 |
| Std. Deviation | 16.05389 |
| N | 216 |

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The minimum value of 0 indicates that there were instances where insurance firms had a CAR of zero or even negative, implying that they did not have sufficient capital to cover their risks and obligations. The mean (average) CAR of approximately 2.6808 indicates that, on average, the companies had sufficient capital to cover their risks and obligations. The high standard deviation of 16.05389 signifies significant variability in the CAR across the dataset. This variability suggests diversity in the financial strength and risk management practices of insurance firms in Kenya.

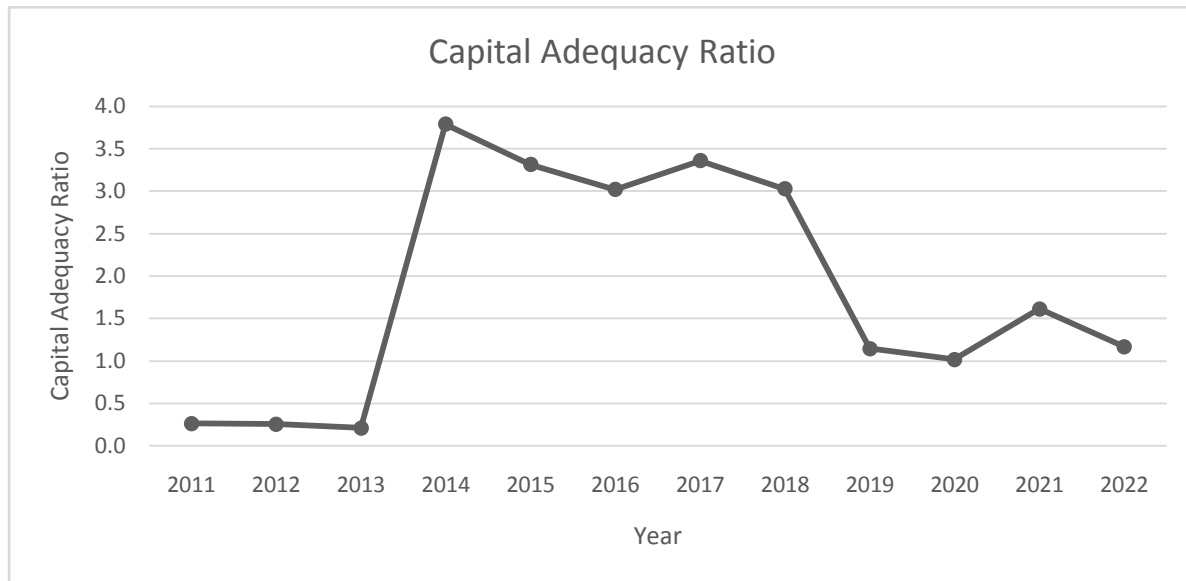


Figure 1 Variation in Average Capital Adequacy Ratio for Insurance Industry between 2011 and 2022

The CAR values for the first three years (2011 to 2013) were relatively low, ranging from 0.2 to 0.3. This indicated that, on average, insurance firms had lower levels of capital relative to their risk exposure during this period. A significant increase in CAR was observed in 2014, with a value of 3.8 suggesting a substantial improvement in capital adequacy, potentially due to increased capital injections, improved risk management, or other financial strategies. The CAR remained relatively high in the subsequent years (2015 to 2017), ranging from 3.0 to 3.4 implying that insurance firms maintained a higher level of capital relative to their risk exposure during this period.

There was a decline in CAR in 2018, with a value of 3.0, followed by a further decrease in 2019 and 2020, with values of 1.1 and 1.0 respectively. These decreases indicated changes in financial strategies or an increased risk profile for insurance firms during these years. A slight recovery is observed in 2021, with a CAR value of 1.6, followed by a slight decrease to 1.2 in 2022. The low CAR values in the early years (2011 to 2013) indicated potential weaknesses in capital adequacy for insurance firms. The subsequent increase in 2014 suggested that measures were taken to strengthen financial resilience and risk management.

The trend analysis of the average Capital Adequacy Ratio for insurance firms in Kenya reflects fluctuations, improvements, and potential challenges in maintaining sufficient capital to cover risks. The findings underscore the importance of robust risk management, regulatory compliance, and adaptive financial strategies to ensure the financial health and stability of insurance firms over time. The study findings concurred with Kariuki (2014) who revealed that capital adequacy requirement introduced by Basel 1 had a negative impact on credit creation by financial firms in Kenya.

This study further collected primary data on each of the study variable to assess the perception of managers in insurance sector in Kenya on the effect of capital adequacy on and insurance penetration in Kenya. Table 2 presents the results from descriptive analysis of the primary data collected.

