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Insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in motor insurance sector

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INSURANCE STAKEHOLDERS' PERCEPTIONS ON EFFECTIVENESS AND USAGE OF FRAUD DETECTION AND PREVENTION TECHNIQUES IN MOTOR INSURANCE SECTOR

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference was made in the thesis itself.

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APPROVAL

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ABSTRACT

This study aimed to establish insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector. It also sought to establish the organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector. The study utilized structured questionnaires on a sample of 384 respondents that comprised of the employees, insurance brokers, motor valuers and insurance agents. Descriptive statistics comprising of averages and ranking method was used to assess the perceived effectiveness and usage of the anti-fraud techniques. Spearman's rho correlation analysis was to assess the organizational factors that influence the perceived usage of the anti-fraud techniques. Friedman's test was used to assess if significant variation existed in the views of the insurance stakeholders on the effectiveness and usage of anti-fraud techniques. The findings established that the most effective anti-fraud techniques were proper due diligence on customers, insurance fraud investigators, evaluation of insurance policies and claims, Integrated Motor Insurance Database System and claims assessment. Furthermore these most effective anti-fraud techniques were perceived to be least used. Significant variation based on the views of the respondents was noted on the effectiveness of due diligence on customers and the Integrated Motor Insurance Database techniques. Lack of a dedicated audit committee and adherence to fraud policy influenced the lack of usage of the anti-fraud techniques. The main limitation of the study was a fairly low responses rate and the exclusive use of questionnaires. Future studies should focus on assessing the effectiveness and actual usage of these techniques in the Kenyan public sector. They should also consider using secondary data to assess the influence of organizational factors on the usage of anti-fraud techniques.

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DEDICATION

I humbly dedicate this work to my lovely family that includes my father, Mr. Benedict Peter Otieno, my stepmother Mrs. Roselyn Otieno and my two brothers that I cherish so much, Samuel Owino and Kevin Okinyi. They have made great sacrifices and valuable contributions in my Masters studies at Strathmore University. I also dedicate this work to my Uncle Fredrick Okinyi and Caroline Narocho they have given a good environment and sufficient material support for this project. I am greatly indebted to you all. Finally, I also dedicate this work to the living memory of my late mother, Millicent Akoth Otieno.

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ABBREVIATIONS AND ACRONYMS

AAA	American Accounting Association
AKI	Association of Kenyan Insurers
CAIF	Coalition Against Insurance Fraud
CEO	Chief Executive Officer
IAIS	International Association of Insurance Supervisors
IFIU	Insurance Fraud Investigation Unit
IRA	Insurance Regulatory Authority
KPMG	Klynveld Peat Marwick Goedeler
NGO	Non-Governmental Organization
NSE	Nairobi Stock Exchange
PWC	PricewaterhouseCoopers
SPSS	Statistical Package for the Social Sciences Software
USA	United States of America

DEFINITION OF KEY TERMS

Perception: The Oxford Advanced Learner's Dictionary defines perception as an idea, an image or belief that a person possesses because of how he or she view things or understands the true nature of something (Hornby, 2015).

Effective: The Oxford Advanced Learner's Dictionary defines effective as the production of an outcome that is desired and is successful (Hornby, 2015).

Fraud: According to Owolabi (2010) the Chamber English Dictionary defines fraud as an act of intentional deception with an aim of incurring some gain that is destructive to another party.

Fraud prevention: Is the resulting consequence of reducing the opportunity and eradicating the temptation of potential offenders to commit fraud (Deloitte Forensic Center, 2012).

Fraud Detection: It is a situation whereby a fraudulent activity that is either ongoing or has already occurred, is pointed out and communicated to the responsible authority (Deloitte Forensic Center, 2012).

Technique: The Oxford Advanced Learner's Dictionary as an efficient or skillful way of accomplishing something (Hornby, 2015). In this study it will be understood to be a method or measure put in place to prevent or detect fraud.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Insurance fraud in the motor insurance sector has been the most expensive fraud scandal globally (CAIF, 2012). In USA alone, about 10-20% of all motor insurance claims filed are a sham (CAIF, 2012). Insurance fraud is an unlawful act directed on the insurer, through obtaining insurance payments by deception or breach of confidence (Rusetskaja, et al., 2016). Insurance fraud is an illegal activity that occurs when an agent, employee, policyholder or third party claimant commits an intentional act to acquire monetary gain (Al-Singlawi & Al-Rawashdeh, 2016).

