EFFECT OF FRAUD RISK ON PROFITABILITY OF MOTOR VEHICLE INSURANCE FIRMS IN KENYA

BY
GRACE NDUTA NJAAGA

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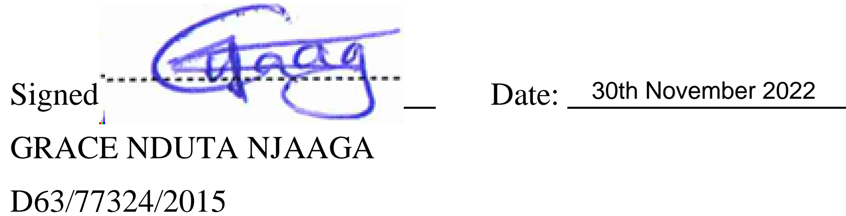
NOVEMBER 2022

DECLARATION

This research project is my original work and has not been presented for a degree in any other university.



Signed__________ Date: 30th November 2022

GRACE NDUTA NJAAGA

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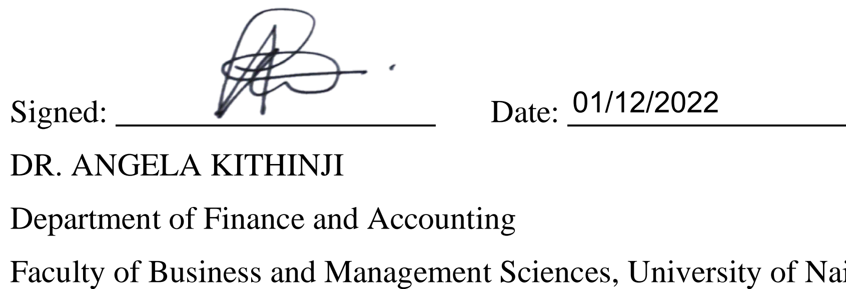
This research project has been submitted for examination with my approval as the University Supervisor.



Signed: ____________________ Date: 01/12/2022

DR. ANGELA KITHINJI

Department of Finance and Accounting

Faculty of Business and Management Sciences, University of Nairobi

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DEDICATION

I dedicate this project to my family. A special feeling of gratitude to my loving parents, Mr. Simon Njaaga Kungu and Mrs. Mary Njaaga,whose words of encouragement and push for tenacity ring in my ears and for their unwavering support towards my educational path.

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LIST OF ABBREVIATIONS

AKI	Association of Kenya Insurers
ANOVA	Analysis of Variance
DMB	Deposit Money Bank
IRA	Insurance Regulatory Authority
NDIC	Nigerian Deposit Insurance Commission
ROA	Returns On Assets
ROE	Returns On Equity
ROI	Returns On Investment
ROTA	Returns On Total Assets

ABSTRACT

The motor vehicle insurance subsector in Kenya has been experiencing reduction in their profitability levels. The sector has also experienced increased fraud cases that have led to the increased claims with the subsector contributing to more than 50% of the fraud cases in the insurance sector. The studies show research gaps in fraud risk and profitability of motor vehicle insurance firms in Kenya. This study sought to determine the effect of fraud risk on the profitability of motor vehicle insurance firms in Kenya. To meet the objective, the researcher adopted descriptive research design for 36 motor vehicle insurance firms in Kenya between 2017 and 2021. The study was based on secondary annual data, from annual reports of IRA between 2017 and 202, collected using data collection sheet. Analysis was done using descriptive and regression statistics. The research undertook normality, heteroscedasticity and Multicollinearity. The model significance was tested using F-statistics. This study was guided by collective risk theory and the fraud triangle theory. The outcomes exhibited that fraud risk possessed a negative effect on the profits of motor vehicle insurers. This leads to the conclusion that fraud risk has a negative effect on the profits of motor vehicle insurers in Kenya. The firms that have a high fraud risk ought to have low levels of profitability. Outcomes further show that liquidity possessed a positive effect on firm profits. This study concludes that liquidity possess a positive effect on firm profits of motor vehicle insurers in Kenya. Further, firm leverage possessed a positive effect on profitability of motor vehicle insurers. This study concludes that firm leverage possesses a positive effect on profitability of motor vehicle insurers in Kenya. The study recommends that motor vehicle insurers in Kenya reduce their fraud risk by reducing the claims and increasing the premiums earned by the firms; come up with controls that would reduce fraudulent claims; increase their liquidity levels; and increase their level of leverage.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

In the present-day competitive business atmosphere, organizations are faced with more risks as they endeavor to improve profitability levels (Mandal, 2019). An institution's degree of return is directly connected to degree of risks company encounters; hence it can only be prosperous if it can successfully manage a spectrum of risks or incentives which go along therewith this (Abdelaziz, Rim & Helmi, 2022). The issue of fraudulent incidents have emerged into a major concern for enterprises, within developed and developing world. Insurance companies experience high levels of fraudulent claims which create financial losses hence creating profitability challenges within the firms.

This study was guided by two theories that relate to insurance fraud namely; the Cramer's (2000) collective risk theory and the fraud triangle theory (Cressey, 1953). In a well-presented fraud triangle, the three factors are interrelated in one way or another, for example, the more prominent the apparent opportunity is, or the more extraordinary the condition of pressure is, the less rationalization it takes for a person to confer fraud act (Albrecht, Turnbull, Zhang, and Skousen, 2010). The fundamental concern in Cramer's collective risk concept is not really benefits, costs, or claims of specific plans, but rather the level of aggregate claims or even total profit emanating from across overall policies inside the portfolios under consideration.

Motor insurance segment in Kenya comprises of private and commercial motor insurance. The segment has been growing in the last decade, such that in the year 2021, the total premiums collected was Ksh. 47.24 billion, a 6% increase from 44.74 billion in 2017 (IRA, 2021). During the same period, the total insurance underwriting expenses was Kshs 28.06 billion which was an increase of 14.94% in the same period ended December 2016. According to the IRA (2021), the net insurance claims for the motor vehicle insurance has been increasing in the last five years with claims that can be considered fraudulent increasing from Kshs 25.5 billion in 2017 to Kshs 35.4 billion in 2021.

