EFFECT OF OPERATIONAL RISK ON FINANCIAL PERFORMANCE OF GENERAL INSURANCE FIRMS IN NAIROBI, KENYA

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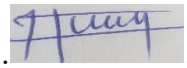
2022

DECLARATION

I declare that this research project my original work that has never been present in any University for the award of a degree

Signature…  ……Date…21/11/2022……

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This research project has been submitted for examination with my approval as University Supervisor.

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ACKNOWLEDGEMENT

Appreciation is extended to Dr. Winnie Nyamute for supervision of this study.

DEDICATION

To my parents.

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ABBREVIATIONS AND ACRONYMS

IRA	Insurance Regulatory Authority
MPT	Modern Portfolio Theory
ROA	Return on Assets
ROE	Return on Equity
ROI	Return on Investment

ABSTRACT

The study sought to determine effect of OR on FP of general insurance firms in Nairobi, Kenya. Descriptive survey design was adopted targeting 40 general insurance firms in Nairobi and census was used. Secondary data was gathered on a period 2017-2021 from Insurance Regulatory Authority and the financial statements of respective insurance firms. The analysis of the collected data was done through means and standard deviations, correlation and regression analysis and presented through tables. It emerged that operational risk (β=0.201, $p<0.05$), liquidity (β=0.103, $p<0.05$) and firm size (β=0.202, $p<0.05$) were significant predictors of financial performance of insurance firms in Kenya. The study concludes that operational risk, liquidity and firm size significantly predict financial performance. The study recommends that risk and operation managers working in general insurance firms in Kenya should have in place sound strategies of mitigating exposure to operational risks so as to enhance financial performance. The finance managers working among general insurance firms should establish a balance between current assets and current liabilities. The policy makers working in the general insurance firms in Kenya need to formulate should policies as far as operational risk is concerned.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Financial performance (FP) is one of the far reaching objectives that guide existence of the firm and it is best determined through profitability ratios like returns generated on assets (ROA) as well as equities (ROE) (Ko, Lee & Anandarajan, 2019). Financial performance allows firms to achieve basic goal of maximizing the wealth of the owners. Operational risk is among the key risks that financial institutions are exposed to. Operational risk (OR)relate to risk of direct as well as indirect loss that arise from inadequate internal processes, people or even systems. Proper anticipation and response to operational risk is therefore critical in curbing operational losses and thus increasing profits (Okeke, Aganoke & Onuorah, 2018). From an empirical point of view, an inverse nexus is anticipated between OR and FP.

The link between OR and FP can best be explained through the modern portfolio theory (MPT) and the extreme value theory. Developed by Markowitz (1952), the MPT argues that firms can best reduce the negative outcomes from operational risk through diversification. The theory argues that holding a diversified portfolio helps firms to minimize exposure to operational risk and thus maximize the expected returns. Proposed by Embrechts (1999), the extreme value theory provides a useful framework for analyzing operational risk in reference to financial performance of the firm. It provides an expansion of the knowledge with regard to operational risk that firms are exposed to.

Insurance firms play an instrumental role in an economy by underwriting risks to allow firms run operations smoothly. These firms contribute towards the growth of the economy by opening up employment opportunities and in payment of taxes. Despite this instrumental role that these

institutions play to the economy, they have continued to record poor financial performance results globally. In Kenya for instance, some of the insurance firms like United Insurance, Blue Shield Insurance, Concord Insurance and Standard Assurance (IRA, 2017) had to be placed under statutory management because of consistently reporting poor financial results.

1.1.1 Operational Risk

Operational risk is an inherent loss to the firm occasioned by its ability to carry out operations in ways that are not ethically approved. It is a risk that experienced through disruption of business, failures of controls as well as possible errors (Fadun & Oye, 2020). The operational risk events can lead to reputation as well as monetary damage and ultimately may negatively affect the profitability of the firm. Some practical examples of operational risk that firms face include fraud as well as vandalism and failed relationship with customers (Toroitich, 2018). The Basel II committee (2017) defined operational risk as any exposure that arises from failed policies and procedures like fraud, system failure as well as errors committed by employees of an organization.

When an institution is exposed to operational risk, it is likely to incur some losses. When internal systems and process breakdown, the resultant effect can be felt on disruption of the operations (Hakimi, 2020). Operational risk cannot be completely eliminated in an organization but the firm can only put in place relevant systems and processes that cannot easily be broken down (Mrindoko, Macha & Gwahula, 2020). There are several measures of operational risk; the widely known one is the cost income ratio. This ratio is determined by taking the total operating expenses against operating income. Thus, in the present study, operational risk was measured using cost income ratio.

1.1.2 Financial Performance

Financial performance is defined as the use of assets and equities in their primary core business for generation of income. Financial performance is the goal that informs and guides the operation and existence of firms (Nyabaga & Wepukhulu, 2020). Firms aim at strengthening and enhancing their financial performance by undertaking projects that generate positive cash flows as well as positive returns (Adesina, 2021).

There are several measures that exist in literature as far as FP of the firm is concerned. These include returns generated by the firm on equities (ROE) assets (ROA) and investments (ROI). While ROA represents how effective and efficient a firm can leverage the assets to generate wealth for shareholders, ROE is used in reference to the ability of the firm utilize equity for creation of returns (Oketch, 2020). In the present study, financial performance was measured through ROA. The measure is selected because it has been widely documented in corporate finance literature.

1.1.3 Operational Risk and Financial Performance

The nexus between OR and FP can be illustrated from a theoretical and empirical point of view. Theoretically, the MPT theory argues that effective management of risk is yardstick of better financial performance (Markowitz, 1952). Generally, a firm cannot completely avoid exposure to risks. Additionally, while some risks at firm level can best be handled through diversification, there are other specific risks that the firm may not diversify. Thus, in light of the MPT theory, operational risks have significant effect on financial performance since firms may not be able to diversify them (Markowitz, 1952).

Empirically, Fadun and Oye (2020) observed that sound management of OR exposure is positively connected with financial performance of the firm. Toroitich (2018) shared that operational risk has mixed and inconsistent nexus with financial performance of the firm depending on the proxies that have been adopted to measure it. Mrindoko, Macha and Gwahula (2020) used cost income ratio as a proxy of operating risk where the same was found to have an inverse nexus with financial performance. Obeng and Mkhize (2017) noted existence of an inverse nexus between OR and FP. Hakimi (2020) established existence of negative nexus between operational risk and loan performance.

1.1.4 General Insurance Firms in Nairobi, Kenya

The General Insurance Firms operate in the larger insurance industry and they are responsible for underwriting risks on behalf of their clients. These firms are regulated by the Insurance Regulatory Authority (IRA). The mandate of IRA is to enhance resilience and stability of these insurance firms by formulating regulations and guidelines to support their operations. Besides IRA, the insurance industry in Kenya has a self-regulation body called Association of Kenya Insurers (AKI). This institution is responsible for lobbying the interests of the member insurance firms (AKI 2013).