The most common form of insurance fraud includes hiding essential information during the time of insurance validity, double insurance, insurance payments based on fake claims and fake accidents (Rusetskaja, et al., 2016). There are two types of insurance fraud directly linked to this study identified in literature (IAIS, 2007; Yusuf, 2010 and Yusuf & Babalola, 2009): (i) *internal fraud-*, which is a type of fraud, perpetrated against the insurer by an employee or management through a conspiracy with an internal or external party to defraud the insurer. (ii) *Policyholder fraud or claims fraud-*, which is a type of fraud, perpetrated against the insurer by the customer during the acquisition and/or execution of insurance product by receiving an unjust and wrongful coverage or payment. The study focused on these two types of fraud with an aim of assessing the perceived effectiveness of the relevant techniques that can curb them.

Insurance fraud is very pricey because it decreases the firm's earnings and inflates the loss costs. Consequently, fraud prevention and detection is gaining ground as a means of dropping down insurance costs (Rusetskaja et al., 2016). Currently the major concern is whether the fraud detection and prevention techniques put in place are effective enough to curb fraud. This is with

regard to the changing fraud dynamics due to advancement of technology and the mindset of the fraudsters.

Firms are trying new various techniques to combat fraud because the strategies and techniques they have used in the past have proved to be ineffective and impractical to combat fraud (Wells, 2004). This is because new ways and strategies of committing fraud are evolving that organizations have no knowledge about (Othman et al., 2015).

In 1997, the AAA recommended for research studies that will come up with policy frameworks, which will facilitate the fraud investigators and auditors in detecting and preventing potential fraud (Bierstaker, Brody and Pacini, 2006). This is because when firms employ effective anti-fraud techniques, fraudsters will then have a hard time to commit fraud and forced to go elsewhere (Ijeoma & Aronu, 2013).

Various studies have been conducted in different countries, sectors and organizations to establish the anti-fraud techniques with the highest effectiveness and usage rating based on perceptions. For instance Othman et al. (2015) and Efiong, Inyang and Joshua (2016) established that the fraud detection and prevention techniques with the highest effectivenss rating were fraud hotlines, forensic accountants and whistleblowing in the Malaysian Public sector but are barely utilized. In Nigerian public sector it was established that the most effective fraud detection and prevention techniques were fraud auditing, fraud prevention & detection training, data mining, firewalls, virus protection and forensic accountants but were rarely used. The perceptions of effectivenes of some techniques varies from country to country. For instance in the Malaysian Public Sector fraud hotlines were percieved to be effective in curbing fraud but ineffective in the Nigerian Public Sector. This is because of the unique fraud enviroment in Nigeria where fraud is percieved as a culture and normal (Efiong, Inyang & Joshua, 2016).

Furthermore, these techniques varies from one business sector to another because they operate in different environments. For instance, bank reconciliations, perceived to be effective in the banking sector by Rahman (2014), and Bierstaker, Brody and Pacini (2006) cannot be used in the insurance sector. Furthermore, thorough evaluation of insurance claims perceived to be effective in the insurance sector by (AKI, 2013) cannot be used in the banking sector because they operate in different environments. This shows that the perceived effectiveness and usage of the anti-fraud techniques are unique based on different sectors. Hence, the research outcomes of particular anti-techniques in one sector cannot be recommended for another different sector.

AKI (2013) and Sofia (2016) discovered anti-fraud techniques with the highest effectiveness rating in the Kenyan health insurance sector were detection software, electronic alert to members on claims, fraud awareness programmes and forensic investigative. In the Indonesian Public Sector it was established that the techniques with the highest effectiveness rating comprised of bank reconciliation, inventory observation, internal control review and improvement and continous auditing. This clearly illustrates that the effective fraud detection and prevention techniques in the public sector and the private sector varies. Meaning that a fraud detection and prevention policy framework in the private sector cannot be used to curb fraud in the public sector.

Moreover the findings of the study conducted by Zamzami, Nusa and Timur (2016) in the Indonesian education sector conflicted with that of Bierstaker, Brody and Pacini (2006) when it revealed that IT technology which comprised of firewalls, virus protection and filtering software were less effective in combating fraud. The contrast is due to the fact that Indonesian universities inadequately capitalize on IT technology to combat fraud when compared to USA. This shows the effective of fraud detection and prevention techniques vary from each country and sector based on different reasons in the unique enviroment that they operate in.