Data from the Insurance Fraud Investigation Unit (2021) exhibited that motor vehicle insurance accrued for more than 50% of the fraud cases within the general insurance sector. In fact, fraud has progressed through times in the majority of Kenya's automotive insuring organizations, through simple complete loss of automobiles and death claims towards bogus stereo installations even windscreens. Instances in which the volume of applicants

exceeds a vehicle's transporting limits or involves numerous insurance plans have been raised for motorized subsector. Thus, the increasing cases of fraud in the motor sector in Kenya have been a cause of concern not only to the insurance firms but also to the government (Association of Kenya Insurers [AKI], 2021). Therefore, there was need to understand how fraud risk influence the profitability of the motor vehicle insurance industry in Kenya.

1.1.1 Fraud Risk

According to Rezaee and Riley (2011), fraud entails the employment of deceit with goal of acquiring an unfair position, getting out of commitment, or harming some parties. According to Duffield and Grabosky (2001), fraud stands an unlawful act that includes deceit (liek purposefully distorting the truth or concealing a material fact) in gaining an unjustified edge over some person with the ultimate goal of securing anything of substantial value or depriving this other person of a privilege. Power (2013) describes fraud risk as chance of unanticipated monetary, physical, or reputational damage as a product of deceptive practices by people inside or outside any business. Derrig (2002) characterized fraud risk as the costs brought on by an unlawful action which entails obtaining monetary gain via misrepresentation of real status. According to Boateng, Boateng, and Acquah (2014), fraud risk is chance that a consumer or a 3rd paryty obligor would commit fraud, do harm, or something else malevolent through an effort to reduce or lose the entire debts that are susceptible to collections.

Inside the insurance sector, fraud happens in a number of diverse approaches. According to Vieane and Dedene (2015), fraud inside motorized business can assume the shape of insurer company employees manipulating systems that pays corrupt people, forge records, posing as legitimate policyholders, or simply embezzling from claimants. From Bond and Crocker (2007), insurer fraudulent activities could be broadly divided as premeditated and opportunism deception. Meticulously planned fraud is typically committed by a single person to take advantage of insurer, and it has been frequently performed with the assistance of a worker of such an insurer. However, those that have suffered a losses and attempt to shift their expenses to insurer are committing opportunism fraud. Exaggerating claims is by far the primary common type of opportunism fraud, which can be committed by one consumer independently or alongside a network operator or other legitimate entity (Vieane et. al. 2015). The loss ratio was used to calculate the fraud risk.

1.1.2 Profitability

The performances of an institution’s entire losses and profits is related to it's own profitability. Profitability refers to how well a company achieves its objectives while minimizing hazards. Ball et al (2015) defined profitability is defined as a firm’s capacity to provide a return on an investment depending on its resources in comparison to an alternative investment. On the other hand, Mijić, Nuševa and Jakšić (2018) termed profitability as the return from investment of idle cash. Profitability is defined by Işık (2017) as the aptitude of specified investments to make a return from its usage. Hadani and Coombes (2015) defined profitability as the variance amid incomes and expenses acquired throughout the accounting timespan.

For businesses to make informed decisions and assess the efficacy of company strategy, it's indeed essential that they examine overall performances. Eshna (2016) asserts that numerous parties, including stockholders, managers, and creditors, value knowledge about profitability. Consequently, it really is crucial for businesses conduct frequent financial evaluation to ascertain if the business is functioning at a profitability or a loss. Alarussi and Gao (2021) notes that profitability is a key factor for smooth running of the business in a competitive environment. Profitability is also necessary for a financial institution for continued operations and reasonable returns for shareholders (Yuanita, 2019). Husain and Sunardi (2020) noted that, for many firms, Among the more crucial aspects of finance accounting is profitability. As it offers a distinct indicator of organizational performances, profitability is crucial to company's management, stockholders, or other relevant individuals or parties connected to company.

Profitability ratios are the key measures of profitability of a firm. They include the return on assets (ROA), return on equity (ROE), return on investment (ROI), return on total assets (ROTA), return on invested capital and return on capital (Ceylan et al, 2018; Hagel, 2019; Ikbal, 2019). Hagel (2019) measured profitability through on returns on assets, ROE and returns on total assets (ROTA). Ikbal (2019) used net profit margin as the measure of profitability. This study used ROTA to measure profitability.

1.1.3 Fraud Risk and Profitability

Theoretically, fraud risk leads to losses which in turn reduce firm profitability. Fraud triangle theory states that firms that face high fraud risks experience deteriorating profitability due to increased financial losses through fraud. Despite the theoretical

assertion, fraud risk has empirically produced mixed results on profitability where some studies have shown negative effect with others showing insignificant effect on profitability. Chepkoech and Rotich (2017) found that fraud risk negatively affected profitability. However, Kiragu (2019) found that fraud risk had an inconsequential consequence on profitability. Falade and Oyedokun (2022) found that fraud risk influenced profitability of firms insignificantly.

1.1.4 Motor Vehicle Insurance Firms in Kenya

The Kenyan insurer business is generally regulated by Insurance Regulatory Authority (IRA) and managed by the laws and principles provided in the constitution of Kenya under the Insurance Act, Cap 487 that is housed under the Ministry of Finance. The motor vehicle insurance forms the largest bulk of the insurance firms in the country. The motor vehicle insurance in Kenya is a key segment in the overall insurance industry with 38 out of the 53 insurance firms in the country offering the product and forms more than 30% of the sector's total premium as at 2021. The motor insurance involves the private and commercial motor vehicles (IRA, 2021).

According to IRA (2021), the motor vehicle insurance segment is one of the products that are riskier compared to the other segments because of the number and value of claims lodged. Indeed, the risk is higher for commercial PSV motor vehicles, with only 11 out of the 38 insurance firms offering insurance cover to the commercial PSV vehicles. Indeed, the motor private segment registered a net underwriting loss of Ksh 3.47 billion in 2021 and this was attributed by among other the high level of fraud (AKI, 2021). However, the private motor vehicles have overtaken the commercial vehicles as shown by underwriting loss of 6.16 billion in 2021. This can be attributed to the refocus by the insurers on the private motor insurance where the fraud seems to have shifted. Consequently, there is need to investigate the motor vehicle insurance fraud risk and its influence on the profitability of the insurance firms because it expected that fraud risks possessed significantly adverse bearing on profitability.

