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Factors Affecting Financial Performance in the Kenyan Non-Life Insurance Sector

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Abstract

Despite premium growth over the years, Kenyan non-life insurance penetration has continued on the downward trend from 2.28% in 2013 to 1.63% in 2017; Profitability has also been on the negative side since 2015; recording an underwriting loss of Kenyan shilling 0.02 Billion in 2015; 2.1 Billion in 2016 and 1.013 Billion in 2017. Against this background, the present study establishes the internal factors affecting Kenyan non-life insurers financial performance, Return on Asset (ROA) being the proxy indicator. The study was mainly based on secondary data collected from audited financial statements of all the 37 non-life insurance companies in Kenya for the period 2013 to 2017 (5 years). For this purpose, fixed effects panel data regression analysis was used to assess the relationship of insurance companies specific characteristics such as expense ratio, retention ratio, liquidity, company's size, loss ratio and shareholders equity ratio against return on assets. The statistical findings revealed that liquidity has a significant positive effect on Kenyan non-life insurers financial performance; company size and loss ratio have a significant negative effect; and no significant relationship with expense ratio, shareholders equity ratio, and retention ratio. The study recommends that for non-life insurers in Kenya to enhance their financial performance in terms of their return on assets, they should embrace technological disruptive innovations by leveraging on new technologies that boosts their operational efficiency and meets the evolving customer demands.

Declaration and Approval

I the undersigned declare that this dissertation is my original work and to the best of my knowledge, it has not been submitted in support of an award of a degree in any other university or institution of learning.

Signature

Date

PETER WANJOHI MWANGI

Reg No. I56/8102/2017

In my capacity as a supervisor of the candidate's dissertation, I certify that this dissertation has my approval for submission.

Signature

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Dedication

This dissertation is dedicated to my children “You are capable of achieving anything you put your mind to”.

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1 Introduction

This Chapter provides the study background, the research problem, study objectives, significance and study limitations.

1.1 Background of the Study

Globally, the insurance industry has experienced an enormous transformation specifically over the past decade. Intermediation, risk transfer and a financial system that is efficient towards mobilization saving is a primary function of insurance companies. Trade and resource arrangement is facilitated by one economic unit to another through transfers risks, channel funds, and financial institutions.

From 2009 to 2013, the rate of growth was 4.8% in the insurance and financial sectors (KPMG, 2014). Approximately, 6% of GDP was accounted for in 2013. Over the last few years, the service sector has been growing; being a core component from the operations conducted in the insurance and finance sectors. Its activities saw an increase of up to 13.2% in the year 2013 in terms of GDP services compared to 8.8% of services GDP recorded in 2009. For the economy to grow and develop, there is a need for uniqueness in the activities done by insurance companies. According to Ahmed, Ahmad and Zulfqar (2011), insurance plays a key role in providing sustainability for businesses especially those in risky operations may be able to re-establish all types of risks especially in this environment, which changes from time to time. Insurance companies experience difficulties in increasing the profits for its shareholders due to its continuing ability to cover risk. An economy's infrastructure development mostly depends on the long term funds provided by the insurance industry (Charumathi, 2012). Corporates, citizens, researchers and financial experts have been interested in companies' financial performances. A selection of successful firms has proved a challenge and a difficult exercise because firms may be having problems regarding their liquidity, but still at the same time may be doing very well in terms of their profitability.

Capital, sales turnover, dividend growth, and profitability are among how you can determine the performance of a financial firm. Liargovas and Skandalis (2008) argue that there are other alternatives to measuring the performance of financial firms and the indicators affecting a company's performance financially. By having multiple factors one is capable

to evaluate better the financial performance of a firm. Competitive advantage can be obtained through performance (Iswatia & Anshoria, 2007).

The profitability of insurers' is achieved through examining factors affecting the firm both internally and externally (Ansah-Adu, Andoh & Abor, 2012). Internal factors are concerned by characteristics that are specific to the insurer while external factors are concerned by macroeconomic variables and also the features attributed to the industry. Profit is a key element to any insurer who is willing to attract capital from outside to meet their objective goals, especially in this competitive and gradually changing environment.

According to Asimakopoulos, Samitas, and Papadogonas (2009), the 2007/2009 financial crises of the global economy contributed to the reinvigoration of the scientific knowledge in regards to the factors affecting insurers' profitability. Besides, the profitability of the insurance industry can be improved through appropriate policy frameworks that can be formulated immediately after establishing the factors leading to insurance companies profitability. Hence, various bodies and stakeholders and various insurance regulators have shown intense interest in the determinants of insurers' profitability. Fewer studies conducted in investigating internal financial performance factors affecting non-life insurers in Kenya have brought motivation in examining the factors.

1.1.1 Financial Performance

A firm's financial performance is measured through the proceeds of their profits and the value appreciations they acquire through the firm's share price. The insurance industry's performance is mostly measured through proceeds acquired in the underwriting process, net premiums, and proceeds made through investments and return made on equity. Performance on investments and performance on profitability are indicators of financial performance. Monetary fund measures profitability index, for example, deducting expenses from the revenues earned.

Macroeconomic variables, firm operations influence expenditure and revenue factors. Performance on investment may be classified into two ways. It may be classified based on the proceeds made on assets apart from cash and through proceeds made on investments and excess in cash from the operations of the firm (Chen & Wong, 2004; Asimakopoulos, Samitas & Papadogonas, 2009).

A cheap source of funds can be acquired at the micro level where survival for firms depends on how much profit they make and how they can cope with their competitors to grow. Profits are key for insurers to be able to attract outside capital to satisfy their objective goals. Profit not only provides the insurer with solvency but plays a major role in persuading shareholders to invest their capital in the insurance firms. The profit helps insurance firms acquire funds from shareholders and policyholders because they will be interested to invest in a firm that is profit making. The main objective when it comes to insurance companies is to ensure that profit-making is a major requirement for doing any business activity in the insurance industry (Chen & Wong, 2004).

The last two decades have observed the measurements of financial performance and profitability. Previous revisions towards computing profitability were very important to the banking industry for monetary segmentation (Short, 1979; Bourke, 1989). Numerous SWOTs analysis examined the importance of both external and internal factors estimates towards performance and profitability but their main area of focus was on their own country (Olutunla & Obamuyi, 2008; Anbar & Alper, 2011). Internal and external determinants affecting the performance and profitability of banks have been conducted by various countries through the support of the panel (Pasiouras & Kosmidou, 2007; Staikouras & Wood, 2011).

The profitability of a firm may also be measured through the proceeds make on its assets (ROA), proceeds from capital invested (ROIC), and proceeds acquired through equity (ROE) are ways that can be used to measure profitability (Nguyen, 2006). Segal and Greene (2004) described that the performance of insurance firms may be determined through calculating return on assets, return on equity, return on invested capital (ROIC), annual turnover and return on investment. According to Nguyen (2006), the objective of financial management is to increase profits and ensure that the wealth of the owner is maximized making profitability a major tool of performance. Adams and Hardwick (1999) and Malik (2011) argue that ROA is one of the best methods compared to many in measuring financial performance through profitability.

Bates et al (2008) investigated to prove that age and firm's size have a direct impact on the investment plan of industry. Cox and Hutchison (2006) identified the strong relationship linking financial leverage of the banking sector of the US and return on equity (ROE). They identified that there was a negative relationship between a bank's assets and profitability. Panayotis et al (2008) examined the relationship that exists between a bank's leverage and ROA and direct relationship that exists between leverage and ROE of the firm. Boadi et al (2013), found that there is a direct relationship among liquidity, leverage, and profitability examined through the exploration of Ghana's 16 insurance firms from 2005 to

2010. Hifza (2011) found a strong negative relationship in leverage, profitability, and loss ratio in Pakistan's 35 registered non-life and life insurance companies by conducting an examination on them during the period of 2005-2009.

A firm's financial performance may be measured in numerous ways, hence, financial analysis is a method that is widely applied and measures the efficiency and performance of a firm through profitability ratios. A huge list of theories has tried to establish why other firms are more profitable compared to other firms by examining various variables that affect or contribute to the performance of a company. Besides, measuring the financial success or performance of a firm remains a key issue to many practitioners and researchers.

1.1.2 Non-life Insurers Financial Performance Determinants

Internal and external factors influence the profitability of Non-life insurers'. Internal factors are concerned by characteristics that are specific to the insurer while external factors are concerned by macroeconomic variables and also the features attributed to the industry. The most used factors are expense ratio, retention ratio, liquidity, inflation rate, equity capital, age, size, leverage and loss ratio. However, this study will assess six factors namely; expense ratio, retention ratio, liquidity, company size, equity capital and loss ratio.

Initially, the expense ratio is amongst the major determinants of a firm's financial performance. Expense ratio measures how much a fund's asset have been spent on administrative and other related operating expenses. The expense ratio is realized by dividing the operating expenses of a fund by the average currency value of its assets under management. Besides, the fund's assets are likely to be reduced by the operating expenses, hence, reducing the ROI (Adams & Buckle, 2000).

A retention ratio is an important tool for insurers because it identifies the amount of underwritten business that is not given to reinsures. For a positive performance result towards the performance of an insurer, the retention ratio must be high and have a lower claim ratio. According to Charumathi (2012), an efficient insurance company has huge profits if their underwriting decisions are accompanied by higher retention.