There are 40 general insurance firms with operations in Kenya according to the statistics from IRA. Just like many other firms, these insurance firms do face various risks that should be carefully anticipated and planned for. Operational risk is one of them. However, over time, these insurance firms have faced FP challenges resulting into collapse of some while others like United Insurance, Blue Shield Insurance, Concord Insurance and Standard Assurance had to be placed under statutory management (IRA, 2017). Against this background of poor financial

performance trend of the insurance firms, the present study seeks to appraise if the same is associated with their exposure to operational risk.

1.2 Research Problem

Financial performance is among the top goals that inform existence and operation of the firm. In order to survive and maximize the wealth of their shareholders, firms need to careful anticipate and respond their exposure to risks like operational risks. Failure to do so is a foundation for ultimate collapse of the firm (Obeng & Mkhize, 2017). From the MPT point of view, firms may not be able to diversify their exposure to operational risk and this it might be associated with unfourable outcomes as far as FP of the firm is concerned (Markowitz, 1952). The existing empirical evidence provides mixed and inconsistent results on operational risk financial performance nexus.

The general insurance firms in Kenya have been reporting poor financial performance for a long period of time. This has resulted in a situation where some of these firms like Blue Shield Insurance and AMACO were placed under statutory management by IRA (IRA). Other insurance firms have found themselves collapsing with the premiums of the policy holders (IRA, 2017). In as much as the government has played an instrumental role in restoring the financial performance trend of these insurance firms, little positive outcomes have been registered. The policy makers have failed to address this worrying trend in financial performance of the insurance firm, despite their instrumental role they play towards the growth of the economy.

The existing studies on a global scene include Fadun and Oye (2020) who focused on Nigeria to provide the nexus between OR management and FP of banking institutions. The study registered existence of a positive nexus between the two variables. Mrindoko, Macha and Gwahula (2020)

focused on banks in Tanzania to provide the nexus between OR and financial performance where mixed and inconsistent results were obtained. Hakimi (2020) used commercial banks in Tunisia as the point of reference to appraise how operational risk and performance are linked with each other where a positive relationship was registered. Isoh and Nchang (2020) used Cameroon as a point of reference to predict the link between management of operational risk and financial performance and a significant link was registered.

Locally in Kenya, Toroitich (2018) did an appraisal of exposure to operation risk and the implication on financial performance where mixed findings of significant and non-significant relationship was pointed out. Obeng and Mkhize (2017) did a study whose focus was on operational risk, the size and FP of banking entities and an inverse link was evident. Kioko, Olweny and Ochieng (2019) did a study whose focus was on financial risk and its implication on financial performance of banks where operational risk was found to have an inverse and significant link with FP.

The reviewed studies create gaps in that some like Fadun and Oye (2020) and Hakimi (2020) focused on Nigeria and Tunisia respectively and not on Kenya. Other studies like Isoh and Nchang (2020) create conceptual gap in that they used operational risk management as the independent variable which is different from operational risk. Thus, informed by these gaps, the present inquiry was evident.

1.3 Research Objective

To determine effect of OR on FP of general Insurance Firms in Nairobi, Kenya

1.4 Value of the Study

The risk managers working in the insurance firms in Kenya would be in position to understand a clear nexus of the exposure to operational risk and the implication it has on financial performance. The risk management committee members in the insurance firms would be able to strengthen risk management framework as a key corporate governance mechanism for better financial performance of their firms. The finance managers, internal and external auditors working among insurance firms in Kenya would be in position to put in place relevant mechanisms of responding to operational risks. The operational managers of the insurance firms in Kenya would have an understanding of the various operational risks and how best to address them.

The policy makers working among insurance firms in Kenya would be in position to come up with sound policies as far as operational risk financial performance nexus is concerned. These policy makers would be able to formulate and review the existing practices and operations in regard to operational risk in their organization. The policy makers working at IRA would be in position to put in place policies to help commercial banks respond to operational risk.

The study would contribute to the available and existing literature with regard to operational risk and financial performance. The future scholars and academicians conducting related studies would be in position to consider information of this inquiry. The study would contribute towards an understanding of the theories in respect to operational risk and financial performance of the firm.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Literature on theories and the determinants of FP of insurance entities is evaluated. It also focuses on reviewing of past empirical studies and pointing the arising gaps..

2.2 Theoretical Review

The MPT and the extreme value theory were used to anchor the study variables.

2.2.1 Modern Portfolio Theory

The proponent of this theory was Markowitz (1952) and its main argument is firms can best respond to the exposure to some risks by carefully diversifying them. Diversification allows firms to hold on asset portfolio thus minimizing exposure to some risks and maximizing on expected returns. High risks are associated with greater profits. Risk arises from the fact that investments may yield lower returns than as desired. The theory is of the view that every stock within the market has its own unique deviation from the overall mean of the stock. Thus, the risk arises as standard deviation from the average (Markowitz, 1952).

This theory has been criticized for assuming that all investors are guided by the notion of maximizing returns. This is not the true like for the case of the social investors who mostly play a philanthropic role. Despite this criticism, the present study leveraged this theory to ascertain of some of the operational risk can be diversified and its implication on financial performance.

2.2.2 Extreme Value Theory

The Extreme Value Theory was developed by Embrechts (1999) and it is used to expand the knowledge of management of exposure to operational risks. The theory provides the need for securitization of risk and alternative avenues for risk transfer. The theory highlights the point of

convergence between finance and insurance at the product point of view. The theory plays an instrumental role within management of risk in the finance, reinsurance and insurance field. The theory focuses on operational risk and provide some of the mechanisms that firms can best respond to the risk. Such measures include the need to take relevant security measures with respect to risk in order obtain better financial outcomes. Thus, the theory plays an instrumental role when it comes to the ability of financial institutions to respond to exposure to operational risk. As such, this theory is found to be relevant to the present study that sought to provide the nexus between OR and FP.

2.3 Determinants of Financial Performance of General Insurance Firms

The subsequent sections detail a review of literature on determinants of FP of the general insurance firms.

2.3.1. Operational Risk

Inability of the firm to anticipate and address the exposure to operational risk may negatively affect financial performance. This is due to increased erosion of earnings by the firm. As such, operational risk may lead to generation of operational losses at firm level which are treated as normal expenses to the firm. There is a wide range of operational risk that a firm may be exposed to, including fraud, system failure among others. Goldmann (2009) shared that internal fraud that employees and the managers commit represent 50-80% of the total frauds in an organization and they are regarded as part of operating risk. Francis and Hess (2004 observed existence of an inverse nexus between cost income ratio and financial performance of the entity.

2.3.2 Liquidity

Highly indebted and low liquid firms are perceived to be highly risky as they have high likelihood of collapse (Niresh, 2012). When a firm is liquid, it is able to pay its obligations on time and the operations run smoothly without interference. Firms facing liquidity issues find it hard to access lending institutions and this may have an inverse effect on financial performance. However, firms should balance liquidity with profitability as having more cash can restrain investments leading to an opportunity cost (Lartey, Antwi & Boadi, 2013).

2.3.3 Firm Size

Yoon and Jang (2005) noted that firm size (FS) exerts a significant positive effect on FP of the firm. However, Said et al. (2008) failed to obtain a significant nexus between FS and FP. Al Karim et al. (2013) noted existence of significant nexus between size and financial performance. Other studies like Iannotta et al. (2007) and Mercieca et al., (2007) pointed out existence of positive link between FS and FP.