1.2 Research Problem

Fraud risk poses significant and costly challenge for both policy holders and insurance companies (De Leeuw, 2014). For the genuine policy holders that are faced with the insured risk, existence of fraud delays the settlement of claim while to the insurance firms, fraud cases leads to high settlement cost to a company and eventually affecting the firms'

profitability. However, Doig and Levi (2013) highlight that despite the increase in fraud prevention budget and policies introduced, the sophistication and volume of fraudulent claims has been raising over the years, more so, electronic fraud. According to Ndwiga et al., (2012), fraud risk limit the profitability of insurance firms through increased costs in terms of fraudulent claims.

The motor vehicle insurance subsector has been experiencing reduction in their profitability levels. The underwriting loss increased within the last five years from Ksh. 1.997 billion in 2017 to an underwriting loss of Ksh. 9.493 billion in 2021 (IRA, 2021). Despite the increase in gross premiums from 44.74 billion in 2017 to 47.24 in 2021, the subsector experienced reduced net premiums in the last five years. The underwriting expenses have also been rising among the insurers. The net claims have increased especially for the motor vehicle subsector. They increased from Kshs 25.5 billion in 2017 to Kshs 35.4 billion in 2021 for the subsector. The fraud cases have led to the increased claims with the motor vehicle subsector contributing to more than 50% of the fraud cases in the general insurance sector (AKI, 2021).

Verma and Singh (2017) did an experimental examination of influence of frauds on profitability of Indian public sector bankers. The investigation established frauds possessed a substantial consequence on profitability. Further, Salami and Olabamiji (2021) did a study on the effect of fraud on profitability of traded deposit money banking institutions in Nigeria with fraud possessing inverse and substantial consequence on profitability. Falade and Oyedokun (2022) studied claims payment and financial performances of traded Nigerian insurers with fraud having an inconsequential consequence on profits. Locally, Ndolo (2018) studied baering of fraud management practices on profitability in insurers; Kiragu (2019) examined drivers of motor vehicle insurance fraud risk; while Gathu (2018) studied influences of frauds risks management on net incurred medical claims in Kenyan insurers.

The local studies done in the area of fraud and profitability have shown various gaps that exist in the area. The studies show conceptual gaps where the researchers looked at different variables other than fraud risk and profitability. The studies also exhibited contextual gaps. In this case, the researchers undertook their studies in different sectors other than the motor vehicle insurance sector. The studies also exhibited gaps relating to the research methodologies adopted. The studies adopted different data sources, data

analysis and data collection techniques compared to the current study. The researchers also undertook their studies based on different data collection periods other than 2017 through to 2021. What is the effect of fraud risk on profitability of motor vehicle insurers in Kenya?

1.3 Research Objective

To determine the effect of fraud risk on the profitability of motor vehicle insurance firms in Kenya

1.4 Value of the Study

This investigation will make a contribution to practice. For this case, outcomes will be valuable to managers of Motor vehicle insurance organizations as well as other insurance firms. This study would provide information on how profitability would be affected by the fraud risk within these firms. This information would enable managers of these organizations to establish relevant policies and tactics enabling them to limit the effect of fraud risk for improved financial performance. The recommendations given by this study would also support the fraud risk management strategies among the Motor vehicle insurance firms. This would in turn support the profitability goals within the firms.

This study will make a contribution to policy. In its contribution to policy it would be important to the policy developers like the IRA. The policy makers would understand how fraud risk among motor vehicle insurers in Kenya affects their profitability. The policy makers would come up with relevant policies that would protect the insures from the fraud risks. The policies would also be geared towards supporting the organizational policies and procedures towards management the fraud risk in an attempt to remain profitable and increase their contribution to the economy.

The study will also contribute to theory. The study will make this contribution through provision of literature relating to fraud risk and firm profitability. This study will be a source of literature which would be valuable to the academicians. The academicians would find it easy to handle any assignment related to fraud risk and firm profitability as this study would offer the necessary information. Other researchers may also find this study important as a basis for further research. This study may have research gaps that other researchers may endeavour to fill in pursuant for more researches.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature prevailing in area of fraud risk and profitability. The chapter also reviewed the theories related to fraud risk. The determinants of profitability are also discussed. The conceptual framework was also indicated in the study.

2.2 Theories

2.1.1 The Fraud Triangle Theory

Cressey (1953) extended the concept through arguing that there should exist a purpose underlying what humans undertake. Those 3 components which make up a fraud are anticipated opportunities, believed compulsion, and lastly justification of false action. The fraud triangle is indeed the consequence of three elements. According to Albrecht, Turnbull, Zhang, and Skousen (2010), the three elements are straightforward because there are lesser likelihoods of somebody being spotted steering fraud in just about any situation once chance of imagined chance or weight is significant. Nevertheless, since fraud is indeed a consequence of many different behaviors, it possesses distinctively complex property which renders fraud hard in spotting & eradicating (Rae & Subramaniam, 2008). Understanding ways fraud is encouraged by anticipated opportunities, competition, and rationality inside a corporation could, to larger degree, aid exertions to lessen fraud, uncover susceptible spaces wherever fraud might happen, and urge protection of such susceptible spots (Albrecht et al., 2008).

Fraud perpetrators need a clear chance to commit crime; opportunities include things like weak top management teams, weak internal controls, or aptitude to fleece fraud beneath complex dealings. (Albrecht and others, 2009) Inadequate controls, control obfuscation which anticipates or identifies falsified behaviour, the incapability to discern the essence of results, the incapability to penalize fraud perpetrators, lack of relevant data, ignorance, inadequacies, and the utter lack of such an independent review trail are a few of the aspects that end up making a chance an attribute that helps foster fraud operations (Albrecht et al., 2009). Conversely, opportunities pose a dilemma as it permits scammers to work without restrictions within a company (Rae & Subramaniam, 2008).

A fraud could happen because of inadequate checks or even the leadership's ability to suspend checks (Vona, 2012). Additionally, when a worker develops a degree of

confidence in a company or even where organizational safeguards remain ineffective, chances for fraud may appear. The propensity of establishments to depend on limited long-terms staff members that ultimately get autonomy and power and consequently possess easy full rights to financial assets and a comprehensive understanding of structure operations and how to perpetrate fraud successfully increases the chance for theft (Kelly & Hartley, 2010).