Levels of liquidity is also a major determinant of financial performance. Liquidity refers to the degree to which a firm can meet its liabilities through cash and assets that may be generated to cash within the same financial period. Liquidity in insurance is the insurer's ability to be able to cover its policyholders without exchanging to cash their financial

assets or increasing their profits through the underwriting process. Cash and balances from the bank are set aside to satisfy the current liabilities that are generated from claims that are not already settled and exceeded their payment deadlines (Chaharbaghi & Lynch, 1999).

The size of a company is a major indicator that measures the profitability of an insurance firm. There are many ways in which it can influence the financial performance of a business. Large sized firms may be extra productive by utilizing economies of scale as compared to small-sized firms. Total assets can be used to measure company size, this can be standardized by the natural log of total assets (Ahmed, Ahmed & Ahmed, 2010; Teece, 2009).

Funds generated by company owners are known as equity capital. If liabilities are more than assets then equity is negative and vice versa. In the knowledge of accounting, shareholder's equity is whereby the firm sets aside an amount of cash or part of company assets in form of stocks as a reward for the shareholder towards investing in the firm. Through this, the shareholder increases funds for better investments and through this, the insurance firm can increase its operations and improve on its profits and perform better financially (Lee, 2008).

The final determinant of a firm's economic performance considered in the study is loss ratio. In a general term, loss ratio refers to gains from the ratio of losses. For example, a paid insurance claims ratio which consists of adjusted expenses, to premiums received. The positive and negative effects of loss ratio are not necessarily consistent, even though they seem to be dependent on the existing impact of the year's environmental condition as reported by Tesfaye (2016).

1.1.3 Kenyan Insurance Industry

Insurance Regulatory Authority (IRA) is a corporate institution of the State whose obligation is supervising, regulating and promoting the growth of all Kenyan insurers. Insurers, loss adjusters, insurance brokers, re-insurance companies, insurance agents, motor assessors, insurance investigators, insurance surveyors, risk managers and claim settling agents, are the key players that are regulated by IRA. To put in place policies that will enhance both insurance access and regulatory environment for the insurance sector growth in the country, IRA has been working with various stakeholders internationally, regionally and locally.

According to chapter 487 within the laws of Kenya, which was introduced and established in 1985, The insurance act regulates the insurance industry. Commissioner of insurance was established by the ministry of finance and then delinked from the ministry by the government to give it some autonomy to increase the supervising levels of the regulator. The main purpose of establishing this commission was to increase the supervision of the government towards regulating the insurance industry. The establishment of the Insurance Regulatory Authority (IRA) was done by number 11, insurance (amendment) Act 2006 which specified commissioner of insurance as the person in charge of the duties of regulating, supervising and providing development measures in the insurance industry. This authority had the objective of ensuring effective supervision, administration, control and regulation reinsurance and insurance business in Kenya. IRA was the body that took over the duties and responsibilities of the commissioner of insurance (Insurance Amendment Act, 2006).

IRA has the mandate to license re-insurance and all firms in the insurance industry in Kenya and all intermediaries, risk surveyors, risk-valuers and loss adjusters and assessors. Also, the authority has the mandate to protect the 6 interest of policyholders of insurance and beneficiaries of insurance contracts, to provide information to the government on the national policies that will ensure assets and properties of the country are secured, to promote the growth of the insurance business among others (Insurance Act Cap 487). The Association of Kenyan Insurers (AKI) also offers self-regulation. Insurance Institute of Kenya (IIK) is the professional body that offers professional education and training.

1.2 Research Problem

As far as the insurance industry is concerned, its entire financial system is very important. Same way as the banking industry, the insurance industry plays a major role in the financial intermediation of the economy. For that reason, the succession of an economy is determined by success; or failure of an economy (Ansah-Adu, Andoh & Abor, 2012).

Non-Life insurance in Kenya wrote premiums worth Ksh126.05 billion in 2017 translating to 60.1percent of the total premiums underwritten. This was a 2.4 percent growth from 2016 (AKI, 2018).

Despite premium growth over the years, non-life insurance penetration has been on the downward trend from 2.28% in 2013 to 1.63% in 2017. The profitability of Non-life insurance has also been on the negative side since 2015; recording an underwriting loss of

Kenyan shilling 0.02 Billion in 2015; 2.1 Billion in 2016 and 1.013 Billion in 2017 (AKI, 2018).

In regards to the income statements audited in the year of 2017, out of the 37 non-life insurance companies, 19 companies recorded an underwriting loss while 18 recorded an underwriting profit (AKI, 2018).

In Kenya, since the non-life insurance sector started experienced losses, Internal factors affecting performance have not been investigated. Owing to importance of insurance, negative performance can lead to detrimental effects to the Kenyan economy and thus it is of great importance to investigate and identify factors affecting financial performance of the non-life insurance companies in Kenya.

1.3 The Objective of the Study

1.3.1 General Objective

The general objective of the study is to examine the factors affecting the financial performance of non-life insurance companies in Kenya.

1.3.2 Specific Objectives

Specific objectives are to:

1. Assess the significance of the relationship between expense ratio, retention ratio, liquidity, loss ratio, company's size and shareholders' equity ratio on the financial performance of non-life insurance companies in Kenya
2. Measure the amount of variation in the financial performance of non-life insurance companies in Kenya explained by the significant independent variables.
3. Examine the magnitude of each significant independent variable on the financial performance of non-life insurance companies in Kenya.

1.4 Significance of the Study

Insurance companies will use insights into the identified components of financial performance to efficiently and effectively manage their resources by identifying and implement-

ing changes that will positively influence the overall financial performance.

The investigation will establish the linkage between the various factors influencing financial performance towards enhancing the efficiency of the insurance business environment in Kenya and building sustainable insurance business systems through innovation and improved practices.

This study will expand on the existing information on the principal components of financial performance in the insurance sector contributing to a broader understanding of the factors and also bring out grey areas for further study.

The examination seeks to help non-life insurance sector in Kenya achieve better financial results which will enhance consumer confidence and shareholders interest to invest leading to increased insurance penetration in the country.

1.5 Limitations

The study was focused on internal factors affecting financial performance and limited to the data gathered from insurance companies audited reports.

1.6 Outline

The outline of this study is as follows:

Introduction to the study provides the study background, the research problem, study objectives, significance and study limitations. Literature review provides insights into relevant literature; past researches that have been done which relates to financial performance factors in insurance, the chapter concludes with a selection of summaries highlighting the knowledge gaps. Research methodology describes the research design, study population, sampling design, data collection, variables operationalization, data validation, and analysis. Data analysis and interpretation presents the study findings along with the analysis and the authors' interpretation, the main objective of this chapter is to provide answers to the main and specific objectives of the study. Summary, conclusion and recommendations presents a summary of the main findings of the study. The chapter also provides suggestions for practical and academic implications and recommendations.

2 Literature Review

2.1 Introduction

The chapter gives insights into relevant literature; past researches that have been done which relates to financial performance factors in insurance. The chapter concludes with an overview highlighting the knowledge gaps.

2.2 Empirical Review

Financial performance is the basis for every company, it is crucial since non-performance can lead to collapse. Financial performance may be defined as the way a company best utilizes the resources it has and generates earnings. It also indicates the financial position of a company in a given financial year, and which is used to determine similarities amongst companies within the related industry (Investopedia, 2003).

There exist various research papers done in the field of insurance relating to factors affecting financial performance on insurance companies in various jurisdictions in different periods

2.2.1 Expense Ratio Effect on Financial Performance

Martin, Malhotra, and McLeod (2011) study provides comparisons analysis involving the expense ratios of domestic and global closed-end and open-end equity funds. Calculation of Asset-weighted expense ratios (weighted average of the expense ratios of individual funds in the group) was performed to all funds found in the data sets. A regression analysis was conducted to measure the existing relationship between expense ratio and equity funds. The univariate analysis results indicate a weak correspondence between expenses and returns

Saeed and Khurram (2015) in their study investigated the factors influencing the financial performance of non-life insurance companies in Pakistan. The expense ratio which was one of the factors identified, which was scrutinized on performance deputations by ROE -a measure of the profitability. Information was collected from 24 non-life insurance com-

panies operating in Pakistan spanning the 2005-2013 period. Hausman test was employed to establish how performance impacted insurance companies. From study findings, the inverse relation between expense ratio and firm profitability was established but it was insignificant.

Similarly, Nanigian (2015) conducted his analysis of the expense-performance relationship over the period 2000-2015. Morningstar Direct managed the net-of-expense returns on U.S. equity mutual funds and was gathered to conduct this analysis. A portfolio that equally allocated capital across each fund in the 10 portfolios were constructed in the study based on its decile rank of annual report net expense ratio traversing from the previous year. From the study findings, the expense ratio was found to be ranging from 0.13 percent-0.87 percent for the decile 9 portfolio and mid-priced decile 5 portfolio respectively, thus confirming that the relationship between expense ratio and performance does not exist. In Kenya, research was conducted at examining the impact of expense ratio on the profitability of mutual funds was conducted by Nyanamba, Muturi, and Nyangau (2015). Out of the 63 funds in Kenya, only 19 mutual funds were incorporated in the study. The study employed data at the end of the year 2014. The study gathered a negative correspondence regarding expenses together with profitability gains from mutual funds.

Navone and Nocera (2016) investigated if distribution costs added to the expense ratio plays a role in the comparisons of expense ratios on mutual funds amongst different countries. Data acquired in 2006 of mutual funds amounting to 5,000 and more in four countries in Europe was employed in this study. The survey data results indicated that the cost of distribution included in the expense ratio affects both the no-load and load funds.