The usage or the lack of use of the effective fraud detection and prevention techniques can be influenced by organizational factors. Important organizational factors that can lead to the usage of effective fraud detection and prevention techniques comprises of;

The audit committee; whose responsibility is to understand and ensure that the firm implements anti-fraud programs and controls in place to assist in curbing fraud (AICPA, 2003; Othman et. al., 2015). Financial stability; Companies with greater revenues and resources can be able to invest in antifraud technologies which can play an important role in fraud mitigation (Bierstaker, 2006). An empirical study conducted by Bierstaker (2006) revealed that companies that realizes an annual turnover of more than $1 billion, employed discovery sampling, data mining, digital analysis and forensic accountants to mitigate fraud more than the smaller companies. The management; The management have a primary responsibility to ensure that effective fraud detection and prevention techniques are in place and are utilized to curb fraud (Rezaee, 2002; Messier et. al., 2008). They have to ensure that sufficient anti-fraud controls exists and that they are adequately implemented to detect fraud (Messier et al., 2008).

Fraud Policy; It is essential for every firm to create a fraud policy so as to guide the employees on their actions and the outcomes of such actions to the performance of the organization fraud (Agathee & Ramen, 2017). The most important thing is for employees to be aware and to understand the contents of the fraud policy which plays an important role in motivating them to adequately implement fraud detection and preventions techniques in order to curb fraud (Agathee & Ramen, 2017). There was a literature deficiency to show if the organizational factors influence the perceived usage of fraud detection and preveniton techniques. This study sought to bridge that gap. This is because it is important for motor insurance firms to know the organizational factors that are responsible for the usage and extent of usage of the perceived effective anti-fraud techniques.

The Kenyan motor insurance industry has experienced a great ordeal of insurance fraud which has contributed to the failure of many insurance firms (Chepkoech & Rotich, 2017). Over a period of years the general insurance companies have been commissioning extensive fraud risk management strategies to combat insurance fraud yet the problem still persists (Chepkoech & Rotich, 2017). This posed a need for a study to be conducted in order to determine a new fraud risk management strategy that can assist the Kenyan insurance firms to successfully curb insurance fraud. This was achieved by conducting a study to assess the perceptions of the insurance stakeholders on the effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector.

Numerous research studies reviewed (Bierstaker, Brody & Pacini, 2006; Efiong, Inyang & Joshua, 2016; Kummer, Singh & Best, 2015, AKI, 2013; Othman et al., 2015; Zamzami, Nusa & Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene, 2016; Ramazani & Atani, 2010; Rahman &Anwar, 2014; Mat et al., 2013) focused on the public, education, banking, general insurance and health insurance sectors. However, limited research has been carried out to assess the perceptions of effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector. This study sought to bridge the gap. This is because if motor insurance firms have adequate knowledge on the perceived effectiveness and usage of anti-fraud techniques based on the insights of motor insurance stakeholders. Then it will be easier for them to formulate fraud-risk management framework consisting of the perceived effective anti-fraud techniques that can precisely address the motor insurance fraud problem in the Kenyan motor insurance industry.

1.2 Problem Statement

The insurance fraud menace in the Kenyan insurance sector is alarming compared to banking and telecommunication sectors (KPMG, 2015). Customers conspire with the employees of the insurance firms to conceive fictitious claims, which consequently financially injures the insurance providers (KPMG, 2015). More than 300 million shillings has been lost through insurance fraud schemes in the Kenyan insurance industry (IRA, 2015). Moreover, the losses incurred from insurance fraud rose by 3 times from 102 million shillings in 2014 to 366 million shillings by 2015 (IRA, 2016).

An aggregate number of 106 insurance fraud cases were reported in 2015, with the motor insurance sector leading with 42 fraud cases compared to other insurance sectors (IRA, 2015). The IRA pointed out that insurance fraud keeps growing because firms have a hard time to detect fraud, share information about fraud and lack of data sharing amongst the insurance firms (IRA, 2016; KPMG, 2015). Moreover, the motor insurers do not conduct regular review of their fraud risk management policies considering the fact that insurance fraud keeps evolving (Chepkoech & Rotich, 2017). This generally points that the motor insurance firms lacks fraud risk management policies that can precisely address the insurance fraud issue (KPMG, 2015; IRA, 2016).