2.2.2 Collective Risk Theory

The risk theory was advanced by Cramer (2000) and makes usage statistical simulations to explain how susceptible an underwriter would be to disaster or bankruptcy. With major attention not on profits, loss, or claims of specific policies, but instead on overall levels of added claims or overall gains emanating from across the policy initiatives inside the portfolios under consideration, collective risk theory strives to objectively study the risks business overall. The commercial risks are those types of risks that are attendant upon general economic fluctuations and poor investment decisions. Insurance risks, on the other hand, are unadulterated risks in a class by themselves and are correlated with risk variations as determined by the discrepancy amongst existing and anticipated claim quantities. Cramer (2000) divided insurer hazards into 2 groups: exogenous hazards, like the possibility of significant surplus death brought on by conflicts and outbreaks, and stochastic variations, which could be brought on by a high quantity of cases, especially big claim values, or perhaps both.

The central emphasis wasn't on the profits, costs, or claimants resulting from specific products, but instead on the overall quantity of cases or aggregate gain resulting from many policy initiatives inside the portfolios under consideration. The collective risk theory is therefore interested in determining the distributions of total increase or the overall sum of demands in a portfolios or risk business as well as determining the likelihood that what a risky company's current risk reserves would run out (Schemetter, 2005). This theory established a balance between premium inflows against claims or loss as a measure of fraud risk from in Motor insurance firms.

2.3 Determinants of profitability of Motor Vehicle Insurance Firms

2.3.1 Fraud Risk

Fraud risks increase the financial losses within a firm which causes a reduction in the net income. Fraud triangle theory states that firms that face high fraud risks experience deteriorating profitability due to increased financial losses through fraud. Theoretically, therefore, fraud risk negatively affects firm profitability. Empirically, Chepkoech and Rotich (2017) indicated a fraud negative effect on profitability. However, Kiragu (2019); and Falade and Oyedokun (2022) insignificant effect.

2.3.2 Firm Liquidity

Liquidity relates to how assets easily assets are convertible to cash (Culham, 2020). Madushanka and Jathurika (2018) recommends that firms need to balance their level of liquidity in order to enhance their profitability. Firm liquidity has been established as a factor that affect firm's profitability (Raykov, 2017). Markonah, Salim and Franciska (2020) indicates that liquidity is measured through liquidity ratios. This makes the study adopt liquidity ratio as a measure of liquidity in this research.

Furthermore, it is reasonable to believe that the more liquid a company is, the smaller the risk connected with it, and thus the more liquid a corporation is, the less profitable it is. This implies that as liquidity increases, profitability declines. To maintain enough liquidity, avoid risks, and increase profitability, the commercial enterprise's working capital situation must be balanced (Panigrahi, 2019). Panigrahi (2019); and Alrabadi, Al Salamat and Hatamleh (2021) produced direct linkage around liquidity and profitability. Hossin and Begum (2020) found liquidity possessed adverse bearing on profitability. Charmler (2018), however, found no relationship between liquidity and profitability.

2.3.3 Leverage

Leverage is a measure of how much a company relies on debt and equity to fund its operations (Ahmed, Awais & Kashif, 2018). Leverage rises in tandem with debt. The association between leverage and profitability has been observed in several studies. As a leverage metric, the firm's liabilities to assets ratio is utilized (Hoang & Phung, 2019). In insurance firms leverage is gauged as the ratio of deferred liabilities and total assets. Alarussi and Alhaderi (2018) exhibited a direct linkage around leverage and organizational profits while Samo and Murad (2019) produced inverse linkage. However, Sugiastuti, Dzulkirom and Rahayu (2018) found that an insignificant relationship existed between

leverage and profitability. This exhibits that leverage and profitability have a mixed relationship.

2.4 Empirical Studies

2.4.1 Global Studies

An analytical investigation of impact of frauds upon Indian banks was conducted by Verma and Singh (2017). Data got obtained from Indian Stats using a statistical study methodology. This time period covers an 11-year span, spanning 2005 to 2015. There were twenty six lenders in the dataset. The investigation was conducted using regression with aid of statistical packages E-Views. The analysis indicated that profits had been significantly impacted by number and intensity of fraud.

The claims payout and financial performances of listed insurer businesses in Nigeria were examined by Falade and Oyedokun (2022). The study's information was gathered using an ex-post component analysis approach from yearly statements of the businesses spanning years 2011 through 2019. This analysis's conclusions indicate that financials performances of insurer businesses in Nigeria is unaffected by net claims, net premiums, expenditures ratios, and risk-based capitalization. Accordingly, the investigation reached the conclusion that insurers must always times implement plans to assure effective administration of net claims, net premiums, and risk-based capitalization and delegate them to professionals to provide the desired outcome.

The impact of fraud upon that profits of public Nigerian deposit money lenders was examined by Salami and Olabamiji (2021). The investigation used public financial accounts from DMBs and secondary information taken from Nigerian Deposit Insurance Commission (NDIC) in accordance with an explanatory research approach. 14 identified DMBs were the subject of the investigation for just a six-year timeframe (2012-2017). For purpose of estimating the survey's modeling, panels multivariate regression approach was employed. The results demonstrated that fraud does indeed have a detrimental and considerable impact upon their profits.

The impacts of fraud on the performance of overall insurer business were examined by Otiso (2021). This essay used a comprehensive analysis of different relevant literary works. Both qualitative and quantitative pieces of research have been organized in a cohesive manner. The literature was reviewed using a funnel strategy, with worldwide topics coming first, then regionally, and ultimately localized. Several of the survey's outcomes revealed

contradictory conclusions, whereas others demonstrated that insurance fraud had a negative impact on the insurance business, meaning that even as fraud rises, performances falls, and conversely. Still other studies revealed a strong positive association.

2.4.2 Local Studies

A assessment on major banks' risk management and profits was conducted in 2021 by Gitonga and Barasa. The investigation made usage of secondary data that was gleaned from accounting records of banks for years 2014 through 2018. In attempt to arrive at the best outcome, the investigation ran a number of statistical and diagnostics. Regression modeling was adopted in testing the theory. The survey's discoveries displayed that liquidity risk and profit growth seemed to be adversely and substantially linked, credit risk and profit growth have been favorably and considerably linked, interest risk and profit growth exhibited a favorable and substantial affiliation, foreign exchange risk favorably but not substantially impacts the profit levels and there was a favorable and substantial association around capital management risk and profits.

Ndolo (2018) conducted research on how fraud management techniques affect the profits of insurer sector. Through the use of a standardized survey, primary information was obtained. Secondary data was gathered from 3 period of AKI's industrial stats. The net profit and total assets were composed from business statements in order to calculate the ROA, which is a measure of profitability. The top 15 general insurer firms were the ones selected. The report's conclusions demonstrated that requirement to uphold legislative and supervision requirements and there is a requirement to fulfill moral guidelines are what motivate insurers in Kenya to implement fraud risk management programs. Ultimately, the logistic analysis's findings exhibited that there's little connection across profitability and fraudulent management strategies.