Dube and Mazviona (2017) had utilized secondary data from twenty short-term insurance companies in Zimbabwe aimed at examining factors affecting their financial performance. The data from the 2010-2014 period were included in the study. The factors affecting performance and identifying their impact was examined through factor analysis and multiple linear regression models. Study findings showed that expense significantly affects the profitability of insurers negatively.

2.2.2 Retention Ratio Effect on Financial Performance

Previous studies have investigated the retention ratio effect on insurance industry financial performance. For instance, using a descriptive research design and secondary data acquired from the Nairobi Securities Exchange and registered insurance firms annual reports for the 2009-2013 period, Thurairana (2014) sought to establish the retention ratio

effect on stock return. Regression analysis was applied to obtain the relation between each coefficient and correlation of the study variables. The outcome revealed that there is no direct link between retention ratio and stock yields.

Using data for 22, 23 and 25 insurers spanning the 2010 - 2012 period; Mwangi and Iraya (2014) sought to examine relationship against selected factors and the financial performance of non- life Kenyan insurers. Multiple linear regression was used in the study. It was established that the retention ratio was not linked to financial performance.

In 2015, Mwangi and Murigu were involved in a different study aimed at establishing the relationship of selected factors and profitability of Kenyan non-life insurance underwriters for the period of 2009-2012. Multiple linear regressions were also employed in this study. The study findings indicated no existing correspondence regarding the retention ratio and the insurance companies performance.

Similarly, Borome (2015) established factors impacting on the profitability of Kenyan life insurers. ROA was the financial performance proxy indicator. The relationship was analyzed using multiple linear regression. Data from the respective 2010-2014 period were included in the study involving 24 life insurers operating in Kenya. The study found the retention ratio to be negatively related to financial performance.

Albada et al. (2018) investigated the dominant signals (retention ratio, auditor reputation, underwriter reputation, board reputation and lock up period) in explaining the initial return within the Malaysian IPO market. The order of contribution of the signaling variables to the overall model was tested using the stepwise analysis through regression. Results from the study three signals out of five seemed to have a relationship significance together with the initial return where retention ratio was ranked first.

Whether there existed micro factors directly related to insurance profitability formed Kinyua (2018) investigation. The study employed a descriptive survey design censuring all licensed firms in the Kenyan insurance industry. Fixed regression analysis was employed to investigate the relationship of micro factors towards Kenyan insurers performance. The findings of the research study showed that retention ratio harmed financial performance.

2.2.3 Liquidity Effect on Financial Performance

Khan, Nouman and Imran (2015) investigated profitability determinants of Karachi Stock Exchange listed financial sector firms using 2008-2012 data. The study employed various models (descriptive statistics, Chow test, Hausman Test, Lagrange multiplier, Breusch-Pagan and correlation Matrix). The estimated results revealed that liquidity significantly affects financial performance of financial sectors.

Approximately 10 out of the 26 registered non-life insurers were considered in Kwaning, Awuah, and Mahama (2015) study using purposive sampling. The study aimed at assessing the constituents that influence the Non-Life Insurance firms' financial performance in Ghana from the 2009-2013 period. Investment Yield, Investment to Total Assets, ROE and ROA were the key indicators of performance in the study. According to the study findings, there was a slightly weak correlation between liquidity and ROA while all the constituents strongly predict ROA with Liquidity happened to be the most influential predictor.

Kamau and Njeru (2015) emphasized on establishing liquidity risk impact on financial performance among Kenyan listed insurers. The target population included 6 insurance companies using time series between 2012-2015 by comparing net premiums earned for those years and return on equity. This research was descriptive. It was determined liquidity risk harmed these companies performance financial.

Evidence from the Turkish retail industry: Research was conducted to analyze the impact of liquidity on financial performance (Demirgüneş, 2016). Turkish retail industry time-series data in the period of 1998-2015 was used in the study. The co-integration test and the unit root test as demonstrated by Maki (2012) and Carrioni-i-Silvestre et al. (2009) respectively were used in testing the series stationarity and the co-integration relationship between them. Liquidity and financial performance showed a positive relationship.

In Kenya, Wainaina (2016) did a study to ascertain liquidity's impact on financial performance of firms in the Kenyan insurance industry. The proxy pointer of 'financial performance' was ROA. Relationship between liquidity and ROA was examined in the study through multiple regression. The study findings indicated insurances 'financial performance' (ROA) has significantly been affected by liquidity ratios with a positive correlation.

A very recent study investigated liquidity management impact on Nigerian insurers profitability using reliable data from 2003-2012 (Ologbenla, 2018). The study's dependent

variable was ROA which is used in measuring financial performance. A panel analysis was applied in the research to estimate the model. A negative effect on the insurers performance was established from the regression analysis used on liquidity management.

Derbali and Jamel (2018) investigated empirically firm-specific characteristics effects on the Tunisian insurance companies profitability. The research sampled 8 insurers from the 2005 to 2015 period. The results revealed that liquidity has no effect on performance of Tunisian insurers.

2.2.4 Company Size Effect on Financial Performance

In Turkey, Kaya (2015) studied firm-specific constituents of non-life insurers that affect profitability. The study used 192 observed panel data sets from 24 non-life insurers operating within the 2006 to 2013 period. Sales and technical profitability ratios were proxy indicators of determining profitability. Reference to study findings, company size significantly impacts Turkish non-life insurer's profits.

The research was intended to assess factors affecting the insurance firms performance in Ethiopia and was conducted by Ejigu (2015). The study sample 9 insurance companies operating between 2005 to 2012. ROA as the response variable was the indicator used in determining financial performance. Multiple regressions were conducted in the investigation to determine existing relations. The results showed that company size is an influential determinant of performance of Ethiopian insurers.

Kigen (2015) investigated the profitability of Kenyan insurers based on size. The key indicator of profitability in this study was ROA. The data sets covered the period of 2009-2013 after censoring 48 insurance firms and also those operating in long term basis. This empirical research was quantitative. In the study regression model was also applied to examine the research variables relationship. According to research results, there existed a positive significant link financial performance of insurers and size.

In his study, Jerene (2016) sought to identify the non-life insurer's profitability determinants in the insurance industry of India. Data sets were gathered for the period 2006-2016 which involved financial statements of eight insurers. The analysis model used in the study was the ordinary least squares regression. The study established that there exists a positive relationship between size of the firm and ROA.

Mumo (2017) investigated factors influencing the insurance firms performance. The study selected a descriptive study design. The sample size was generated through stratified random sampling. To determine the degree of correspondence against the study variables, correlation analysis was used. It was the size of a firm was established as an essential determinant of an insurance company's financial performance.

A recent study conducted in Nigeria examined the characteristics of a firm regarding its effect on profitability of listed insurers (Abubakar & Haruna, 2018). The necessary data was provided by the annual reports and insurance firms accounts published in the Nigeria Stock Exchange (NSE) covering year 2007 to 2016. The hypothesis was tested using regression analysis. Results showed that firm's size has a positive impact on firm's profitability in the Nigerian insurance industry.

Pjanić et al. (2018) investigated the significance of interior determinants of business operations by non-life insurers in Serbia. The multi-linear regression model assisted in calculating and testing the correlation and coefficient of the study variables. Further, 'analysis of variance' (ANOVA) was conducted, which categorically tested if the observed model variables were significant. The results revealed that the insurance company's size influenced ROA positively but the influence was proved to be statistically insignificant.

2.2.5 Loss Ratio Effect on Financial Performance

Using data for 22, 23 and 25 insurers spanning the 2010 - 2012 period; Mwangi and Iraya (2014) sought to examine relationship against selected factors and the financial performance of non- life Kenyan insurers. Multiple linear regression was used in the study. It was ascertained that loss ratio was negatively linked to financial performance.

Ejigu (2015) carried out research to assess the factors that affect Ethiopian insurance companies' performance. Nine insurance companies operating from 2005 to 2012 were included in the study. The dependent variable, ROA was the indicator used in determining financial performance. Multiple regressions were conducted in the study to evaluate existing relationships. The results show that loss ratio is an influential factor in Ethiopian insurer's financial performance

Koc (2016) carried out an empirical study to identify effective performance factors of insurers listed at the Istanbul Stock Exchange. The eight-year period between 2008 and 2015 was able to provide the required study's data set. The study employed analysis of

panel data and established that loss ratio is negatively correlated to insurers performance.

Similarly, Tesfaye (2016) applied a quantitative approach and a research design that was explanative and whose sampling was purposive to investigate factors that affect Ethiopian insurers financial performance. The research selected 12 out of 17 insurers within the 2011-2016 period. The data analysis involved both the descriptive statistics and the Random Effect econometric model. Study findings identified significant negative effect of loss ratio on financial performance of Ethiopian insurers.

Dube and Mazviona (2017) had utilized secondary data from twenty short-term insurance companies in Zimbabwe aimed at examining factors affecting their financial performance. The data from the 2010-2014 period were included in the study. The factors affecting performance were determined through factor analysis and multiple linear regression models. Study results indicated that performance of insurers is significantly and negatively affected by loss ratio.

Lai, Chen, and Chang (2018) had established that the loss ratio of Environmental insurance (EI) is positively affected by itself from one period ahead in Taiwan. The macroeconomic factor positive and negative effects on the loss ratio of Environmental insurance (EIs) are dependent on the effect of the year's environmental condition and therefore not consistent. Hence, the loss ratio of EI is quite inconsistent, which is affected by economic variables.