Consequently, there was a need for a study to assess the perceptions of insurance stakeholders concerning the effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector. This is because there was limited research conducted in the motor insurance area. The knowledge of the perceived effectiveness and usage of the anti-fraud techniques in motor insurance sector based on the perceptions of the insurance stakeholders will help the firms develop a fraud risk framework that will precisely address the motor insurance fraud problem in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

To establish insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in motor insurance sector.

1.3.2 Specific Objectives

i. To establish the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector.

ii. To establish the organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector.

1.4 Research Questions

i. What is the perceptions on the effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector?

ii. To what extent does the organizational factors influence the usage of fraud detection and prevention techniques in Kenyan motor insurance sector?

1.5 Significance of the Study

This study will benefit the management of the motor insurance firms. They will been enlightened about the situation of their fraud risk management strategy. This is because currently it is not clear if the current anti-fraud techniques put in place are effective or adequately used to curb insurance fraud. The findings of the study will help them reformulate their fraud policies to incorporate the anti-fraud techniques with the highest effectiveness rating that precisely address the motor insurance fraud problem. Consequently, this will help them to curb fraud that will result to reduction of insurance premium costs and the losses experienced.

This study will also benefit future researchers. Researchers from other countries who would want to investigate about the effectiveness of fraud control measures in the motor insurance industry where there is existence of insurance fraud problem. Future studies can use this study to build on their literature and examine a research gap that has to be bridged.

This study will help the government through the IRA that regulates the insurance industry. This is to the extent of formulating a fraud risk management policy framework based on the recommendations of this research work, which all motor insurers will use to curb insurance fraud. This is because limited research has been piloted to assess the perceptions of effectiveness and usage of anti-fraud techniques in the motor insurance sector.

1.6 Scope of the Study

This study sought to determine the insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in the Kenyan Motor insurance sector. The target population was 35 motor insurance companies, 20 motor insurance brokers, 20 motor valuers and assessors. The scope of study was limited to a sample of 384 respondents drawn from the targeted population. The scope of the insurance stakeholders comprised of employees, insurance agents, motor assessors and valuers and insurance brokers. The fraud detection and prevention techniques that were assessed comprised of 18 items. The scope of the organizational factors operationalized were limited to 4 items.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looked at fraud triangle and fraud management lifecycle theories that were relevant to this study under the theoretical review; it also discussed the findings of previous studies that were linked to the objectives of this study under the empirical literature review. Furthermore, it summarized the discussions of the literature review and identified the research gaps that was needed to be addressed.

2.2 Theoretical Literature Review

This part of the literature review will look at the fraud theories that are relevant to this study. They will include the fraud management life cycle theory and the fraud triangle. Fraud management life cycle comprises of interconnected stages that elaborates the process of curbing fraud through deterrence, prevention, detection, analysis, policy formulation, investigation and prosecution of fraud perpetrators. The techniques of the study are linked to the 3rd and 4th stages of this theory, which were fraud prevention and detection. On the other hand, fraud theory comprises of three elements that leads to fraud incidents, namely pressure, opportunity and rationalization. Ineffective anti-fraud techniques or the lack of use effective anti-fraud techniques creates opportunity to commit fraud.

2.2.1 The Fraud Management Life Cycle Theory

Fraud management life cycle can be defined as a system lifecycle whereby each phase within the lifecycle is a cumulative body that is made up of interconnected, inter-reliant and autonomous actions, tasks and operations (Wilhelm, 2004). These activities can, but do not essentially transpire in a chronological or linear flow (Wilhelm, 2004). The fraud management life cycle consists of

eight phases which includes; fraud deterrence, fraud prevention, fraud detection, analysis, policy, investigation and prosecution (Wilhelm, 2004).

Fraud deterrence which is the first phase of fraud management lifecycle involves activities that are meant to stop fraud before it is actualized (Wilhelm, 2004). The second phase of the fraud management life cycle is prevention which entails actions executed to obstruct or hinder fraudsters from carrying out any fraudulent or shamful activity that is injurious to another party (Pesout & Andrle, 2011). The third phase which is fraud detection entails the revelation of occurring fraud activites, fraud attempts and fraudulent actions that has already transpired (Wilhelm, 2004). Fraud mitigation which is the fourth phases involves stopping fraud before it is actualized (Pesout & Andrle, 2011).