Kiragu (2019) conducted research on the factors that increase the probability of motor vehicle insurance fraud using data from Kenyan insurance firms. The 28 general insurers with offices in Nairobi were really intended audience, and out of those, 84 responders worked in the claims processing, risk management, and automobile evaluation sections. A systematic survey were used to gather primary data. Although organizational characteristics do not have a scientifically substantial impact on fraud risk assessment,

macroeconomic environment and personal traits both revealed to substantially impact the probability of motor insurance frauds.

Chepkoech and Rotich (2017) investigated how Kenyan auto insurance fraud was affected by the risk management process. Thirty-three insurers that adversely affect their operations to motorized vehicles were the report's targeted audience, and a descriptive study design were employed for investigation. According to the investigation, there is indeed a strong correlation amongst Kenyan motor insurance fraud and vulnerability analysis, evaluation, reduction, and surveillance. According to the outcomes of the logistic analysis, the investigation indicated that all of the regressors have an impact on motor insurance fraud. The report's findings advise firms to closely evaluate how much companies implement alternative risk management measures because it's determined that these tactics have varying effects on vehicle insurance frauds.

Gathu (2018) investigated how fraud risk management strategies affected the amount of net medical claims in Kenya's insurance sector. The report's major goal was to gather information from medical insurers on their fraud risk management procedures. Furthermore, the Insurance Regulatory Authority was contacted for secondary information on net incurred claims ratios and sector benchmarking (IRA). Thru the Pearson correlation tests and linear regression, research statistics published helped identify any potential correlations across parameters. Corporate governance, fraud preventive procedures, fraud detective techniques, and fraud response & monitoring practices all significantly predicted survey's dependent variable, according to correlations. Market share, nevertheless, did not significantly affect overall percentage of net incurred claims.

2.5 Summary of Literature Review

The experimental studies reviewed around fraud risk and profitability. The studies show that fraud risk influence profitability in different ways. Some studies exhibited negative influence with others showing insignificant effect of fraud risk on profitability. The local studies have shown various gaps in the area of fraud risk and profitability of Motor insurance firms in Kenya. Conceptual gaps exist where the studies adopted different concepts and measures for the variables. Other studies were based on other firms other than motor insurance firms. The studies also adopted different research methodologies indicating methodological gaps. This research seeks to fill the gaps by undertaking research on the effect of fraud risk on profitability of motor insurance firms in Kenya.

2.6 Conceptual Framework

The conceptualization frameworks display affiliation among parameters. The investigation adopted profitability as dependent variables as measured by return on total assets (ROTA). Fraud risk was adopted as the dependent as measured by loss ratio. Firm liquidity and leverage were used as the control variables.

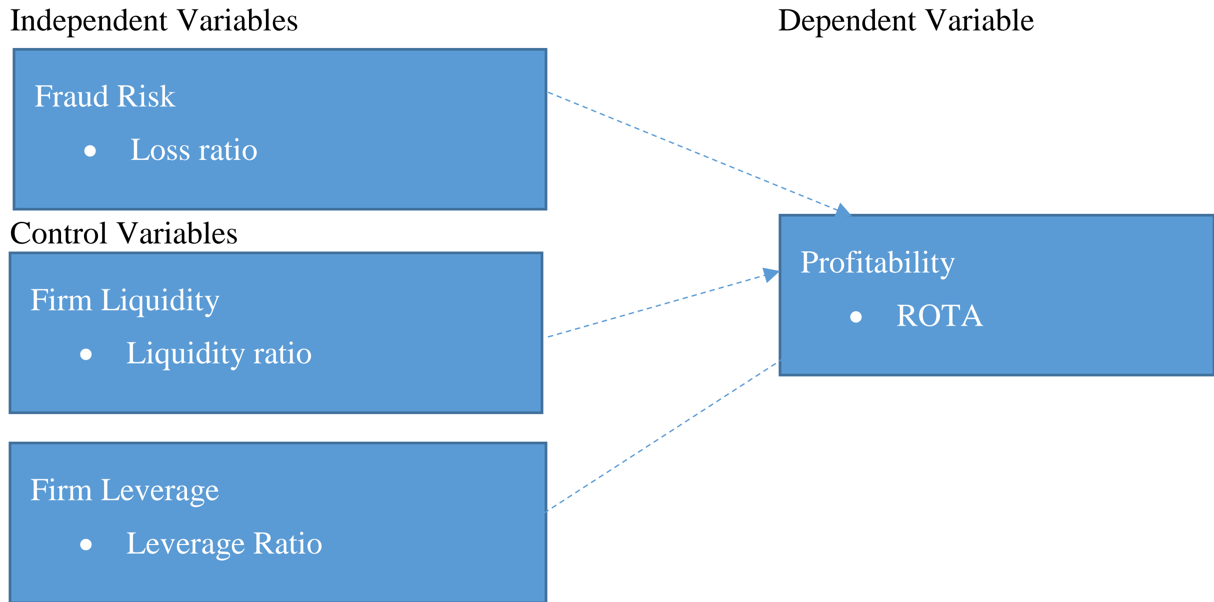

Figure 2.1: Conceptual Model

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Relying on its study approach, this part were written. It has to do with the demographics, sampling, research approach, data collecting, and analysis of data.

3.2 Research Design

This investigation assumed descriptive researching designs. The research designs is a design is preferred in establishing standing of two or more variables without manipulating the outcomes. It's also a design that allows the researcher to establish the effect of one or more variables on a variable. These designs were relevant in that it guided the investigator in establishing the bearing of fraud risk on profits of Kenyan Motor insurers.

3.3 Population

This study involved all insurance firms offering motor insurance services. According to IRA (2021) there were 38 insurance firms offering motor vehicle insurance in Kenya as at December 2021. This study focused on the motor vehicle insurance firms between 2017 and 2021. According to IRA, there were 36 motor vehicle insurance firms in Kenya between 2017 and 2021 (Appendix I). This period saw the motor vehicle fraud risk increase to very high levels. This period also saw motor vehicle insurer experience reduction of profitability levels with subsector experiencing increased underwriting losses.