Yet Afolabi (2018) noted having liquid assets enhances timely claims payment and determines its profitability. Therefore, his study carried out examined claims payments effect on profitability of Nigerian insurers. Secondary data covering the 2011-2016 period was used in the study where 2 insurance companies were selected. The results of the study indicated a loss ratio brought an indirect impact on ROA (profitability).

2.2.6 Shareholder's Equity Ratio Effect on Financial Performance

Foong and Indris (2012) investigated leverage's effect on profitability of Malaysian general insurers. The study censured all authorized general insurers operating within the period covering 2006-2009 where 94 observations were analyzed. The statistical findings indicated that leverage is significantly and negatively associated with profitability of the insurers.

The shareholder's equity ratio relationship with firm financial performance was studied by Ilyukhin (2015). From 2004 to 2013, a large sample of Russian joint-stock companies was investigated. The study applied different measures of firm performance, the sub-samples and time clusters were vigorously checked and an alternative estimation approach was also employed. The study findings indicated that the relationship between the shareholder's equity ratio and financial performance was negative.

Rajkumar (2015) study intended to investigate and test the existence of relationship between John Keells Holdings Plc financial performance and shareholder's equity ratio. The study was conducted in Sri Lanka from 2006 to 2012. Ratio analysis and multiple regressions were conducted to test the relationship and the influence of the study key variables. The study results show a significant negative relationship between the shareholder's equity ratio and the John Keells Holdings plc financial performance.

In the United Kingdom, a study aimed at investigating financial strength determinants of insurers was conducted by Diara (2015). 57 insurers were sampled in the United Kingdom within the 2006-2010 period. Both regression models and rating transition matrixes are employed in the study. The outcome revealed that shareholder's equity ratio is a significant determinant of financial performance of United Kingdom insurers.

Banafa, Muturi, and Ngugi (2015) established shareholder's equity ratio effect on performance of listed financial Kenyan companies. The study considered static trade-off theory for study objective. The research applied casual study design involving financial firms at the NSE under different categories. Secondary panel data covering 2009-2013 was used in the study. The study variables relationship was measured using regression model. Results of the statistical test established shareholder's equity ratio have a negative but significant effect on financial performance (ROA).

Gharios, Hamdar, and Seissian (2016) collected data from 71 randomly selected companies based on the 2011-2014 cluster selection. The study aimed at investigating shareholder's equity ratio economic impacts on the financial performance of MENA & GCC listed companies. Secondary quantitative research was necessary for carrying out analysis. Random effects of regression analysis were projected in the study in determining relationships of study variables. The results showed that shareholder's equity ratio had a negative impact in regards to profitability.

2.3 Theoretical Review

Based on the objectives, this study has been affected by five approaches: Rational Choice Theory, The Shareholder Wealth Maximization (SWM) Theory, Efficiency Hypothesis, The Structure Conduct Performance (SCP) Model and Expense-Preference Behavior.

2.3.1 Rational Choice Theory

This theory plays a larger role in comprehending an individual's economic behavior. Hence, rationality itself as a term varies with the subject. Other theories attempt to explain the market dynamics that are capable of enhancing the production and distribution of goods. But in the case of Rational Choice Theory, its dominance is seen when applying the same principles that are adopted by other theories to understand interactions that revolve around resources such as prestige, time among others.

Eckardt (2007) asserts that human beings are favorably driven by their own goals and preferences as contented by Rational Choice Theory. The information concerning the conditions whereby a particular individual contemplates to work and likely will put much effort into ensuring his or her goal is achieved is vital in regulating their actions. It has not always been easy for human beings to achieve whatever they desire. The domain of Rational Choice Theory necessitates that the Choice of goals together with the selection of an appropriate method can assist in attaining the previously set target. As emphasized by Rational Choice Theory, selection of goals and the consequences of that selection should not be taken for granted, therefore, 'individual should have a proper understanding of the latter.

This is a theory in which the insurance industry can apply since the risks of individuals are protected by taking up the policies. Proper policies with proper companies are very essential in acquiring benefits from insurance. Profitability of insurers is the rational choice for choosing companies. Many individuals do not buy policies in companies that they know they will get bankrupt to protect their risks or else would not benefit from the policies and would want to choose a company that would compensate them for their losses.

2.3.2 The Shareholder Wealth Maximization (SWM) Theory

In the business market, the main aim of a company is maximizing the market value of its stock (John, Loy & Clements-Croome, 2005). Maximizing shareholder's wealth lies as the responsibility of the management team in a company. Successful management is one that adapts to shifts in the market situations to increase profitability. The quality of the firm's management is measured by how fast and efficient they can react towards environmental changes in the business sector. According to Bharadwaj (2000), maximizing returns generated through equity capital is the main interest of a firm through the operation of shareholder wealth maximization (SWM) theory. Managers of firms and investors in a firm should not put their interests largely towards SWM as it makes the objective and operations of a firm equal.

For the objective of a firm to be considered as strict emphasis on SWM, the goals of operations from both managers and investors should be recognized together with a social purpose and public corporation. According to John, Loy & Clements-Croome (2005), SWM is defined in economics and literature of finance as a standard assumption. SWM's objective goal is to provide an effective capital resources allocation. Corporate social responsibility, business ethics, and stakeholder theory emphasize the difference of SWM's operational goals towards that of public corporation and social purpose. The corporation law identifies the responsibilities, duties and rights of both non-financial and financial stakeholders.

2.3.3 The Structure Conduct Performance (SCP) Model

According to Grygorenko (2009), the SCP model is one of the initial pillars that used to examine financial institutions profitability. Factors such as market conditions, concentration and technology determine the structure of an industry (Baye, 2010). Conduct may be defined as to how sole proprietorships participate in the market. It may involve decisions made in pricing such as fees, commission and interest rates. Other factors to be considered may include investing in research and development and advertising. Performance may be defined as social well being that exists in the market segment and also through proceeds from profits.

Market structure makes companies to act in a particular style due to these three aspects of the industry which are seen by Structure Conduct Performance (SCP) as if they are integrally related. The efficiency or inefficiency of a market is determined by how this behavior causes the allocation of resources. The failure of this model is its lack of performance recognition towards its impact on structure and behavior while the structure may affect behavior and performance. The SCP model confirms that determinants of

profitability to an organization is primarily through its external factors.

Strength of firms determines their profitability (Mason, 1939 & Bain, 1951). Low concentrated firms get lower profits compared to firms operating in highly concentrated industries. To gain more profits in the insurance industry, there is a need for higher concentration in the industry which allows insurers to collude hence set up higher prices.

2.3.4 Efficiency Hypothesis

Demsetz (1973) suggested the Efficiency Hypothesis model. He argued that increased levels of efficiency eventually lead to an increase in market shares hence high proceeds in terms of profits towards a firm. According to Grygorenko (2009), the efficiency of the insurer is the determining factor towards financial performance of insurers but not the concentration of the market. According to the hypothesis, high profits are determined through the insurer operating efficiently compared to its competitors and in the end, low operational costs are incurred and market share increased.

According to Mensi and Zouari (2010), intense concentration and unequal distribution of positions are created through differences in efficiency levels. Market share represents efficiency through an empirical examination performed by (Smirlock, 1985). Results showed significant correlation between bank's profitability and market share but no correlation between bank's profitability and market concentration in Smirlock (1985) empirical study of 2700 banks and through this study came up the invalidation of the SCP model.

According to Rhoades (1985), product diversification and some banks to be able to set higher prices on their services was the reason for the positive relationship between profitability and market share. Further empirical studies were unable to provide a clear picture in determining the theory that best explains the profitability of a firm (Grygorenko, 2009). Haron & Ahmad (1998) and Neus & Yu (2005) explained the Structure Conduct Performance theory. Naceur (2003) and Remoundos & Mamatzakis (2003) brought up evidence for the Efficient Hypothesis.

2.3.5 Expense-Preference Behavior

The performance of a firm is not only measured by profitability or the returns made by the firm as we have witnessed in the theories discussed. Expense-Preference Behavior hypothesis is a theory that measures performance through utility, unlike the theories we

have already discussed. The ultimate goal of managers in this theory is to maximize the firm's utility and this goal is met through increasing the expenses of staff and salaries (Williamson, 1963).

2.3.6 Overview

Despite immense study focusing on financial performance factors in the Kenyan financial sector and other jurisdictions, few studies have paid attention to internal factors impacting on the Kenyan non-life insurers financial performance. Besides, the existing research has failed to reach a common conclusion regarding the relationship of various factors towards the financial performance of insurers. As such, this study aims to address the above gap by addressing selected factors (expense ratio, retention ratio, liquidity, company's size, loss ratio, and shareholders' equity ratio) and using a large sample comprising of all 37 Kenyan non-life insurers for a 5 year period.

3 Research Methods

3.1 Introduction

The research methodology used in this study is described in this chapter. It describes the research design, study population, sampling design, data collection, operationalization of variables, data validation, and analysis.

3.2 Research Design

The research design employed is a panel study design that involves describing information about the same cases at two or more points in time, combines both cross-sectional data and time series data. The study used data for 37 cross-sectional units and 5 periods.

3.2.1 Population of the Study

The sampling frame comprised of non-life insurers in Kenya who are also members of the Association of Kenya Insurers. The total number of non-life insurers stood at 37 as of 31st December 2017. Due to the availability of data all 37 companies were sampled.