2.4 Empirical Review

2.4.1 International Literature Review

Hakimi (2020) did an analysis of OR and performance of banking entities within the context of Tunisia. The period covered by the study ranged from 1990 all through to 2017 thus panel data was embraced. It emerged that operational risk and loan activities are positively connected with each other. Isoh and Nchang (2020) focused on selected banks in Cameroon to link OR management and financial performance. The methodologies adopted include quantitative case study design. Purposive sampling was adopted in selection of 250 staff from 3 banks. Structural

Equation Modeling in conjunction with SPSS were critical during the analysis of the results. A significant and positive relationship was registered between OR management and financial performance.

Fadun and Oye (2020) focused on Nigeria to predict the nexus between the management of operational risk and financial performance of commercial banks. The inquiry relied on information from second hand sources within the time period of 2008-2017. Regression model helped in analysis of the gathered information from the participants. The inquiry pointed out existence of a direct link between operational risk and FP. Mrindoko, Macha and Gwahula (2020) did an inquiry whose focus was on operational risk and financial performance of banks with operations in Tanzania. The inquiry leveraged panel data methodology. Longitudinal explanatory design was adopted in this study and the panel covered 41 banks. STATA played an instrumental role during the analysis of the evidence. It emerged from results that a negative link exists between operational risk and FP

2.4.2 Local Literature Review

Toroitich (2018) did an assessment of exposure to OR and the implication FP of Kenya's banks. The variables that were covered in this study include exposure to credit risk, liquidity, operational expenses and operational efficiency. In total, 42 commercial banks were covered in this inquiry. The time horizon was 2008 all through to 2017. Panel regression model analysis was adopted in conducting the processing the evidence. The study observed existence of mixed and inconsistent nexus between exposure to OR and financial performance depending on the respective proxy used. Obeng and Mkhize (2017) conducted an inquiry with emphasis on operational risk and FP of Kenyan banks. The methodologies adopted included qualitative

research design and ordered logistic model. STATA was an instrument used for analysis of the evidence of the inquiry. It emerged that operational risk and financial performance is negatively linked with each other.

Kioko, Olweny and Ochieng (2019) did a study that focuses on financial risk and the effect it has on financial performance of Kenyan commercial banks. In total, 44 commercial banks were covered and 11 listed banks formed the sample. The time horizon of the study was 2014-2018. The adopted design in the inquiry was descriptive. SPSS was critical during the processing of the gathered information. OR and FP of the firm are negatively and significant connected with each other.

Yasmin (2017) did a study whose focus was on practices of managing OR and their link with financial performance of Kenya's Islamic banks. The specific measure of financial performance adopted wads profitability and the inquiry covered a period of 5 years. It emerged from analysis that the practices of managing OR are instrumental in allowing financial institutions to enhance their profits. Kamau (2018) looked at OR management and FP focusing on tiers II & III commercial banks in Kenyan context. Panel data methodology was adopted although the panel was unbalanced. The time frame was 2008-2016 and FE model was adopted. It was observed that OR and financial performance have an inverse nexus with each other. It was further pointed out that the banks in questions were not in position of managing their operational risks. Mwanja (2021) did an analysis of exposure to market and operational risks and the implication on FP. Panel data was adopted over period 2010-2019. It was noted that exposure to market and operational risks has significant effect on FP of the financial institution.

2.5 Summary of Literature and Gaps

Table 2.1: Summary of Literature and Gaps

Author & year	Study	Key finding	Knowledge gap	Focus of present study
Hakimi (2020)	an analysis of OR and performance of banking entities within the context of Tunisia	operational risk and loan activities are positively connected with each other	The study was conducted in Tunisia	The present study was conducted in Kenya
Isoh and Nchang (2020)	OR management and financial performance	A significant and positive relationship was registered between OR management and financial performance.	Information was gathered from first hand sources supported by the questionnaire.	Information was obtained from secondary sources
Fadun and Oye (2020)	to predict the nexus between the management of operational risk and financial performance of commercial banks	The inquiry pointed out existence of a direct link between operational risk and financial performance.	management of operational risk was the independent variable	Operational risk was covered as an independent variable
Toroitich (2018) did	assessment of exposure to OR and the implication financial performance of Kenya's banks	observed existence of mixed and inconsistent nexus between exposure to OR and financial performance depending on the respective proxy used	The study was conducted among commercial banks	The focus of the present study was among insurance firms
Obeng and Mkhize (2017)	operational risk and financial performance of Kenyan banks	Operational risk and financial performance is negatively linked with each other.	The study was conducted among commercial banks	The focus of the present study was among insurance firms

2.6 Conceptual Framework

Figure 2.1 is the conceptual Model

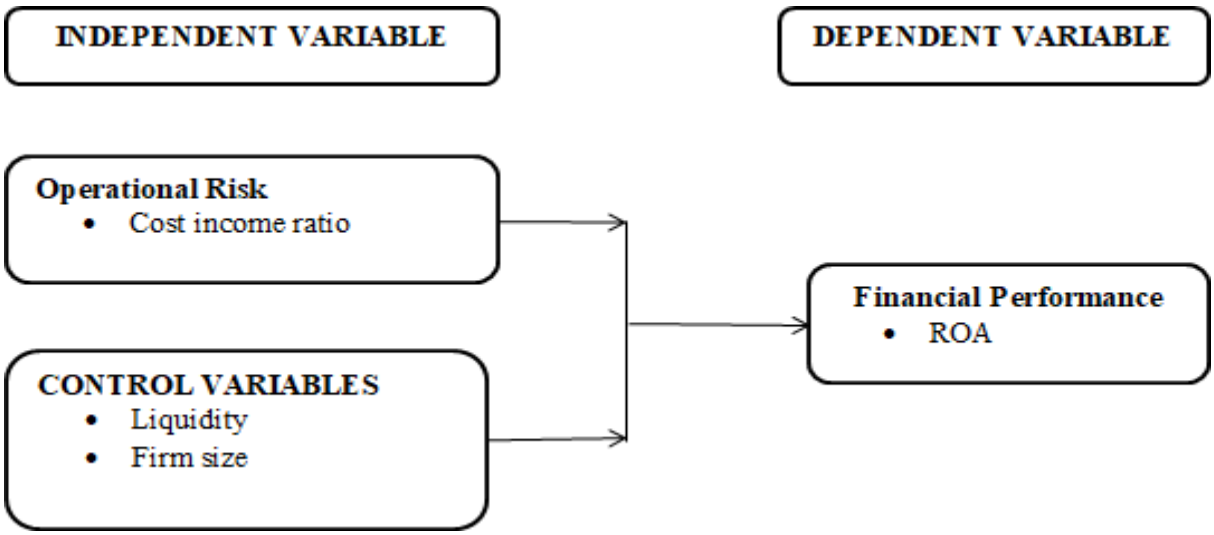

Figure 2.1: Conceptual Model

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The relevant methodologies for obtaining information and processing the same are outlined in this chapter.

3.2 Research Design

Descriptive survey design was adopted to support the establishment of the effect of OR on FP. According to Yin (2017), descriptive design provides answers to questions in respect to what and how regarding a given phenomenon.