3.4 Data Collection

This investigation adopted secondary annual data obtained via annual reports of IRA between 2017 and 2021. It was gathered via data collection sheets containing data in absolute form. The researcher used the data from the field to calculate the necessary ratios for data analytics.

3.6 Data Analysis

The gathered information was scrutinized by means of descriptive and regression anlytics. Descriptive statistics involved use of mean and standard deviation. Regression analysis was done through multiple regression model. The analysis was done using SPSS which was used to generate the statistics for analysis.

3.6.1 Diagnostic Tests

Regression assumes that the data is normally distributed with a constant error tem and no linearity among predictors. Hence this study undertook normality, heteroscedasticity and Multicollinearity. Normality test was done using Shapiro Wilk test. Heteroscedasticity will be tested using Breush Pagan statistics. Multicollinearity was tested using Variance Inflation factor.

3.6.2 Analytical Model

This study will adopt the analytical model of:

$$Y=\alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$$

Where:

Y is profitability as epitomized by return on total assets (Nets Incomes/total assets);

α is constant terms;

β_1-β_3 is regre ssion coefficients;

X_1 is fraud risk as measured by loss ratio ([incurred claims + adjustment expenses]/ premiums earned);

X_2 is firm liquidity as measured by liquidity ratio (total assets/total liabilities);

X_3 is firm leverage as measured by leverage ratio (total equity/total assets); and

ε = error term

3.6.3 Tests of Significance

The model significances were tested using F-statistics generated via Analysis of Variance (ANOVA). The models with significance below 0.05 displays a significant model.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presented the outcomes based on goal of determining effect of fraud risk on profitability of Kenyan motor vehicle insurers.

4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
profitability	180	-59.77	42.86	2.0590	11.54957
Fraud risk	180	.00	1380.08	63.4394	122.03085
Liquidity	180	.00	78.08	11.3886	11.28589
leverage	180	-66.12	283.74	37.2107	30.88965
Valid N (listwise)	180				

The insurance firms exhibited an average profitability level of 2.059% indicating that the firms possessed low profitability levels within timespan around 2017 and 2021. The organizations, within the period, exhibited a fraud risk of 63.4% depicting that the motor vehicle firms in Kenya had high fraud risk within the period. Within the period, the insurance firms had an average liquidity ratio of 11.39%. This indicates that the motor vehicle insurers had low levels of liquidity. For leverage, the firms had an average ratio of 37.21%. This exhibits that the motor vehicle insurance firms had a low level of equity within their capital structure. The variables exhibited high levels of variation as shown by the standard deviation which was higher than the mean except for liquidity.

4.3 Diagnostic Tests

Table 4.2: Normality

	Statistic	df	Sig.
Profitability	.722	180	.000
Fraud risk	.385	180	.000
Liquidity	.764	180	.000
Leverage	.743	180	.000

The normality test was done using Shapiro Wilk statistics. The statistics show sig value of below 0.05. This calls the researcher to reject the null hypothesis that the data follows a

normal distribution. Hence, researcher concludes that the variable data adopted in this survey follows no normal distribution.

Table 4.3: Multicollinearity

	Collinearity Statistics	
	Tolerance	VIF
Fraud risk	.861	1.162
Liquidity	.973	1.028
leverage	.882	1.134

Outcomes of Multicollinearity show VIF values below 2. This exhibits that there is low inflation of variances within the data. This means that there is no linearity among the predictors adopted in the survey. Therefore, the researcher makes a conclusion that there is no Multicollinearity in the data.

Table 4.4: Heteroscedasticity

Breusch-Pagan Test for Heteroskedasticity[a,b,c]

Chi-Square	df	Sig.
2.469	1	.116

a. Dependent variable: profitability

b. Tests the null hypothesis that variance of the errors does not depend on the values of independent variables.

c. Predicted values from design: Intercept + X3 + X1 + X2

From the outcomes, the model exhibited a Chi-Square (2.469) with a sig value of 0.116. The sig value is above 0.05 a reflection of non-existence of heteroscedasticity in the data. Therefore, the researcher concludes that heteroscedasticity is not a problem in the data.

4.4 Regression Analysis

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.706[a]	.499	.490	1.39736

a. Predictors: (Constant), leverage, Liquidity, Fraud risk

The model's summaries exhibit that model has an R squares of 0.499. It stipulates that predictors (fraud risk, liquidity and leverage) contributes 49.9% to the change in the profitability of motor insurance companies within Kenya. It further exhibits an R value of

70.6% indicating that the predictors have a strong relationship with the profitability of the motor insurance firms in Kenya.

Table 4.6: Analysis of Variance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1014.916	3	338.305	26.042	.000[b]
	Residual	2286.356	176	12.991		
	Total	3301.272	179			

a. Dependent Variable: profitability

b. Predictors : (Constant), leverage, Liquidity , Fraud risk

The Anova table exhibits that the model had an F value of 26.042. The F-value exhibited a sig. of 0. This is a sign that the model fits data with predictors showing substantial bearing on profitability of motor insurance firms in Kenya.

Table 4.7: Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.558	.241		-2.318	.022
	Fraud risk	-.211	.075	-.208	-2.798	.006
	Liquidity	.110	.030	.097	3.695	.000
	leverage	.357	.171	.353	2.086	.038

a. Dependent Variable: profitability

From the analysis,

$Y=\alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$

was fitted into

$Y=0.558-0.211X_1+0.110X_2+0.357X_3$

From the fitted model, holding the predictors at constant, the profitability would stand at 55.8%. On the other hand, a unit increment in fraud risk reduces the profits of motor vehicle insurers in Kenya by 0.211. Further, unitary increment in liquidity of the firms increases profits of motor vehicle insurers in Kenya by 0.110. Further, unit increment in leverage of

the profits of motor vehicle insurers in Kenya would increase the profitability of the firms by 0.357. The effect of the predictors is significant as the p-values fall below the value of 0.05.

4.5 Discussion of Findings

From the outcomes, increment in fraud risk reduces the profits of motor vehicle insurers significantly. This depicts that fraud risk possesses a negative effect on the profits of motor vehicle insurers. The findings concur with the findings of Chepkoech and Rotich (2017) who indicated a fraud possessed a negative effect on profitability. However, they were different form Kiragu (2019) and Falade and Oyedokun (2022) who produced an insignificant effect.