Table 2: Descriptive Analysis of Capital Adequacy Statements

| | SD | D | N | A | SA | Mean | Std Dev |
|--|------|------|-------|-------|-------|------|---------|
| A well-capitalized insurance firm has the financial capacity to enhance penetration as customers are more likely to trust insurers | 0.0% | 0.0% | 16.7% | 44.4% | 38.9% | 4.22 | 0.73 |

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with robust capital positions

Capital requirements for insurance companies ensure their solvency and ability to fulfill obligations

5.6% 11.1% 0.0% 16.7% 66.7% 4.28 1.27

Capital adequacy influences an insurance firm's capacity to underwrite policies

0.0% 16.7% 5.6% 38.9% 38.9% 4.00 1.08

Capital adequacy provides insurance firms with a competitive advantage

0.0% 0.0% 22.2% 16.7% 61.1% 4.39 0.85

Aggregate score

4.22 0.99

The results suggest a strong link between capital adequacy and insurance penetration in Kenya, with an aggregate score of 4.22 and relatively low standard deviations across individual statements. Also, 38.9% strongly agree that a well-capitalized firm enhances penetration due to increased customer trust. This highlights the importance of robust capital in attracting and retaining customers, ultimately driving market growth. Further, 66.7% strongly agree that capital requirements ensure solvency and the ability to fulfill obligations. This emphasizes the regulatory role in maintaining a stable and trustworthy insurance ecosystem, indirectly supporting penetration. The result showed that 38.9% agree that capital adequacy influences an insurance firm's capacity to underwrite policies. This suggests that higher capital can allow for expansion into new risk categories or larger policy sizes, potentially reaching new customer segments. Finally, the results showed that 61.1% strongly agree that capital adequacy provides a competitive advantage. This implies that well-capitalized firms may attract investors, partners, and talent, ultimately strengthening their market position and driving penetration.

9.2 Insurance Penetration Rate

The Insurance Penetration Rate is a significant metric that measures the level of insurance coverage within a specific market or economy, in this case, Kenya. It reflects the proportion of the total population or GDP that is covered by insurance products. The Insurance Penetration Rate was calculated by dividing the total insurance premiums (both life and non-life) by the total population or GDP of the country. The Insurance Penetration Rate provides insights into the extent to which individuals, households, and businesses in Kenya are financially protected against various risks through insurance products. A higher penetration rate implies better financial protection, increased economic stability, and opportunities for the insurance industry to grow and innovate. Table 3 presents the descriptive statistics of insurance penetration rates.

Table 3: Descriptive Statistics of Insurance Penetration Rate

| Insurance Penetration Rate | Descriptive Statistics |
|----------------------------|------------------------|
| Minimum | 2 |
| Maximum | 3.7 |
| Mean | 2.642 |
| Std. Deviation | 0.575 |
| N | 216 |

The minimum Insurance Penetration Rate value of 2 indicated the lowest recorded average penetration rate during the period implying that only around 2% of the population or economy was covered by insurance products. The maximum value of 3.7 represents the highest average penetration rate observed. This implies that, at its peak, approximately 3.7% of the population or economy had insurance coverage. The mean (average) Insurance Penetration Rate of approximately 2.642 indicates the overall average penetration rate for the entire period. This value gives an overview of the general level of insurance coverage within the country over these years.

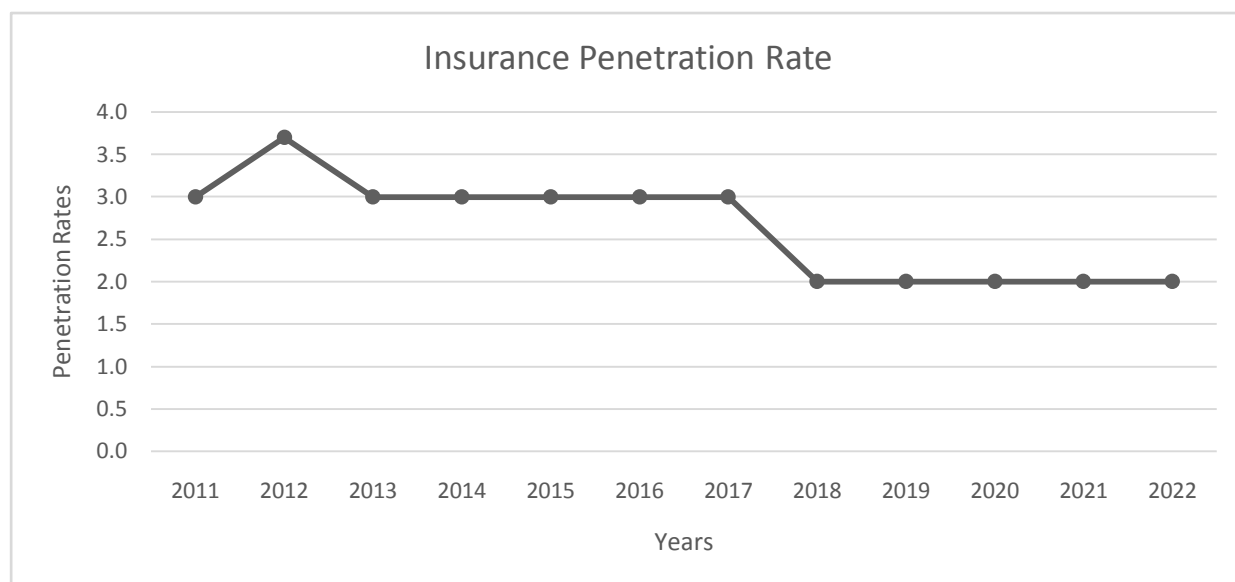


Figure 2: Variation in Average Insurance Penetration Rates in Kenya between 2011 and 2022