3.3 Population of the Study

A total of 40 general insurance firms having operations in Nairobi (appendix I) were covered. The reason for selecting on Nairobi was because majority of the insurance firms had their head offices there which made it easy to obtain information. Since the population of these firms was small and could easily be accessed, census was adopted.

3.4 Data Collection

Secondary data was obtained from IRA and the published financial statements of the respective insurance firms over period 2017-2021. The reason for selecting upon secondary data was that it could easily be accessed in the public domain. The period under consideration is selected because it is most current and complete data needed for analysis is likely to be obtained across the same. The information was gathered on annual basis covering assets, current assets and liabilities, net income operating expenses and operating income. The nature of the data that was gathered on annual basis, as most of the reports were available within a given financial year.

3.5 Data Analysis

Panel regression model was embraced. This was supported by SPSS tool version 24. The model for analysis is specified as under:

$$FP_{it} = \beta_0 + \beta_1 OR_{it} + \beta_2 L_{it} + \beta_3 FS_t + \varepsilon_{it}$$

FP_{it} is financial performance of firm i at time t

OR_{it} is operational risk of firm *i* at time *t*

L_{it} is liquidity of firm *i* at time *t*

FS_{it} is firm size of firm *i* at time *t*

$\beta_{0\,It}$ is Constant of firm *i* at time *t*

β_{1-3} Beta Coefficients

The findings were presented through tables.

3.5.1 Operationalization of Variables

Table 3.1: Operationalization of Variables

Variable type	Measurement	Scale
Independent operational risk	Operating expenses/Operating income	Ratio
Control liquidity	Current assets/current liabilities	Ratio
Control firm size	Logarithm of total assets	Continuous
Dependent financial performance	Net income/Total assets	Ratio

3.5.2 Diagnostic Tests

The study conducted multicollinearity, normality and autocorrelation test to validate the assumptions of regression analysis. The respective values from these tests were appropriately interpreted. The discussion of these tests is presented below:

Multicollinearity Test

A data set exhibits multicollinearity problem when at least two or more of the independent variables are highly correlated with each other (Berry, 1993). Existence of this will require statistical treatment or dropping of the affected variables. VIF values were generated to determine the presence of this assumption and any value within range of 1-10 meant absence of the symptom (Poole & O'Farrell, 1971).

Normality Test

Regression analysis assumes that the data to be used for processing has a normal distribution. To check this assumption, normality test is required (Das, 2019). The study used Shapiro wilk test. The $p > 0.05$ in this test implied presence of this normality assumption (Williams, Grajalesb & Kurkiewicz, 2013).

Autocorrelation Test

Autocorrelation occurs in time series data (Poole & O'Farrell, 1971). The study used Durbin Watson Statistic to test for this assumption. Value equal or close to 2 would provide an indication of absence of this assumption (Berry, 1993).

3.5.3 Significance Tests

T-test was used by interpreting the t-values against 1.96 which should correspond with the significance level of 5% for the p-values. In this regard, $t > 1.96$ was correspondingly in line with $p < 0.05$ and this indicated existence of significant relationship.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter is designed to provide an account of the analysis and a discussion on the findings from the data that was gathered. A discussion on the findings is also presented.

4.2 Summary of Descriptive Statistics

Consider Table 4.1.

Table 4.1: Summary of Descriptive Statistics

	n	Minimum	Maximum	Mean	Std. Dev
Operational risk	200	.14	31.25	3.8006	4.351
Liquidity	200	.05	34.65	3.6137	4.686
Firm size	200	4.00	5.00	4.4677	.275
Financial Performance	200	.003	.10	.0181	.017

Table 4.1 indicates the average value of operational risk as 3.8006, with minimum, maximum and standard deviation values being 0.14, 31.25 and 4.351 respectively. This infers that most of the insurance firms in Kenya generated sufficient incomes to cover their operating expenses that were occasioned by operational risks. On liquidity, the value of mean was 3.6137 with a maximum value of 34.65, minimum of 0.05 and Std. Dev of 4.686. This shows that most of the insurance firms in Kenya have a strong liquidity position as demonstrated by an excess of their current assets against current liabilities. The findings on firm size were indicated an average value of 4.4677, minimum value of 4.00, maximum of 5.00 and Std. Dev of 0.275. This implies that most of the insurance firms in Kenya had accumulated some assets that they leveraged to fund investments. On FP, the value of mean was 0.0181; maximum value was .10, minimum of 0.003 and Std. Dev of 0.017.

4.3 Diagnostic Tests

These were meant to validate the assumptions of regression analysis.

4.3.1 Multicollinearity Test

A data set exhibits multicollinearity problem when at least two or more of the independent variables are highly correlated with each other (Berry, 1993). Existence of this will require statistical treatment or dropping of the affected variables. VIF values were generated and any value within range of 1-10 will mean absence of the symptom (Poole & O'Farrell, 1971).

Table 4.2: Multicollinearity Test

	Collinearity Statistics	
	Tolerance	VIF
Operational risk	.924	1.083
Liquidity	.907	1.103
Firm size	.976	1.024

The value of VIF for operational risk, liquidity and firm size were 1.083, 1.103 and 1.024 respectively. This finding is echoed by Poole and O'Farrell (1971) who observed that when testing for multicollinearity using VIF, any value within range of 1-10 will mean absence of the symptom.

4.3.2 Normality Test

Regression analysis assumes that the data to be used for processing has a normal distribution. To check this assumption, normality test is required (Das, 2019). The study used Shapiro-wilk test.

Table 4.3: Normality Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Financial performance	.260	2	.673	.780	3	.367
Operational risk	.260	2	.687	.828	3	.183
Liquidity	.260	2	.379	.654	3	.345
Firm size	.260	2	.933	.798	3	.432

From Table 4.3, the p-values across all the variables under Shapiro-Wilk column are all above 0.05 ($p>0.05$). This is consistent with Williams, Grajalesb & Kurkiewicz (2013) whop noted that

p-values above 0.05 in this test imply presence of this normality assumption under Shapiro wilk test.

4.3.3 Autocorrelation Test

The study used Durbin Watson Statistic to test for this assumption.

Table 4.4: Autocorrelation Test

Model	Durbin-Watson
1	1.633

From Table 4.4, the value is given as 1.633, which is closer to 2. This finding is consistent with Berry (1993) who shared that when testing for autocorrelation using Durbin-Watson, a value equal or close to 2 would provide an indication of absence of this assumption.

4.4 Correlation Analysis

Table 4.5 gives an overview

Table 4.5: Correlation Analysis

		Financial Performance	Operational risk	Liquidity	Firm size
Financial Performance	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	200			
Operational risk	Pearson Correlation	.490	1		
	Sig. (2-tailed)	.000			
	N	200	200		
Liquidity	Pearson Correlation	.825	.530	1	
	Sig. (2-tailed)	.000	.000		
	N	200	200	200	
Firm size	Pearson Correlation	.312	.363	.371	1
	Sig. (2-tailed)	.000	.000	.000	
	N	200	200	200	200

The findings in Table 4.5 indicate that OR has a moderate and positive relationship with FP of the insurance firms in Kenya (r=0.490). Liquidity and FP had strong and positive relationship with each other (r=0.825). On firm size, the study observed that it had moderate and positive

relationship with FP (r=0.312). On overall, the study observed that OR is a positive correlate with FP.