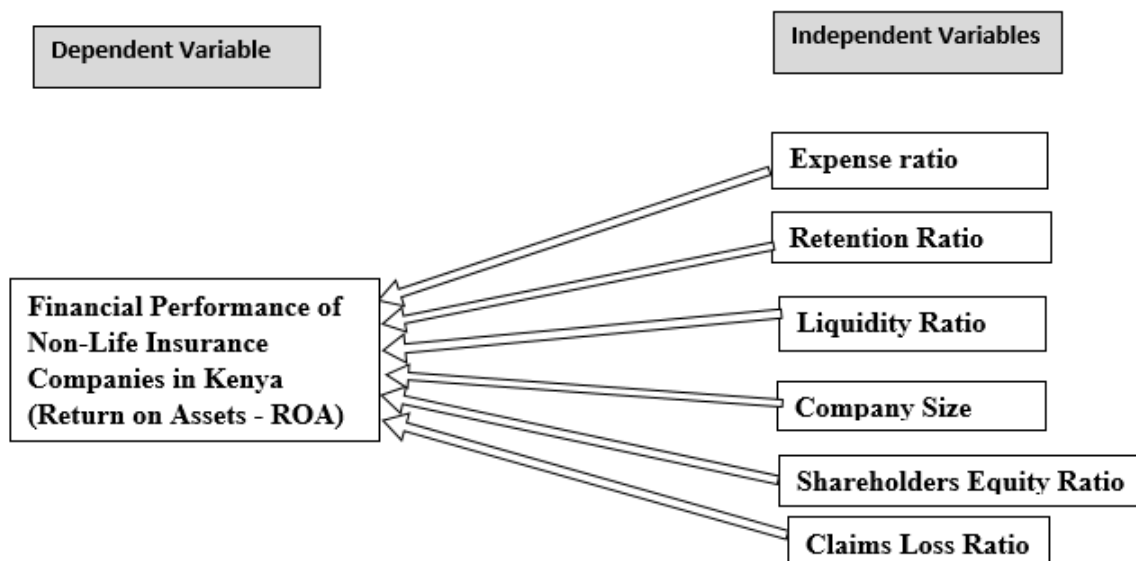
3.2.2 Data Collection

Data utilized in the study comprised of secondary data obtained from audited financial statements of all the insurance companies in Kenya for 5 years (2013 to 2017), compiled in the appendices of the Association of Kenya Insurer's industry annual reports under the statements of comprehensive income and financial position.

Audited accounts provide reliable and accurate information giving an overview of the company's financial performance since together with other disclosure documents the audited accounts are approved by the management of the company. Primary data was also be reviewed from various books, articles, and journals, to ensure effective presentation of past researches done and in understanding and dispensing different financial terminologies and ratios.

3.3 Conceptual Model

The conceptual model depicts the relationships between the identified independent variable (return on assets) and the independent variables (expense ratio, retention ratio, liquidity, company size, shareholder equity ratio and claims loss ratio).



3.4 Empirical Model

Return on assets (ROA) the estimated composite index of financial performance is a function of expense ratio (ER), retention ratio (RR), liquidity (LQ), company size (CS), shareholder equity ratio (SER) and loss ratio (LR).

Thus, the empirical model is given by:

$$ROA = f(ER, RR, LQ, CS, SER, LR)$$

Data obtained from the industry reports were operationalized into ratios to allow them to be measured empirically and quantitatively, as follows:

Independent Variable

$$\text{Return on assets (ROA)} = \frac{\text{Profit before tax}}{\text{Total assets}}$$

Explanatory Variables

$$\text{Expense ratio (ER)} = \frac{\text{Commissions and management expenses}}{\text{Net earned premiums}}$$

$$\text{Retention ratio (RR)} = \frac{\text{Net written premiums}}{\text{Gross written premiums}}$$

$$\text{Liquidity (LQ)} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Company Size (CS)} = \ln(\text{Total assets})$$

$$\text{Shareholder equity ratio (SER)} = \frac{\text{Total shareholder equity}}{\text{Total assets}}$$

$$\text{Loss Ratio (LR)} = \frac{\text{Net claims incurred}}{\text{Net earned premiums}}$$

3.5 Model Analysis

Summarized ratio data obtained from the audited financial statements will be analyzed using Gnu Regression, Econometrics and Time-series Library (GRET) statistical software.

3.5.1 Descriptive Statistics

Characteristics of the collected data were described using descriptive statistics which include central tendency measures (such as maximum, minimum and mean) and dispersion measures (such as standard deviation). All the variables will be covered in the descriptive statistics.

3.5.2 Correlation Analysis

To test the linear relationships linking variables, Pearson correlation (r) will be used

3.5.3 Panel Data Regression Analysis

Panel data regression analysis was used to assess the prediction level of regression models and assess the link between the factors affecting insurance financial performance.

Since all companies were included in the study and thus no random selection, the panel fixed effects model was used to model the relationship between the identified factors by fitting a linear equation to the collected data.

The general model for predicting financial performance, ROA (Y) will be represented by the following model:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \dots + \beta_n X_{nit} + \varepsilon_{it} ; i=1,2,\dots, 37; t=1,2,3,4,5.$$

Where,

- Y_{it} is the dependent variable, for company i at time t and is a linear function of X_{1it} , X_{2it} , X_{3it} , ..., X_{nit} plus ε_{it}
- β_0 is the regression constant or intercept, β_{1-n} are the regression coefficient or change induced in Y_{it} by each X_{it} ,
- X_{1it} - X_{nit} are independent variables for company i at time t .
- ε_{it} it is the error term for company i at time t ; that accounts for the variability in Y_{it} that cannot be explained by the linear effect of the independent variables.

To account for the cross-section and time fixed effects in the model, we used a two-way error component assumption for the error term, ε_{it} .

$$\varepsilon_{it} = \mu_i + \delta_t + v_{it}$$

Where,

- μ_i represents the unobservable company diversity
- δ_t represents the time unobservable time diversity
- v_{it} represents the remaining random error

The fixed effects model is used to study internal changes causes within an organization, controlling for time-invariant differences between companies.

In matrix form, the model can be written as

$$Y_{it} = X'_{it}\beta + \varepsilon_{it}$$

Where,

- Y_{it} represents the response variables vector
- X'_{it} represents the explanatory variables vector
- β represents the regression coefficient's vector
- ε_{it} represents the vector of error terms

3.5.4 Model Inference

This involves testing the overall significance of the regression model employing the F test, as a check of if at least one of the explanatory variables in the model is useful in predicting ROA at the $\alpha = 0.05$ level of significance. If the response variable is influenced by any of the explanatory variables the model is significant at $\alpha = 0.05$ and we move on to ascertain the significant explanatory variables.

3.5.5 Parameter Estimation

The unknown parameters will be estimated using the least squares principle which requires us to find the values β_{1-6} that minimizes the sum of the squared difference between the dependent variable Y_i observed values and their expected values (residuals sum of squares – SSE)

$\varepsilon = Y - E(Y)$ where $Y = X\beta + \varepsilon$ and $E(Y) = X\beta$

Thus $\varepsilon'\varepsilon = (Y - X\beta)'\varepsilon$

We determine β such that:

$\beta = \operatorname{argmin}(Y - X\beta)'\varepsilon$

Lets $S = (Y - X\beta)'\varepsilon$

$\therefore S = Y'Y - 2Y'X\beta + \beta'X'X\beta$

The least squares estimates were obtained by minimizing the sum of squares function in the equation above with respect to β by differentiating S with respect to β and setting the results to zero. The solutions to this equations are the unbiased least squares estimates

$$\partial S / \partial \beta = -Y'X - X'Y + 2\beta'X'X = 0$$

$$-2X'(Y - X\beta) = 0$$

$$X'Y - X'X\beta = 0$$

$$X'X\beta = X'Y$$

$$\beta = (X'X)^{-1} X'Y$$

3.5.6 Verification of Assumptions

To ensure, the least square estimates are Best Linear Unbiased Estimators (BLUE). We will ensure multiple regression model assumptions holds, this is essential for testing of hypothesis about the parameters of the regression model and the construction of interval estimates. The below statistical tests will be done to ensure model validity:

Normality

Errors are assumed to be normally distributed by multiple regression, this is important for interval estimates construction and hypotheses testing of the regression model parameters. Violation of normality occurs when the residuals are not symmetrically distributed, that is, too many or too few large errors, this will be detected by the Chi-square test of normality and the normal distribution curve. In the case of too few large errors ("outliers") this will be scrutinized, if they can be explained as unique events not likely to be repeated, then they will be removed from the data, otherwise, a nonlinear transformation of variables will be applied.

We test the hypothesis:

H_0 : Residuals are not normally distributed, versus

H_1 : Residuals are normally distributed.

Based on the results if the value of the χ^2 test returns a p-value $\alpha < 0.05$ we do not reject H_0 at the 5% level of significance and conclude that the errors are normally distributed.

Multicollinearity

In this case, the least squares assumption that rules out exact linear relationships amongst explanatory variables is violated. Multicollinearity exists when the explanatory variables move together in systematic ways, and therefore impossible to isolate the relationship of the parameters of interest. Pesaran CD test for cross-sectional dependence detects multicollinearity, also the sample correlation coefficients between pairs of explanatory variables which indicates the degree of linear association between variables.