Figure 2 illustrates the yearly trends in the average insurance penetration rate in Kenya from 2011 to 2022. The insurance penetration rate represents the proportion of the population or economy that is covered by insurance products. The Insurance Penetration Rate was at 3.0 in 2011 and increased to 3.7 in 2012, indicating a relatively high level of insurance coverage during this period. It then decreased back to 3.0 in 2013. The consistent high penetration rate in the early years during this period suggests that the insurance market was relatively mature, with a significant portion of the population or economy already covered by insurance.

The insurance penetration rate remained constant at 3.0 from 2014 to 2017. This period reflects a consistent level of insurance coverage, suggesting that the market reached a saturation point in terms of the percentage of the population or economy covered by insurance. Starting from 2018, the Insurance Penetration Rate experienced a decline, reaching 2.0 and remaining at this level from 2018 to 2022. The decrease in the Insurance Penetration Rate from 2018 to 2022 suggests a potential shift in consumer behavior or external factors that influenced the demand for insurance products. These findings are consistent with a report by IRA, (2019) that indicated that insurance continued to be a relatively niche sub-sector under the Third Medium Term Plan (2018-2022), with the level of use remaining below 3% of the population and contributing 1.5% to GDP in 2019.

Table 4: Descriptive Analysis on the level of Insurance Penetration in Kenya

| | Very Low | Low | Moderate | High | Very High | Mean | Std Dev |
|--|----------|-------|----------|-------|-----------|-------------|-------------|
| Insurance Premiums as a Percentage of GDP | 55.6% | 16.7% | 5.6% | 5.6% | 16.7% | 2.11 | 1.57 |
| Number of Insured Individuals and Policies | 38.9% | 33.3% | 5.6% | 5.6% | 16.7% | 2.28 | 1.49 |
| Penetration of Different Insurance Types | 44.4% | 38.9% | 0.0% | 16.7% | 0.0% | 1.89 | 1.08 |
| Insurance Awareness and Understanding | 44.4% | 38.9% | 0.0% | 0.0% | 16.7% | 2.06 | 1.43 |
| Aggregate score | | | | | | 2.08 | 1.39 |

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The results in Table 4 suggests that insurance penetration in Kenya is currently low, with an aggregate score of 2.08 and relatively high standard deviations indicating some variance in perceptions across different measures. The results show that 55.6% of respondents categorized this as "very low," highlighting that insurance spending contributes minimally to the national economy. This indicates relatively low overall insurance adoption. A similar pattern emerges here, with 38.9% categorizing the number of insured individuals and policies as "low." This points to a limited reach of insurance services across the population.

Penetration of different insurance types shows the most extreme result, with 44.4% indicating "very low" penetration of different insurance types. This suggests a lack of diversity in the types of insurance products offered or purchased, further limiting overall market penetration. While slightly higher than the previous measures, 44.4% still categorize awareness and understanding as "low." This highlights the need for better education and information dissemination to improve public knowledge about insurance benefits and options.

9.3 Relationship between Capital Adequacy and Insurance Penetration

The study undertook correlation analysis to examine the relationship between capital adequacy and insurance penetration in Kenya. The findings from the analysis were as presented in Table below.

Table 5: Correlation between Capital Adequacy and Insurance Penetration Rate

| | | Capital Adequacy |
|----------------------------|---------------------|------------------|
| Insurance Penetration Rate | Pearson Correlation | 0.340** |
| | Sig. (2-tailed) | 0.017 |
| | N | 216 |

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

Capital adequacy ratio on the other hand showed a positive and weak correlation ($r=0.340$, $p=0.017$) with insurance penetration rate in Kenya. The finding implied that a higher capital adequacy ratio (financial strength) shows a slightly positive correlation with insurance penetration. This further suggests that financial stability might offer some confidence to customers, potentially promoting trust and adoption. The finding supported those of Otwani, Namusonga and Nambuswa (2017) who found that capital adequacy has been found to have a significant and positive effect on the financial performance of Kenya's NSE-listed companies to a very high extent.

IX. Conclusions and Recommendations

The Capital Adequacy Ratio (CAR) is a crucial financial measure used to assess the financial health, solvency, and risk management capability of insurance firms. The findings underscored the importance of robust risk management, regulatory compliance, and adaptive financial strategies to ensure the financial health and stability of insurance firms over time. Capital adequacy ratio on the other hand showed a positive and significant relationship with insurance penetration rate in Kenya. The finding implied that a higher capital adequacy ratio (financial strength) has a positive correlation with insurance penetration.

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