4.5 Regression Results

Table 4.6

Table 4.6: Coefficients and Significance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.208	.512		2.359	.001
Operational risk	.201	.087	.075	2.310	.012
Liquidity	.103	.023	.788	4.478	.000
Firm size	.202	.063	.007	3.206	.032

From Table 4.6, the following equation is predicted:

$$FP_{it} = 1.208 + .201OR_{it} + .103L_{it} + .202FS_t + \varepsilon_{it}$$

FP_{it} is financial performance of firm i at time t

OR_{it} is operational risk of firm i at time t

L_{it} is liquidity of firm i at time t

FS_{it} is firm size of firm i at time t

$\beta_{0,It}$ is Constant of firm i at time t

β_{1-3} Beta Coefficients

OR (β=0.201, $p<0.05$), liquidity (β=0.103, $p<0.05$) and firm size (β=0.202, $p<0.05$) were significant predictors of FP of insurance firms in Kenya. Thus, it can be deduced that OR significantly affects FP. The findings of model summary were determined and summarized as shown in Table 4.7.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.827[a]	.684	.680	.00983

As reported in Table 4.7, the value of R^2 is given as 0.684; this shows that 68.4% change in FP of General Insurance firms in Kenya is explained by variation in OR. This means that there are other factors side from OR that have an effect on FP of these firms by the remaining 31.6% which should be the focus of future studies. The ANOVA results were established and summarized as shown in Table 4.8.

Table 4.8: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.041	3	.014	141.697	.000
Residual	.019	196	9.69E-05		
Total	**.060**	**199**			

F calculated is 141.697 with $p<0.05$. As such, it was suitable for use in the present study.

4.6 Discussion

The findings indicate that OR has a moderate and positive relationship with FP of the insurance firms in Kenya ($r=0.490$). The findings were that OR ($\beta=0.201$, $p<0.05$) was a significant predictor of FP. This disagrees with Mrindoko, Macha and Gwahula (2020) who focused on banks in Tanzania to provide the nexus between OR and financial performance where mixed and inconsistent results were obtained. Hakimi (2020) used commercial banks in Tunisia as the point of reference to appraise how operational risk and performance are linked with each other where a positive relationship was registered. Isoh and Nchang (2020) used Cameroon as a point of reference to predict the link between management of operational risk and financial performance and a significant link was registered.

Liquidity and financial performance had strong and positive relationship with each other ($r=0.825$). Liquidity ($\beta=0.103$, $p<0.05$) had significant effect on FP. These findings are consistent with Niresh (2012) who noted that highly indebted and low liquid firms are perceived

to be highly risky as they have high likelihood of collapse. When a firm is liquid, it is able to pay its obligations on time and the operations run smoothly without interference. Lartey, Antwi and Boadi (2013) argued that firms facing liquidity issues find it hard to access lending institutions and this may have an inverse effect on financial performance.

On firm size, the study observed that it had moderate and positive relationship with FP (r=0.312). The findings were that firm size (β=0.202, $p<0.05$) had significant effect on financial performance of insurance firms in Kenya. This agrees with Yoon and Jang (2005) who noted that FS exerts a significant positive effect on FP. The findings however disagree with Said et al. (2008) who failed to obtain a significant nexus between FS and FP. Al Karim et al. (2013) noted existence of significant nexus between FS and FP. Other studies like Iannotta et al. (2007) and Mercieca et al., (2007) pointed out existence of positive link between FS and FP.

On overall, the study observed that operational risk is a positive correlate FP. Thus, it can be deduced that operational risk significantly affects FP. These findings are supported by Toroitich (2018) who did an appraisal of exposure to operation risk and the implication on financial performance where mixed findings of significant and non-significant relationship was pointed out. The finding disagree with Obeng and Mkhize (2017) who did a study whose focus was on operational risk, FS and FP of commercial banks and an inverse relationship was noted. Similarly, the finding disagree with Kioko, Olweny and Ochieng (2019) who did a study whose focus was on financial risk and its implication on FP of banks where OR was found to have an inverse and significant link with FP.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter provides a summary of the findings and the conclusion. The recommendations are also presented besides limitations. The areas requiring further studies are also indicated.

5.2 Summary

From descriptive statistics, most of the insurance firms in Kenya generated sufficient incomes to cover their operating expenses that were occasioned by operational risks. Majority of the insurance firms in Kenya have a strong liquidity position as demonstrated by an excess of their current assets against current liabilities. Most of the insurance firms in Kenya had accumulated some assets that they leveraged to fund investments. General insurance firms in Kenya generated an average 1.81% of their net incomes by leveraging on their assets across the study period.

Based on correlation results, OR has a moderate and positive relationship with FP of the insurance firms in Kenya. Liquidity and financial performance had strong and positive relationship with each other. On firm size, the study observed that it had moderate and positive relationship with financial performance. On overall, the study observed that OR is a positive correlate with FP.

Regression results over half of the change in FP of the general insurance forms was as a result of OR. OR was a significant predictor of financial performance of insurance firms in Kenya. The study established that liquidity had significant effect on FP of insurance firms in Kenya. The

findings were that FS had significant effect on FP of insurance firms in Kenya. Thus, it can be deduced that OR significantly affects FP.

5.3 Conclusion

Most of the general insurance firms in Kenya have not optimally leveraged their assets to generate revenues so as to improve on their value of their ROA. Despite these firms having adequate asset bases with sound liquidity position, they have consistently posted low value of ROA thus signaling issues as far as their FP is concerned. This can also be an indication that majority of the general insurance firms in Kenya have a strong incentive to use equities as opposed to assets in funding investment projects.

Operational risk was positively related with FP. This was contrary to the expectations since exposure to risks by the firm may diminish the returns. This is particularly evident when a firm has no adequate mechanisms to manage the exposure to operational risks. However, this positive relation between OR and FP can be explained by the fact that some of the insurance firms did generate adequate operating incomes that covered operational expenses some of which are occasioned by operational risks. The study noted that an insurance firm with large size having adequate level of liquidity is characterized by better financial position. However, this is not always the case especially when the firm is too much liquid as the same may introduce an opportunity cost of the tied up capital in current assets which would have put to a more productive function to maximize the wealth of the shareholders.

Insurance firm that aspires to achieve superior financial position should determine and effectively mitigate exposure to operational risks. Furthermore, liquidity and firm size were also significant predictors of financial performance. Being significant, it means that a decision among

insurance firms to enhance on financial position should not under-estimate the liquidity and the size.

5.4 Recommendations

The risk and operation managers working in general insurance firms in Kenya should have in place sound strategies of mitigating exposure to operational risks so as to enhance financial performance. The finance managers working among general insurance firms should establish a balance between current assets and current liabilities that can maximize the wealth of the shareholders. The FMs of the general insurance firms in Kenya should effectively utilize the assets in improving financial performance through ROA.

The policy makers working in the general insurance firms in Kenya need to formulate should policies as far as operational risk is concerned. The policy makers at IRA should align the established regulations and policies with the general operational risk frameworks of the insurance firms in Kenya.