We test the hypothesis:

H_0 : There exists no linear relationship among the explanatory variables, versus

H_1 : There exists a linear relationship in at least one explanatory variable.

Based on the results if the Pesaran CD test Z statistic returns a p-value $\alpha < 0.05$ we do not reject H_0 at the 5% level of significance and infer that multicollinearity is present.

If the auxiliary regression's coefficient of determination (R^2) is high > 0.80 , this implies that a large portion of the change in the explanatory variable is explained by the change in the other explanatory variables and this affects the precision of the parameters; on the other hand the precision of the parameters is not affected by the problem if the auxiliary regression's R^2 is not high. If multicollinearity is present, one of the explanatory variables with a high correlation will be dropped.

Model Specification

To avoid omitted or inflated variable bias due to the omission of an important explanatory variable or inclusion of irrelevant variables that lead to an unbiased estimator.

We test the hypothesis:

H_0 : There exists no bias due to omission or inclusion of explanatory variable, versus

H_1 : There exists bias due to omission or inclusion of explanatory variable.

We will test the adequacy of the model using the Akaike, Schwarz and Hannan-Quinn information criteria, if the score increases after omission or inclusion of explanatory variable we do not reject H_0 and conclude that there exists no bias due to omission or inclusion of explanatory variable

Heteroscedasticity

Heteroscedasticity exists in a regression model when variances of the errors differ across observations. The existence of heteroscedasticity constitutes a violation of one of the least squares assumptions, this will be detected using the Distribution free Wald test for heteroscedasticity if present the model will be transformed with one that has homoscedastic errors to give best linear unbiased estimators.

We test the hypothesis:

H_0 : Variances of the errors do not vary across observations, versus

H_1 : Variances of the errors do vary across observations.

Based on the results if the Distribution free Wald χ^2 test returns a p-value $\alpha < 0.05$ we do not reject H_0 at the 5% significant level and conclude that the variances of the errors do vary across observations

Autocorrelation

In time series data, there is a likelihood of a variable to exhibit correlation over time, that is, the correlation between consecutive errors or errors separated by some other number of periods. When this happens it is often a symptom of a badly misspecified model that can be improved. The Durbin-Watson statistic will provide a test for significant residual autocorrelation, if present we will use least squares with heteroscedasticity and autocorrelation consistent standard errors, to overcome the negative effects that autocorrelated errors have on least squares standard errors.

We test the hypothesis:

H_0 : Variable does not exhibit correlation over time, versus

H_1 : Variable exhibits correlation over time.

Based on the results if the Durbin-Watson statistic value is less than the lower bound we do not reject H_0 at the 5% significant level and conclude that autocorrelation does not exist.

3.5.7 Goodness of Fit

Once the validity of the model has been confirmed, we will measure the amount of variation explained by the significant independent variables. The least square dummy variable model (LSDV) adds a dummy variable for each company and thus presents a reliable way to interpret fixed effects as it estimates the explanatory variable's pure effect by regulating for the unobserved diversity, as every dummy absorbs particular effects of every company. The R-Squared LSDV will provide the unbiased amount of variation explained by the independent variables.

3.5.8 Parameters Inference

We will also need to examine each of the parameters and test for their significance on whether or not they are supported by the data. A t-test is used to carry out the test at the $\alpha=0.05$ significant level. If the t-test p-value returns a value less than 0.05 it confirms the relevance of a particular explanatory variable to be included in the model and vice-versa.

Once the above assumptions are met we can now fit the regression model and make deductions on the parameters, that is, the unit change effect of an explanatory variable on the response variable holding constant the other factors.

4 Data Analysis and Interpretation

4.1 Introduction

This section presents the study findings along with the analysis and the authors' interpretation, the main objective of this chapter is to provide answers to the main and specific objectives of the study.

4.2 Descriptive Statistics

To describe the characteristics of the collected data, for the 5 years under investigation, descriptive statistics were used

Return on assets from 179 observations over the period 2013 to 2017 had an average of 4.56% and a standard deviation of 6.92% with a minimum of -16.4% and a maximum of 35.7%.

Similar details of the response variables are displayed in table below.

	N	Minimum	Maximum	Mean	Std. Deviation
Return on assets	179	-.164	.357	.04559	.069220
Retention ratio	178	.224	.988	.71407	.168921
Liquidity	177	.938	4.484	1.62854	.462596
Company Size	179	20.357	23.612	22.06097	.787287
Shareholder equity ratio	178	.031	.978	.35921	.147751
Loss Ratio	178	.206	1.316	.57268	.159465
Expense ratio	177	.303	2.050	.62938	.265626

4.3 Correlation Analysis

To establish the linear relationship between the variables Pearson correlation coefficient was applied.

Table below summarizes the results.

	Return on Assets	Retention Ratio	Liquidity	Company Size	Shareholder Equity Ratio	Loss Ratio	Expense Ratio
Return on Assets	1						
Retention Ratio	.042	1					
Liquidity	.223**	-.054	1				
Company Size	.068	-.088	-.363**	1			
Shareholder Equity Ratio	.207**	-.064	.918**	-.392**	1		
Loss Ratio	-.294**	-.290**	-.216**	.374**	-.214**	1	
Expense Ratio	-.269**	-.515**	.352**	-.364**	.200**	-.028	1

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

Return on assets has a positive significant relationship with liquidity and shareholder equity ratio; a negative significant relationship with expense ratio and loss ratio; and no significant relationship with retention ratio and company size.

4.4 Panel Data Regression Analysis

A panel data regression model was used to investigate the relative effect of retention ratio, liquidity, company size, shareholder equity ratio, loss ratio and expense ratio on return on assets.

The first panel fixed effects model used 176 observations from the 37 cross-sectional units for a period of 5 years, the dependent variable is "Return on Assets". Results are presented in the table below:

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	1.39237	0.445945	3.122	0.0022	***
Retention Ratio	-0.0532365	0.103160	-0.5161	0.6067	
Liquidity	0.0698334	0.0362134	1.928	0.0559	*
Company Size	-0.0584368	0.0200456	-2.915	0.0042	***
Shareholder Equity Ratio	-0.0540514	0.135297	-0.3995	0.6902	
Loss Ratio	-0.141843	0.0400611	-3.541	0.0006	***
Expense Ratio	-0.0494076	0.0480810	-1.028	0.3060	

Mean dependent var	0.047415	S.D. dependent var	0.067478
Sum squared resid	0.377831	S.E. of regression	0.053299
LSDV R-squared	0.525824	Within R-squared	0.245378
LSDV F(42, 133)	3.511589	P-value(F)	2.08e-08
Log-likelihood	290.9206	Akaike criterion	-495.8413
Schwarz criterion	-359.5105	Hannan-Quinn	-440.5462
rho	-0.145757	Durbin-Watson	1.784681

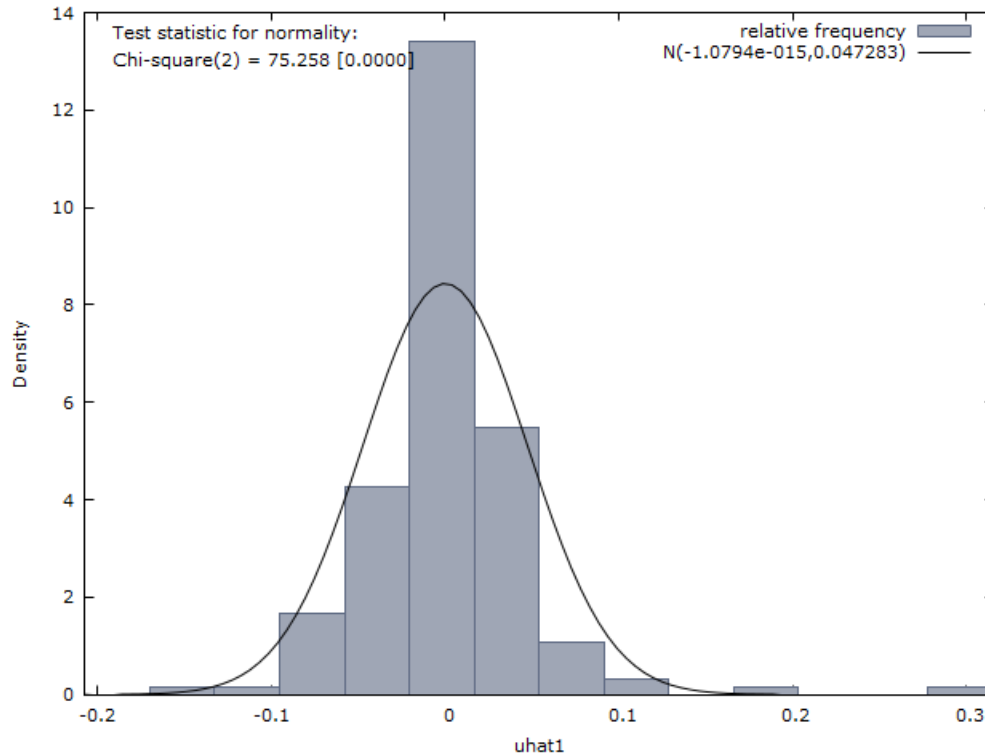
The model produced p-value (F) of 2.08e-08, which is less than the level of significance. This shows the significance of this regression model at 95% confidence level.