On the other hand, increment in liquidity of the firms increases profits of motor vehicle insurers. This depicts that liquidity of the firms possesses a positive effect on firm profits. The outcomes concur with Alrabadi, Al Salamat and Hatamleh (2021) that found a positive relationship between liquidity and profitability. However, they differ with Hossin and Begum (2020) who found that liquidity had a negative effect on profitability. They also contrast with Charmler (2018) who found no relationship between liquidity and profitability.

Finally, increment in leverage of the profits of motor vehicle insurers increased the profitability. This depicts that firm leverage possesses a positive effect on profitability. The findings are the same as those of Alarussi and Alhaderi (2018) who exhibited a positive relationship between leverage and profitability. However, Samo and Murad (2019) found a negative relationship while Sugiastuti, Dzulkirom and Rahayu (2018) exhibited an insignificant relationship.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the findings based on the research objective. The conclusions and recommendations were also indicated in the research. The limitations and areas for future studies closed the chapter.

5.2 Summary of Findings

From the descriptive statistics, outcomes exhibited that insurance firms had an average profitability level of 2.059% indicating low profitability levels between 2017 and 2021. The firms, within the period, exhibited a fraud risk of 63.4% depicting high fraud risk within the period. Within the period, the insurance firms had an average liquidity ratio of 11.39% showing low levels of liquidity. For leverage, the firms had an average ratio of 37.21%.

The model summary exhibits an R squared of 0.499 stipulating that the predictors (fraud risk, liquidity and leverage) contributed 49.9% to the change in the profitability of motor insurance firms in Kenya. The model also exhibits an R value of 70.6% indicating that the predictors have a strong relationship with profitability of the motor insurance firms in Kenya. From the analysis of variance, outcomes exhibited an F-statistics of with significance value of 0.000 which was far below the critical value of 0.05. Hence, fraud risk, liquidity and leverage have a significant effect on profitability of the motor insurance firms in Kenya.

From the outcomes, increment in fraud risk reduces the profits of motor vehicle insurers significantly. This depicts that fraud risk possesses a negative effect on the profits of motor vehicle insurers. On the other hand, increment in liquidity of the firms increases profits of motor vehicle insurers. This depicts that liquidity of the firms possesses a positive effect on firm profits. Further, increment in leverage of the profits of motor vehicle insurers increased the profitability. This depicts that firm leverage possesses a positive effect on profitability of motor vehicle insurers.

5.3 Conclusions

The outcomes show that fraud risk possessed a negative effect on the profits of motor vehicle insurers. This depicts that increased fraud risk would reduce the profits of motor vehicle insurers. This leads to the conclusion that fraud risk has a negative effect on the

profits of motor vehicle insurers in Kenya. The firms that have a high fraud risk ought to have low levels of profitability. The descriptive stats also show that fraud risk is high among the selected firms. This leads to the conclusion that motor vehicle insurers in Kenya have a high level of fraud risk.

Outcomes further show that increment in liquidity of the firms increases profits of motor vehicle insurers. This depicts that liquidity possessed a positive effect on firm profits. This study concludes that liquidity possess a positive effect on firm profits of motor vehicle insurers in Kenya. This stipulates that when the insurers increase their liquidity levels, they experience increased profitability levels.

Further, increment in leverage of the profits of motor vehicle insurers increased the profitability. This depicts that firm leverage possessed a positive effect on profitability of motor vehicle insurers. This study concludes that firm leverage possesses a positive effect on profitability of motor vehicle insurers in Kenya. This exhibits that high leverage levels lead to high levels of profits among insurers.

5.4 Recommendations

Outcome show that the motor vehicle insurers in Kenya have high levels of fraud risk. This leads to the conclusion that motor vehicle insurers in Kenya have a high level of fraud risk. The outcomes also depict that fraud risk has a negative effect on the profits of motor vehicle insurers in Kenya. The firms that have a high fraud risk ought to have low levels of profitability. The researcher recommends that motor vehicle insurers in Kenya reduce their fraud risk by reducing the claims and increasing the premiums earned by the firms. The firms also need to reduce the adjustment expenses which increase the fraud risk. The management of motor vehicle insurers in Kenya also need to come up with controls that would reduce fraudulent claims which increases the total claims by the motor vehicle owners.

This study concludes that liquidity possess a positive effect on firm profits of motor vehicle insurers in Kenya. This stipulates that when the insurers increase their liquidity levels, they experience increased profitability levels. The findings show that the motor vehicle insurers in Kenya have low levels of liquidity. There is need for management of motor vehicle insurers in Kenya to increase their liquidity levels. This can be done by reducing the total liabilities in their firms. This can also be done by increasing the value and number of assets within their firms.

This study concludes that firm leverage possesses a positive effect on profitability of motor vehicle insurers in Kenya. This exhibits that high leverage levels lead to high levels of profits among insurers. The findings further show that the motor vehicle insurers in Kenya have low leverage levels. The researcher recommends that motor vehicle insurers in Kenya increase their level of leverage. This can be done by increasing the debt levels within their capital structure.

5.5 Limitations of the Study

This research was limited by time available for data collection. The researcher therefore limited their research to motor vehicle insurers between 2017 and 2021. The researcher also limited the study to fraud risk and profitability as the variables of study. The researcher also adopted secondary data only other than a mix with primary data. To overcome the limitation of time, the researcher also used the annual reports of IRA which made it easy to access the data and get done within the shortest time possible. The study was also limited to motor vehicle insurers in Kenya.

The study also faced the limitation of data credibility where it was hard to confirm the credibility of the data. To overcome this, the study adopted the annual reports of IRA which the regulator for insurers in Kenya and authorized to print insurers financial. The study was also limited by the historical nature of secondary data. To overcome this, the researcher adopted the most recent data (2017-2021).

5.6 Suggestions for Further Research

From the study limitations, the researcher recommends a research based on a different period other than 5 years. This is because a longer period may give differing results on how the parameters relate. A period of 10,15 or 20 years can be adopted. The researcher limited the study to fraud risk and profitability. This means that other parameters influencing profitability are not considered. The study recommends similar research based on other parameters influencing the profitability.

This research was restricted to specific measures of fraud risk and profitability. There is need for further research based on other measures of the variables. The study was also limited to motor vehicle insurers in Kenya. This means that other insurers or firms in Kenya are not considered within the survey. The adoption of other firms for analysis may give different results on fraud risk and profitability. There is need for future researchers to

undertake a similar study based other insurers or firms in Kenya. This would enable the readers to compare results.