5.5 Limitations of the Study

The small sample size of 40 general insurance firms in Nairobi was the limit of the inquiry. Now that insurance firms operate in the financial industry, limiting to the general insurance firms may constrain the generalization of the findings. This may also limit robust applicability of the findings in the entire financial industry in Kenyan context.

The period of interest in this study was 2017-2-21. This was equivalent to a time period of 5 years. This means that any significant development in the insurance industry in the period beyond 2021 like for instance ion 2022 could not be factored into the study. Thus, similar studies conducted with an extension of this period could yield inconsistent results.

The study covered OR and financial performance as the key independent and dependent variables. This nexus was controlled by liquidity and firm size. The choice of these variables was informed by availability of data across the period of consideration.

Theoretically, the MPT and extreme value theories were used to anchor the variables of the study. All these theories were geared towards explaining the whole idea about risks. This provided a limitation as the study did not have a relevant theory to underpin financial performance as the dependent variable.

In terms of methodologies, this study adopted ordinary least square (OLS) during the processing of the gathered information. In this regard, simple regression analysis was adopted with the help of SPSS tool. The analysis entailed generation of descriptive statistics first before inferential statistics.

5.6 Suggestions for Further Research

Aside from focusing on general insurance, the focus of future research should be on a larger sample selected from the financial industry. These firms can include the commercial banks, microfinance or even the deposit taking SACCOs. Besides, the focus of further research should be on comparing OR and financial performance across the insurance industries at a regional scale like among East Africa Community member countries.

Future studies can extent the period of 2017 to cover and address developments likely to have taken place in the same period. Besides, an extension of this period should be the focus of future studies so as cover years below 2017. In essence, future studies should be conducted by taking an impact analysis.

In the present study, 68.4% change in financial performance was explained by variation in operational risk. This means that there are other additional factors side from OR that have an effect on financial performance. Hence, the study recommends further research on other factors aside from operational risk that have an effect on financial performance.

In additional to adoption of MPT and extreme value theories; future studies should be conducted using other different theories. There should be an appropriate theory to provide anchorage to financial performance like the shareholder wealth maximization theory. Future studies should also bring in more theories to underpin the control variables.

Future studies should also be use of primary data to complement the secondary data. The focus of future studies should be on adoption of more robust method for analysis. These can include the adoption of panel data methodologies. This can also include the adoption of more robust analytical softwares like Stata, E-views or AMOS among others.

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APPENDICES

Appendix I: List of Insurance Firms

1. AAR Insurance Company Limited
2. Africa Merchant Assurance Company Limited
3. AIG Kenya Insurance Company Limited
4. Allianz Insurance Company of Kenya Limited
5. APA Insurance Limited
6. Britam General Insurance Company (K) Limited
7. Britam Life Assurance Company (K) Limited
8. Metropolitan Cannon General Insurance Company I
9. Corporate Insurance Company Limited
10. Directline Assurance Company Limited
11. Fidelity Shield Insurance Company Limited
12. First Assurance Company Limited
13. GA Insurance Limited
14. Geminia Insurance Company Limited
15. ICEA LION General Insurance Company Limited
16. Intra Africa Assurance Company Limited
17. Invesco Assurance Company Limited
18. Kenindia Assurance Company Limited
19. Kenya Orient Insurance Limited
20. KUSCCO Mutual Assurance Limited
21. Madison Insurance Company Kenya Limited

22. Madison General Insurance Kenya Limited
23. Mayfair Insurance Company Limited
24. Occidental Insurance Company Limited
25. Old Mutual Assurance Company Limited
26. Pacis Insurance Company Limited
27. MUA Insurance (Kenya) Limited
28. Pioneer General Insurance Company Limited
29. Pioneer Assurance Company Limited
30. Resolution Insurance Company Limited
31. Sanlam General Insurance Company Limited
32. Takaful Insurance of Africa Limited
33. Tausi Assurance Company Limited
34. The Heritage Insurance Company Limited
35. The Jubilee Insurance Company of Kenya Limited
36. The Kenyan Alliance Insurance Company Limited
37. The Monarch Insurance Company Limited
38. Trident Insurance Company Limited
39. UAP Insurance Company Limited
40. Xplico Insurance Company Limited

Source: IRA (2022)

Appendix II: Data Collection Sheet

Year	Current assets	Current liabilities	Total asset	Net income	Operating expenses	Operating income
2017						
2018						
2019						
2020						
2021						

Appendix III: Raw Data

Year	Name of firm	**Operational risk**	**Liquidity**	**Firm size**	**Financial Performance**
2017	AAR Insurance Company Limited	0.198	0.873	4.629	0.006
2017	Africa Merchant Assurance Company Limited	0.201	0.706	4.602	0.007
2017	AIG Kenya Insurance Company Limited	3.103	0.808	4.230	0.019
2017	Allianz Insurance Company of Kenya Limited	0.754	0.696	4.265	0.021
2017	APA Insurance Limited	0.250	0.815	4.634	0.005
2017	Britam General Insurance Company (K) Limited	0.340	2.157	4.510	0.009
2017	Britam Life Assurance Company (K) Limited	0.168	1.667	4.422	0.007
2017	Metropolitan Cannon General Insurance Company Limited	0.633	0.963	4.001	0.016
2017	Corporate Insurance Company Limited	0.142	0.709	4.602	0.004
2017	Directline Assurance Company Limited	0.255	0.523	4.411	0.035
2017	Fidelity Shield Insurance Company Limited	1.009	0.600	4.423	0.031
2017	First Assurance Company Limited	1.621	0.507	4.903	0.012
2017	GA Insurance Limited	3.350	0.832	4.245	0.044
2017	Geminia Insurance Company Limited	14.424	2.498	4.128	0.055
2017	ICEA LION General Insurance Company Limited	1.302	1.304	4.945	0.008
2017	Intra Africa Assurance Company Limited	5.338	10.337	4.779	0.009
2017	Invesco Assurance Company Limited	9.600	1.166	4.261	0.033
2017	Kenindia Assurance Company Limited	8.567	1.520	4.576	0.018
2017	Kenya Orient Insurance Limited	1.484	0.610	4.367	0.039

2017	KUSCCO Mutual Assurance Limited	4.632	0.851	4.853	0.009
2017	Madison Insurance Company Kenya Limited	8.814	0.662	4.359	0.006
2017	Madison General Insurance Kenya Limited	5.825	1.689	4.830	0.006
2017	Mayfair Insurance Company Limited	2.528	3.233	4.279	0.036
2017	Occidental Insurance Company Limited	4.559	2.033	4.320	0.041
2017	Old Mutual Assurance Company Limited	14.957	2.162	4.152	0.043
2017	Pacis Insurance Company Limited	2.541	0.876	4.296	0.014
2017	MUA Insurance (Kenya) Limited	9.253	1.328	4.578	0.007
2017	Pioneer General Insurance Company Limited	0.809	0.968	4.339	0.008
2017	Pioneer Assurance Company Limited	4.299	1.053	4.795	0.011
2017	Resolution Insurance Company Limited	0.987	0.591	4.693	0.014
2017	Sanlam General Insurance Company Limited	0.747	1.244	4.349	0.031
2017	Takaful Insurance of Africa Limited	0.678	1.200	4.125	0.046
2017	Tausi Assurance Company Limited	0.681	1.993	4.104	0.049
2017	The Heritage Insurance Company Limited	0.895	0.788	4.504	0.017
2017	The Jubilee Insurance Company of Kenya Limited	0.875	0.715	4.042	0.059
2017	The Kenyan Alliance Insurance Company Limited	1.070	1.341	4.324	0.025
2017	The Monarch Insurance Company Limited	6.230	0.838	4.585	0.014
2017	Trident Insurance Company Limited	0.801	3.260	4.196	0.033
2017	UAP Insurance Company Limited	5.538	1.727	4.173	0.029
2017	Xplico Insurance Company Limited	0.803	1.239	4.871	0.006
2018	AAR Insurance Company Limited	1.209	2.097	4.615	0.012
2018	Africa Merchant Assurance Company Limited	1.478	1.925	4.457	0.013