4.4.1 Model Diagnostics

This entails statistical checks to ascertain the assumptions of multiple linear regression analysis

Normality

The normal distribution curve below is bell-shaped and symmetric about the center; this indicates normally distributed residuals. Also, the chi-square test statistics $\chi^2(2) = 75.2582$ with p-value = 4.54881e-017, which is smaller than the significance level, therefore the hypothesis of normality is not rejected. This implies that the parameters of the multiple linear regression model will be accurate.



Heteroscedasticity

Distribution-free Wald test for heteroskedasticity chi-square test statistic $\chi^2(35) = 20159.8$ with a zero p-value, which is lower than the significance level, therefore we do not reject the hypothesis of heteroscedasticity and infer that variances of the errors do not differ across observations.

Multicollinearity

The Pesaran CD test tested for multicollinearity, the Z statistic returned a value of 1.934846 with a p-value of 0.053, which is larger than the significance level and thus we reject the multicollinearity hypothesis and conclude that there exists linear relationship in at least one explanatory variable.

Correlation analysis results shows that shareholder equity ratio and liquidity are highly associated with $R^2 = 0.918$, which is higher than the set limit of 0.80. Since shareholders

equity ratio is not significant at 95% confidence level ($p\text{-value} < 0.05$) in the first fixed effects panel model it was dropped.

The second panel fixed effects model after dropping "shareholders equity ratio" used 177 observations from the 37 cross-sectional units for a period of 5 years, the dependent variable is "Return on Assets". Results are presented in the table below:

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	1.29897	0.436705	2.974	0.0035	***
Retention Ratio	-0.0629662	0.102990	-0.6114	0.5420	
Liquidity	0.0601706	0.0195607	3.076	0.0025	***
Company Size	-0.0545539	0.0196381	-2.778	0.0062	***
Loss Ratio	-0.139921	0.0394362	-3.548	0.0005	***
Expense Ratio	-0.0341777	0.0471317	-0.7252	0.4696	

Mean dependent var	0.046289	S.D. dependent var	0.068934
Sum squared resid	0.384780	S.E. of regression	0.053388
LSDV R-squared	0.539916	Within R-squared	0.241608
LSDV F(41, 135)	3.864010	P-value(F)	1.79e-09
Log-likelihood	291.4619	Akaike criterion	-498.9238
Schwarz criterion	-365.5255	Hannan-Quinn	-444.8227
rho	-0.102963	Durbin-Watson	1.718804

The model produced p-value (F) of 1.79e-09, which is less than the level of significance. This shows the significance of this regression model at 95% confidence level.

Model Specification

After dropping the shareholders' equity ratio variable, the Akaike, Schwarz and Hannan-Quinn information criteria have improved, this implies that there is no bias due to the omission of the explanatory variable, thus it is not important.

Autocorrelation

The Durbin-Watson statistic has a value of 1.718804 since this value lies between the upper and lower bounds, the test fails to tell if there is autocorrelation or not, thus there exists no proof of autocorrelation presence.

5% critical values for Durbin-Watson statistic, $n = 177$, $k = 5$

$$dL = 1.6964$$

$$dU = 1.8124$$

Multicollinearity

Model 2 Pesaran CD Z test statistic returned a value of 2.2091 with a p-value of 0.0271675, which is less than the level of significance, implying no Multicollinearity.

4.4.2 Restricted Model

This is the model that has been obtained by ensuring that the multiple linear regression model assumptions hold implying that the least square estimates are Best Linear Unbiased Estimators (BLUE).

The initial model to be estimated for financial performance was expressed as follows:

$$ROA = \beta_0 + \beta_1 LER + \beta_2 RR + \beta_3 LQ + \beta_4 CS + \beta_5 SER + \beta_6 LR + \varepsilon.$$

Where: ROA is the estimated composite index of financial performance, β_0 is a regression constant or intercept, β_{1-6} are the regression coefficients. ER represents the Expense Ratio; RR is Retention Ratio LQ is Liquidity Ratio; CS is Company Size; SER is Shareholders Equity Ratio; LR is Loss Ratio and ε is a random error term.

The study ensured that the multiple linear regression model assumptions are met and this saw the dropping of Shareholders Equity Ratio variable due to a high correlation with Liquidity Ratio.

The model is further reduced by removing the non-significant variables of the Expense Ratio and Retention Ratio. In this reduced model the model specification tests; Akaike, Schwarz and Hannan-Quinn information criteria have improved implying no bias due to the omission of the explanatory variables.

The reduced model that meets all the multiple linear regression model assumptions is now given by:

$$ROA = \beta_0 + \beta_3 LQ + \beta_4 CS + \beta_6 LR + \varepsilon.$$

Using the reduced model we can now fit and make deductions about the parameters of the regression model.

The third panel fixed effects model after dropping "Expense and Retention Ratios" used 177 observations from the 37 cross-sectional units for a 5 year period, the dependent variable is "Return on Assets". Results are presented in the table below:

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	1.23591	0.416191	2.970	0.0035	***
Liquidity	0.0624344	0.0192023	3.251	0.0014	***
Company Size	-0.0548690	0.0186421	-2.943	0.0038	***
Loss Ratio	-0.140476	0.0390793	-3.595	0.0005	***

Mean dependent var	0.046289	S.D. dependent var	0.068934
Sum squared resid	0.386450	S.E. of regression	0.053111
LSDV R-squared	0.537920	Within R-squared	0.238318
LSDV F(39, 137)	4.089363	P-value(F)	5.37e-10
Log-likelihood	291.0788	Akaike criterion	-502.1576
Schwarz criterion	-375.1116	Hannan-Quinn	-450.6327
rho	-0.083204	Durbin-Watson	1.677306

The model produced p-value (F) of 5.37e-10, which is less than $\alpha=0.05$ significant level thus, the regression model is significant at 95% confidence level.

The chi-square normality test statistics $\chi^2(2) = 67.9479$ with p-value = 1.75911e-015, which is less than the $\alpha=0.05$ level of significance, therefore we do not reject the null hypothesis and infer that errors are normally distributed thus the OLS multiple regression model assumption holds.

The distribution free Wald test for heteroskedasticity chi-square test statistic $\chi^2(35) = 23304.9$ with p-value = 0 thus, we do not reject H_0 and conclude that the units have a common error variance

The Pesaran CD test for cross-sectional dependence test statistic: $z = 2.35593$ with p-value = 0.0184765 thus, we do not reject H_0 and conclude no cross-sectional dependence

The autocorrelation Durbin-Watson statistic returns a value of 1.677306 which lies below the lower bound of the 5% critical values for Durbin-Watson statistic, $n = 177$, $k = 3$: $dL = 1.7197$; $dU = 1.7886$ implying no autocorrelation.

From the Model, the regression equation established is:

$$\widehat{\text{ReturnonAssets}} = \underset{(0.41619)}{1.23591} + \underset{(0.019202)}{0.0624344} \text{Liquidity} - \underset{(0.018642)}{0.0548690} \text{Company Size} - \underset{(0.039079)}{0.140476} \text{Loss Ratio}$$

$$T = 177 \quad \bar{R}^2 = 0.2383 \quad F(39, 137) = 4.0894 \quad \hat{\sigma} = 0.053111$$

(standard errors in parentheses)

To examine the significance of the regression model we test the significant differences in means of the response and explanatory variables, in this case, analysis of variance is used. An F-value of 4.089363 was produced by the ANOVA test significant at $p=0.000$. This proves the fitness of the regression model and it is appropriate to make deductions about the parameters at a 95% level of confidence.

An LSDV R-squared value of 0.537920 was established, this measures the overall strength of association controlling for inter-company heterogeneity. The coefficient of determination depicts that liquidity, company size, and loss ratio bring about 53.8% variations in overall success in return on assets.

While controlling for inter-company heterogeneity, from the above regression model, when Liquidity, Company Size, and Loss Ratio have null value; Return on Assets would be 1.23591 (123.6%)

Holding other factors constant and controlling for inter-company heterogeneity, an increase of Liquidity by one unit would result in a 0.07624344 (7.6%) increase in Return on Assets. A t-ratio of 3.251 and a p-value of 0.0014 was established which is lower than the significance level thus the relationship is statistically significant at a 95% level of confidence.

Holding other factors constant and controlling for inter-company heterogeneity, a unit increase in Company Size (Natural log of total assets) would cause a 5.34% ($1 - \exp$ -

0.0548690)% decrease in Return on Assets. A t-ratio of -2.943 and a p-value of 0.0038 was established, lower than the significance level thus showing the existence of a statistically significant relationship at a 95% level of confidence.

Holding other factors constant and controlling for inter-company heterogeneity, a unit increase in Loss Ratio would result in a 0.140476 (14.05%) decrease in Return on Assets. A t-ratio of -3.595 and a p-value of 0.0005 was established, lower than the level of significance thus the relationship is significant at a 95% confidence level.

4.5 Results Discussion

The study investigated the relationship between the financial performance of non-life insurance companies and the expense ratio. In this study, the expense ratio is realized by dividing commissions and management expenses with net earned premiums. Results from the correlation analysis show that the expense ratio has a negative significant association with ROA at $\alpha=0.01$ significance level. With regards to regression, the coefficient value is negative but insignificant at 95% confidence level with a p-value of 0.4696 and a t-ratio of -0.7252 which is smaller than the significant value. As such, there exists no statistical relation between expense ratio and ROA. In agreement with these results, the findings of Saeed and Khurram (2015) indicated that there exists an inverse relation but insignificant.