The adoption of secondary data created a limitation based on its credibility of its sources as well as the historical nature. Other researchers should adopt primary data for similar study in the future. There is also need for similar research based on other data sources for comparison of results.

REFERENCES

Abdelaziz, H., Rim, B., & Helmi, H. (2022). The interactional relationships between credit risk, liquidity risk and bank profitability in MENA region. *Global Business Review*, *23*(3), 561-583.

Ahmed, F., Awais, I., & Kashif, M. (2018). Financial leverage and firms' performance: Empirical evidence from KSE-100 Index. *Etikonomi: Jurnal Ekonomi*, *17*(1), 45-56.

Alarussi, A. S., & Alhaderi, S. M. (2018). Factors affecting profitability in Malaysia. *Journal of Economic Studies*.

Alarussi, A. S., & Gao, X. (2021). Determinants of profitability in Chinese companies. *International Journal of Emerging Markets*.

Alrabadi, D. W. H., Al Salamat, W., & Hatamleh, A. (2021). Does working capital management affect the profitability of small and medium sized enterprises in Jordan?. *International Journal of Economics and Finance Studies*, *13*(1), 194-214.

Boateng, A. A., Boateng, G. O., & Acquah, H. (2014). A literature review of fraud risk management in micro finance institutions in Ghana. *Research Journal of Finance and Accounting*, *5*(11).

Charmler, R. (2018). The impact of liquidity on performance of commercial banks in Ghana. In *The impact of liquidity on performance of commercial banks in Ghana: Charmler, Richard*.

Chepkoech, F., & Rotich, G. (2017). Effect of risk management process on motor insurance fraud in Kenya. *International Journal of Social Sciences and Information Technology*, *3*(3), 1934-1951.

Culham, J. (2020). Revisiting the concept of liquidity in liquidity preference. *Cambridge Journal of Economics*, *44*(3), 491-505.

Duffield, G. M., & Grabosky, P. N. (2001). *The psychology of fraud* (Vol. 199). Canberra: Australian Institute of criminology.

Falade, O. A. & Oyedokun, G. E. (2022). Claims payment and financial performance of listed insurance companies in Nigeria. Hmlyan Jr Eco Bus Mgn, 3(2), 37-48.

Gathu, T. G. (2018). Effects of fraud risk management practices on net incurred medical claims in Kenyan insurance industry (Doctoral dissertation, Strathmore University).

Gitonga, K. T., & Barasa, J. L. (2021). Risk Management and Profitability of Commercial Banks: Evidence from Kenyan Commercial Banks. *African Development Finance Journal*, *5*(1), 17-32.

Hoang, K. M. T., & Phung, T. A. (2019). The effect of financial leverage on real and accrual-based earnings management in Vietnamese firms. *Economics & Sociology*, *12*(4), 299-333.

Hossin, M. S., & Begum, S. (2020). Effects of Working Capital Management on Firm's Profitability: A Study on the Firms Listed Under DSE in Bangladesh. *International Journal of Economics and Financial Research*, *6*(7), 130-138.

Husain, T., & Sunardi, N. (2020). Firm's Value Prediction Based on Profitability Ratios and Dividend Policy. *Finance & Economics Review*, *2*(2), 13-26.

Ikbal, M. A. (2019). Profitability Measurement of Private Commercial banks in Bangladesh.

Kimakasi, E. (2019). Factors affecting profitability of motor vehicle insurance companies in kenya: a case study of Britam Insurance Company of Kenya (Doctoral dissertation, MUA).

Kiragu, D. N. U. (2019). Drivers of motor vehicle insurance fraud risk: Empirical evidence from insurance companies in Kenya.

Madushanka, K. H. I., & Jathurika, M. (2018). The impact of liquidity ratios on profitability. *International Research Journal of Advanced Engineering and Science*, *3*(4), 157-161.

Mandal, S. (2019). Risks and Profitability Challenges of Agriculture in Sundarbans India. In *The Sundarbans: A Disaster-Prone Eco-Region* (pp. 351-371). Springer, Cham.

Markonah, M., Salim, A., & Franciska, J. (2020). Effect of profitability, leverage, and liquidity to the firm value. *Dinasti International Journal of Economics, Finance & Accounting*, *1*(1), 83-94.

Ndolo, L. N. (2018). Effects of fraud management practices on the profitability in the insurance industry (Doctoral dissertation, Strathmore University).

Otiso, H. N. (2021). The effects of fraud on performance of insurance industry: A critical review of literature. *Journal Homepage: http://ijmr. net. in*, *9*(2).

Panigrahi, C. M. A. (2019). Liquidity and profitability relationship and financial fallacy. *Think India Journal, ISSN*, 0971-1260.

Power, M. (2013). The apparatus of fraud risk. *Accounting, organizations and society*, *38*(6-7), 525-543.

Raykov, E. (2017). The liquidity-profitability trade-off in Bulgaria in terms of the changed financial management functions during crisis. *Management: journal of contemporary management issues*, *22*(1), 135-156.

Rezaee, Z., & Riley, R. (2011). *Financial Statement Fraud Defined* (Vol. 196). John Wiley & Sons.

Salami, S., & Olabamiji, A. W. (2021). The effect of fraud on profitability of listed deposit money banks in Nigeria. *Malaysian Management Journal*, *25*, 169-190.

Samo, A. H., & Murad, H. (2019). Impact of liquidity and financial leverage on firm's profitability–an empirical analysis of the textile industry of Pakistan. *Research Journal of Textile and Apparel*.

Sugiastuti, R. H., Dzulkirom, M., & Rahayu, S. M. (2018). Effect of profitability, leverage toward dividend policy and firm value. *Russian Journal of Agricultural and Socio-Economic Sciences*, *80*(8), 88-96.

Verma, R., & Singh, U. (2017). An empirical analysis of influence of frauds on the profitability of Indian public sector banks. *Impact: International Journal of Research in Business Management*, *5*(9), 1-10.

Vona, L. W. (2012). Fraud risk assessment: Building a fraud audit program. John Wiley & Sons.

Yuanita, N. (2019). Competition and bank profitability. *Journal of Economic Structures*, *8*(1), 1-15.

APPENDICES

Appendix I: Data Collection Sheet

Year	Total assets	Total liabilities	Adjustment expenses	Total earned premiums	Total claims	Profit before tax	Total equity	Outstanding premiums	Insurance claims
	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000	Ksh. 000
2017									
2018									
2019									
2020									
2021									