2018	AIG Kenya Insurance Company Limited	1.587	1.612	4.717	0.009
2018	Allianz Insurance Company of Kenya Limited	0.679	3.095	4.651	0.008
2018	APA Insurance Limited	5.868	2.229	4.470	0.013
2018	Britam General Insurance Company (K) Limited	0.514	1.748	4.777	0.006
2018	Britam Life Assurance Company (K) Limited	5.059	2.227	4.080	0.075
2018	Metropolitan Cannon General Insurance Company Limited	4.279	1.620	4.331	0.032
2018	Corporate Insurance Company Limited	3.233	2.016	4.242	0.026
2018	Directline Assurance Company Limited	2.109	1.860	4.447	0.005
2018	Fidelity Shield Insurance Company Limited	5.651	1.835	4.255	0.006
2018	First Assurance Company Limited	2.847	1.671	4.524	0.016
2018	GA Insurance Limited	0.888	1.309	4.813	0.002
2018	Geminia Insurance Company Limited	3.156	1.704	4.126	0.012
2018	ICEA LION General Insurance Company Limited	4.698	3.656	4.029	0.013
2018	Intra Africa Assurance Company Limited	3.675	4.512	4.150	0.009
2018	Invesco Assurance Company Limited	2.115	3.734	4.654	0.004
2018	Kenindia Assurance Company Limited	1.098	0.853	4.496	0.004
2018	Kenya Orient Insurance Limited	1.816	0.987	4.167	0.010
2018	KUSCCO Mutual Assurance Limited	2.206	0.815	4.065	0.012
2018	Madison Insurance Company Kenya Limited	1.389	0.801	4.587	0.003
2018	Madison General Insurance Kenya Limited	1.210	0.980	4.972	0.002
2018	Mayfair Insurance Company Limited	0.599	1.009	4.514	0.004
2018	Occidental Insurance Company Limited	1.179	0.854	4.871	0.002

2018	Old Mutual Assurance Company Limited	0.925	1.348	4.227	0.016
2018	Pacis Insurance Company Limited	1.173	1.016	4.868	0.002
2018	MUA Insurance (Kenya) Limited	1.497	0.301	4.430	0.009
2018	Pioneer General Insurance Company Limited	1.876	0.244	4.590	0.005
2018	Pioneer Assurance Company Limited	0.522	0.188	4.945	0.001
2018	Resolution Insurance Company Limited	0.355	0.205	4.088	0.034
2018	Sanlam General Insurance Company Limited	0.450	0.079	4.652	0.017
2018	Takaful Insurance of Africa Limited	1.929	0.919	4.287	0.007
2018	Tausi Assurance Company Limited	0.321	0.051	4.900	0.002
2018	The Heritage Insurance Company Limited	1.778	0.428	4.832	0.002
2018	The Jubilee Insurance Company of Kenya Limited	1.057	1.347	4.264	0.011
2018	The Kenyan Alliance Insurance Company Limited	1.256	0.832	4.263	0.010
2018	The Monarch Insurance Company Limited	3.817	1.284	4.368	0.010
2018	Trident Insurance Company Limited	1.305	0.406	4.029	0.011
2018	UAP Insurance Company Limited	0.919	3.763	4.110	0.030
2018	Xplico Insurance Company Limited	1.992	3.971	4.001	0.088
2019	AAR Insurance Company Limited	0.344	6.503	4.353	0.016
2019	Africa Merchant Assurance Company Limited	0.907	0.607	4.415	0.021
2019	AIG Kenya Insurance Company Limited	2.988	1.932	4.440	0.030
2019	Allianz Insurance Company of Kenya Limited	3.514	0.888	4.015	0.079
2019	APA Insurance Limited	5.942	1.229	4.672	0.011
2019	Britam General Insurance Company (K) Limited	2.880	0.661	4.033	0.065
2019	Britam Life Assurance Company (K)	2.758	0.717	4.238	0.018

	Limited				
2019	Metropolitan Cannon General Insurance Company Limited	2.829	2.128	4.590	0.008
2019	Corporate Insurance Company Limited	2.161	0.642	4.183	0.017
2019	Directline Assurance Company Limited	3.148	0.841	4.593	0.010
2019	Fidelity Shield Insurance Company Limited	1.715	1.558	4.462	0.004
2019	First Assurance Company Limited	2.303	1.650	4.093	0.039
2019	GA Insurance Limited	1.597	1.518	4.187	0.023
2019	Geminia Insurance Company Limited	2.000	1.634	4.487	0.010
2019	ICEA LION General Insurance Company Limited	2.014	1.773	4.866	0.005
2019	Intra Africa Assurance Company Limited	1.440	1.659	4.834	0.008
2019	Invesco Assurance Company Limited	2.607	2.296	4.583	0.011
2019	Kenindia Assurance Company Limited	3.604	2.342	4.817	0.008
2019	Kenya Orient Insurance Limited	0.593	2.077	4.386	0.019
2019	KUSCCO Mutual Assurance Limited	3.519	1.436	4.119	0.024
2019	Madison Insurance Company Kenya Limited	5.455	1.420	4.005	0.013
2019	Madison General Insurance Kenya Limited	3.235	2.208	4.232	0.024
2019	Mayfair Insurance Company Limited	2.377	1.326	4.077	0.034
2019	Occidental Insurance Company Limited	2.405	1.269	4.677	0.011
2019	Old Mutual Assurance Company Limited	3.988	2.180	4.194	0.032
2019	Pacis Insurance Company Limited	3.642	1.186	4.366	0.026
2019	MUA Insurance (Kenya) Limited	4.464	1.218	4.323	0.029
2019	Pioneer General Insurance Company Limited	3.379	1.315	4.385	0.008
2019	Pioneer Assurance Company Limited	1.378	6.413	4.998	0.002
2019	Resolution Insurance Company Limited	1.835	2.992	4.814	0.004