The retention ratio is a coarse measure in regards to how much risk is being accepted by an insurer, thus, not passing it to reinsurers, retention ratio in insurance is measured as the ratio of net written premiums and gross written premiums. It was established that retention ratio and ROA have no significant relationship. The coefficient value is not significant at a 95% confidence level since it has a p-value of 0.5420 and a t-ratio of -0.6114 which is smaller than the critical value. Thus, the retention ratio has no significant relationship with the financial performance of non-life insurance companies in Kenya. In line with this study findings, previous studies (Mwangi and Iraya, 2014; Borome, 2015; Kinyua, 2018) had established that retention ratio was not directly related to the financial performance of Kenyan insurance firms.

Liquidity in insurance is the capacity of an insurer to cover its policyholders without converting to cash their financial assets or increasing their profits through the underwriting process (Chaharbaghi & Lynch, 1999). In this study, the insurance firms' level of Liquidity was measured through Current Assets/Current Liabilities. Statistical findings indicate that return on assets is positively and significantly related to liquidity, a t-ratio of 3.251 and a p-value of 0.0014 was established this is lower than the level of significance.

By using a standardized coefficient and holding other factors constant, and controlling for inter-company heterogeneity a liquidity's unit increase would result in a 0.07624344 (7.6%) rise in the Kenyan non-life insurers financial performance. Therefore, liquidity significantly impacts the return on assets. In a similar vein, Wainaina (2016) study findings indicated that insurances financial performance has been significantly affected by liquidity ratios with a positive correlation.

The study also tested the relationship between insurance company size and their performance financial. The natural log of total assets was used in this study to compute company size. Correlation analysis revealed that there is no direct association or ROA and company size at $\alpha=0.05$ significance level. With regards to regression analysis, company size was significant at a 95% confidence level. The t-value was -2.943 which is greater than the critical value. Holding other factors constant and controlling for inter-company heterogeneity, it was determined that a unit increment in company size would result in a 5.34% ($1 - \exp(-0.0548690)$)% decrease in Return on Assets. A t-ratio of -2.943 and a p-value of 0.0038 was established which is lower than the significance level thus there exists a statistically significant relationship at 95% level of confidence. Previous findings established that the company size was significantly affecting the financial performance of non-life insurers (Kaya, 2015; Ejigu, 2015; Kigen, 2015; Mumo,2017) though positively.

Loss ratio generally refers to gains from the ratio of losses. This study measured net claims incurred to net earned premiums. The study results revealed that ROA has a negative significant relationship with loss ratio. A t-ratio of -3.595 and a p-value of 0.0005 was established which is lower than the level of significance thus the relationship is statistically significant at 95% level of confidence. Holding other factors constant and controlling for inter-company heterogeneity, a unit increase in loss ratio would result in a 0.140476 (14.05%) decrease in return on assets. As such, the ROA of non-life Kenyan insurers is negatively and significantly influenced by loss ratio. In agreement with these results, Tesfaye (2016) and Dube and Mazviona (2017) study results indicated that loss ratio has a negative and significant effect on the performance of insurance firms. The positive and negative effects of loss ratio are not necessarily consistent, even though they seem to be dependent on the existing impact of the year's environmental condition as reported by Tesfaye (2016).

The shareholders' equity ratio as a determinant of financial performance of insurance firms has also been studied in the past. In this study, the shareholders' equity ratio was measured as total shareholder equity to total assets. Correlation analysis found that shareholders' equity ratio and ROA are statistically and positively related at $\alpha=0.01$ significance level; findings from the correlation analysis also showed that liquidity and

shareholder equity ratio are highly associated with $R^2 = 0.918$, which is higher than the set limit of 0.80 and the variable was dropped due to multicollinearity and also since it was not statistically significant at 95% confidence level in the initial model. Contradicting with these findings, Banafa, Muturi, & Ngugi (2015) found that shareholder's equity ratio has a significant negative impact on financial performance (ROA), Gharios, Hamdar, and Seissian (2016) established shareholder's equity ratio had a negative impact in regards to profitability (ROA).

5 Summary, Conclusion, and Recommendations

5.1 Introduction

This section presents this study's key summary findings; conclusions and recommendations based on the research objectives. It also provides suggestions for proposed areas of future research.

5.2 Summary

The Kenyan non-life insurance companies have been experiencing a decline in financial performance since 2015, to avoid the collapse of this important sector of the economy, the principal objective of the study was to investigate internal factors that are affecting the financial performance of non-life insurance companies in Kenya. Significance of each of the relationships between firm performance and six factors namely: expense ratio, retention ratio, liquidity, company size, equity capital, and loss ratio were assessed.

Data collected was mainly secondary data from audited financial statements of all the insurance companies in Kenya for the period 2013 to 2017 (5 years), compiled in the appendices of the Association of Kenya Insurers insurance industry annual reports under the statements of comprehensive income and statements of financial position. This data was operationalized into ratios for analysis.

To assess the prediction level of regression models and assess the link between the factors affecting insurance financial performance fixed effects panel data regression analysis was used. Model diagnostics were performed to ensure model validity before inference was done on the model and parameters. The shareholder equity ratio variable was dropped as it had a high association to liquidity violating the multicollinearity assumption. Two more variables expense ratio and retention ratio were dropped as they were insignificant in explaining ROA and confirmed that there was no misspecification bias due to the omission of explanatory variables.

Out of the six explanatory variables, the ones with significant relationships with the financial performance of non-life insurers in Kenya were liquidity, the company's size, and loss

ratio. A reduced model that meets all the multiple linear regression model assumptions were established.

To examine the significance of the regression model we test the significant differences in means of the response and explanatory variables, in this case, analysis of variance is used. An F-value of 4.089363 was produced by the ANOVA test significant at $p=0.000$. This proves the fitness of the regression model and it is appropriate to make deductions about the parameters at a 95% level of confidence.

An LSDV R-squared value of 0.537920 was established, this measures the overall strength of association controlling for inter-company heterogeneity. The coefficient of determination depicts that liquidity, company size, and loss ratio bring about 53.8% variations in overall success in return on assets.

The magnitude of each significant independent variable was examined; while controlling for inter-company heterogeneity, from the above regression model, when Liquidity, Company Size, and Loss Ratio have null value; Return on Assets would be 1.23591 (123.6%)

Holding other factors constant and controlling for inter-company heterogeneity, an increase of Liquidity by one unit would result in a 0.07624344 (7.6%) increase in ROA. A t-ratio of 3.251 and a p-value of 0.0014 was established which is lower than the significance level thus the relationship is significant at a 95% confidence level.

Holding other factors constant and controlling for inter-company heterogeneity, a unit increase in Company Size (Natural log of total assets) would cause a 5.34% ($1 - \exp(-0.0548690)$)% decrease in Return on Assets. A t-ratio of -2.943 at $p=0.0038$ was established, lower than the significance level thus showing the existence of a significant relationship at a 95% level of confidence.

Holding other factors constant and controlling for inter-company heterogeneity, a unit increase in Loss Ratio would result in a 0.140476 (14.05%) decrease in Return on Assets. A t-ratio of -3.595 and a p-value of 0.0005 was established, lower than the level of significance thus the relationship is significant at a 95% confidence level.

5.3 Conclusion

This study concludes that internal statistically significant factors that are affecting the profitability of non-life insurers in Kenya are liquidity, company size and loss ratio.

Liquidity (measured as current assets/current liabilities) has a significant positive effect on Kenyan non-life insurers financial performance.

Loss ratio (measured as a ratio of net claims incurred and net earned premiums) and Company size (natural log of total assets) have a significant negative effect.

The study does not relate the effect of retention ratio, expense ratio and shareholders equity ratio on performance of Kenyan non-life insurers.

5.4 Recommendations

The study recommends that for non-life insurers in Kenya to improve their financial performance in terms of return on assets, they should improve on loss ratio as a unit increase in loss ratio causes the highest decrease in return on assets. This can be realized by reducing net claims incurred, this can happen if the company boosts its operational efficiencies leading to a reduction in costs in servicing claims, eliminating fraudulent claims by embracing data sharing and adoption of digital ledger technologies.

The study showed that the relationship between liquidity and ROA is positive and statistically significant. Insurers should be able to cover their policyholders without converting to cash their fiscal assets or increasing their profits through the underwriting process. Therefore, cash and balances from the bank should be set aside to satisfy the current liabilities that are generated from claims that are not already settled and exceeded their payment deadlines. This will also enhance customer satisfaction and eventually more business and increased financial performance.

The statistical findings show that company size has a negative statistically significant relationship with ROA. In the recent past, large sized firms were more efficient by exploiting economies of scale as compared to small-sized firms. But currently with disruptive innovations due to the proliferation of new technologies and increasing customer demands, a company that embraces the new technologies and provides a good experience to its

customers will prosper despite the size.

5.5 Areas of Further Research

Based on the findings of the study 53.8% of the variation in ROA is brought about by three internal factors after controlling for the inter-company diversity namely: liquidity, company size, and loss ratio. There exist other internal factors that explain the other 46.2%, further research should be conducted to ascertain the other determinants.

Most previous studies have shown that company size has a significant positive relationship with financial performance. In this study even though there is no direct association of company size and financial performance, there exists a statistically significant negative relationship; this can be attributed to the insurance industry slowly facing a revolution with disruptive innovations due to the proliferation of new technologies and increasing customer demands, and no matter the company size if you do not embrace you perish unlike in the previous years. Therefore, researches need to frequently research on the factors affecting insurance companies profitability for stakeholders to make timely policy decisions.

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