2019	Sanlam General Insurance Company Limited	2.632	5.402	4.411	0.008
2019	Takaful Insurance of Africa Limited	2.602	11.526	4.800	0.004
2019	Tausi Assurance Company Limited	3.021	16.194	4.203	0.014
2019	The Heritage Insurance Company Limited	2.975	19.865	4.884	0.003
2019	The Jubilee Insurance Company of Kenya Limited	2.165	11.812	4.618	0.006
2019	The Kenyan Alliance Insurance Company Limited	2.626	9.404	4.841	0.004
2019	The Monarch Insurance Company Limited	4.709	34.645	4.326	0.012
2019	Trident Insurance Company Limited	3.673	3.943	4.897	0.004
2019	UAP Insurance Company Limited	3.269	3.662	4.847	0.013
2019	Xplico Insurance Company Limited	3.462	3.215	4.646	0.016
2020	AAR Insurance Company Limited	8.982	4.274	4.431	0.006
2020	Africa Merchant Assurance Company Limited	4.395	6.465	4.580	0.020
2020	AIG Kenya Insurance Company Limited	7.009	14.857	4.819	0.011
2020	Allianz Insurance Company of Kenya Limited	19.389	6.933	4.077	0.065
2020	APA Insurance Limited	9.290	2.657	4.585	0.020
2020	Britam General Insurance Company (K) Limited	12.561	6.134	4.210	0.044
2020	Britam Life Assurance Company (K) Limited	19.231	1.658	4.204	0.044
2020	Metropolitan Cannon General Insurance Company Limited	14.802	2.208	4.650	0.016
2020	Corporate Insurance Company Limited	16.052	3.007	4.444	0.026
2020	Directline Assurance Company Limited	6.081	3.857	4.094	0.029
2020	Fidelity Shield Insurance Company Limited	6.208	4.402	4.199	0.017

2020	First Assurance Company Limited	2.637	3.717	4.490	0.012
2020	GA Insurance Limited	2.082	2.682	4.587	0.003
2020	Geminia Insurance Company Limited	2.204	6.023	4.342	0.017
2020	ICEA LION General Insurance Company Limited	1.595	3.269	4.530	0.020
2020	Intra Africa Assurance Company Limited	0.394	5.325	4.529	0.014
2020	Invesco Assurance Company Limited	1.825	3.295	4.951	0.001
2020	Kenindia Assurance Company Limited	1.015	6.457	4.027	0.073
2020	Kenya Orient Insurance Limited	1.515	5.497	4.888	0.001
2020	KUSCCO Mutual Assurance Limited	0.425	6.143	4.997	0.006
2020	Madison Insurance Company Kenya Limited	0.298	5.464	4.557	0.003
2020	Madison General Insurance Kenya Limited	1.579	6.329	4.840	0.008
2020	Mayfair Insurance Company Limited	2.083	3.209	4.458	0.006
2020	Occidental Insurance Company Limited	5.071	5.737	4.879	0.029
2020	Old Mutual Assurance Company Limited	2.654	3.814	4.470	0.012
2020	Pacis Insurance Company Limited	5.208	2.724	4.598	0.003
2020	MUA Insurance (Kenya) Limited	0.691	2.159	4.031	0.029
2020	Pioneer General Insurance Company Limited	17.163	4.506	4.429	0.028
2020	Pioneer Assurance Company Limited	7.916	11.426	4.250	0.027
2020	Resolution Insurance Company Limited	6.174	3.451	4.384	0.035
2020	Sanlam General Insurance Company Limited	19.652	18.120	4.822	0.009
2020	Takaful Insurance of Africa Limited	5.565	9.309	4.915	0.007
2020	Tausi Assurance Company Limited	7.099	4.342	4.929	0.008
2020	The Heritage Insurance Company Limited	2.769	1.278	4.129	0.073
2020	The Jubilee Insurance Company of Kenya Limited	2.783	2.345	4.596	0.004

2020	The Kenyan Alliance Insurance Company Limited	4.584	4.708	4.278	0.099
2020	The Monarch Insurance Company Limited	5.887	13.155	4.734	0.018
2020	Trident Insurance Company Limited	6.144	15.128	4.187	0.010
2020	UAP Insurance Company Limited	6.891	7.430	4.494	0.006
2020	Xplico Insurance Company Limited	7.540	6.042	4.377	0.011
2021	AAR Insurance Company Limited	8.377	24.700	4.437	0.005
2021	Africa Merchant Assurance Company Limited	12.461	3.643	4.519	0.022
2021	AIG Kenya Insurance Company Limited	7.186	4.298	4.307	0.042
2021	Allianz Insurance Company of Kenya Limited	10.417	21.460	4.628	0.016
2021	APA Insurance Limited	7.902	9.017	4.141	0.008
2021	Britam General Insurance Company (K) Limited	7.388	10.381	4.862	0.003
2021	Britam Life Assurance Company (K) Limited	8.219	24.173	4.864	0.004
2021	Metropolitan Cannon General Insurance Company Limited	1.846	4.345	4.051	0.019
2021	Corporate Insurance Company Limited	2.052	3.046	4.436	0.007
2021	Directline Assurance Company Limited	0.287	1.030	4.787	0.004
2021	Fidelity Shield Insurance Company Limited	0.463	2.806	4.329	0.009
2021	First Assurance Company Limited	1.135	8.954	4.201	0.012
2021	GA Insurance Limited	1.100	3.590	4.521	0.004
2021	Geminia Insurance Company Limited	0.330	3.203	4.057	0.021
2021	ICEA LION General Insurance Company Limited	1.946	4.428	4.154	0.012
2021	Intra Africa Assurance Company Limited	4.932	4.519	4.778	0.004
2021	Invesco Assurance Company Limited	1.888	3.176	4.320	0.041

2021	Kenindia Assurance Company Limited	2.733	2.864	4.763	0.002
2021	Kenya Orient Insurance Limited	31.246	6.385	4.681	0.003
2021	KUSCCO Mutual Assurance Limited	14.236	2.773	4.274	0.049
2021	Madison Insurance Company Kenya Limited	2.995	1.147	4.447	0.004
2021	Madison General Insurance Kenya Limited	3.747	8.190	4.953	0.002
2021	Mayfair Insurance Company Limited	2.607	2.128	4.922	0.003
2021	Occidental Insurance Company Limited	2.042	1.102	4.045	0.012
2021	Old Mutual Assurance Company Limited	1.664	2.916	4.310	0.032
2021	Pacis Insurance Company Limited	0.872	3.696	4.622	0.003
2021	MUA Insurance (Kenya) Limited	14.566	0.979	4.480	0.004
2021	Pioneer General Insurance Company Limited	4.535	2.063	4.133	0.010
2021	Pioneer Assurance Company Limited	4.161	1.072	4.580	0.003
2021	Resolution Insurance Company Limited	8.489	1.724	4.980	0.008
2021	Sanlam General Insurance Company Limited	1.293	1.023	4.481	0.028
2021	Takaful Insurance of Africa Limited	0.477	5.907	4.500	0.019
2021	Tausi Assurance Company Limited	1.893	1.834	4.380	0.034
2021	The Heritage Insurance Company Limited	0.138	2.682	4.447	0.029
2021	The Jubilee Insurance Company of Kenya Limited	0.835	1.787	4.828	0.012
2021	The Kenyan Alliance Insurance Company Limited	3.529	1.478	4.079	0.034
2021	The Monarch Insurance Company Limited	0.308	2.825	4.282	0.025
2021	Trident Insurance Company Limited	0.839	3.458	4.380	0.025
2021	UAP Insurance Company Limited	0.358	1.788	4.580	0.022
2021	Xplico Insurance Company Limited	0.899	0.593	4.464	0.016