The fifth stage is analysis and it involves the evaluation of the performance of each of the other phases in the fraud management life cycle, moreover it endows them with feedback in respect to performance (Wilhelm, 2004). The sixth stage is policy and in this phase, fraud policies are concieved and assessed to minimize the incidences of fraud (Pesout & Andrle, 2011). The seventh phase involves the investigation process, whereby sufficient evidence and information is collected to stop a fraud event and help in prosecuting and convicting a fraudster(Wilhelm, 2004).The last phase which is prosecution is an agregate of successes and failures in the cycle (Wilhelm, 2004). Failures comes in because at this phase it means the fraud was successfully actuallized and a success because fraud was detected, the suspected fraudster prosecuted, the lost assets recovered and the fraudster convicted (Wilhelm, 2004).

The interrelationships between each of the phases in the cycle are the aspects that truly define the Fraud Management Lifecycle theory (Wilhelm, 2004).The capability to rapidly do a thorough analysis of fraud losses and the loopholes in the fraud risk management systems that led to fraud occurrence, creates the need for organizations to implement effective fraud prevention and

detection guidelines that would amplify the difficulty of commiting fraud (Ijeoma & Aronu, 2013). This is because the fraudsters will be put in a situation whereby they have to defeat the new fraud mitigation strategies put in place and can be forced to look for another vulnerable sector to perpepuate fraud (Ijeoma & Aronu, 2013).

The 3rd and 4 th phases, comprising of prevention and detection is relevant to this study, because the study sought to assess the perceptions of effectiveness and extent of usage of the techniques insurance firms employs to prevent and detect insurance fraud in the Kenyan motor insurance. These fraud detection and preveniton techniques, supported by literature, which the study assessed comprised of 18 measures namely; Organizational use of insurance fraud investigators. Fraud hotline. Discovery sampling. Fraud vulnerability reviews. Integrated Motor Insurance Database System. Digital analysis Benford law. Corporate Code of conduct. Reference check on employees. Claims assessments through interviewing claimants and conduction of special investigations. Sufficient insurance fraud prevention and detection training programs. Data mining. Continuous Auditing. Continuously reviewing and rescoring claims using Suspicion Scores. Electronic alerts to the company on claims. Thorough evaluation of insurance policies and claims. Systematic manual recognition via checklists. Checking client behaviour asking for claim payment. Proper due diligence on potential customers.

2.2.2 The Fraud Triangle Theory

Cressy (1953) invented the fraud traingle theory when he conducted a research study that inquired about factors that lead people to commit fraud and engage in unethical behaviour. According to Abdullahi, Mansor, and Nuhu (2015) the fraud triangle theory that Cressy developed comprises of three essential elements that leads to fraud occurrence; perceived, pressure, opportunity, rationalization

Perceived pressure is the motivation or incentive that makes a perpetrator to commit a fraud crime (Ruankaew, 2016). People demonstrate various motives to perpetuate fraud. Research studies have revealed that the occurrence of fraud actions is due to economic pressures. For instance a financial need to carter for personal losses, greed and to live beyond one's means (Albrecht, Hill, et al., 2006; Albrecht, Turnbull, Zhang, & Skousen, 2010; Howe & Malgwi, 2006).

When a potential perpetrator is faced with pressure to commit fraud, opportunity opens the doorway for the fraud to be actualized (Ruankaew, 2016; Abdullahi, Mansor & Nuhu 2015). The opportunity to carry out a fraudulent activity, presents itself when there are weak internal contols to detect and deter the fraud action (Ohando, 2015; Abdullahi, Mansor & Nuhu 2015).

For a person to commit fraud, he or she must have to justify it so that it can seem to be a morally acceptable action (Abdullahi, Mansor & Nuhu 2015;IAIS, 2011). For example individuals can commit fraud because " every one does it" attitude. They can also be dissatisfied with the insurer or employer. Moreover insurance customers may perceive they have a right to be paid because premiums are compensated (IAIS, 2011).

Opportunity, which is the third element of the fraud theory, was relevant to this study. This is because fraud can be confidently perpetrated when the techniques put in place are not adequate to detect or prevent the fraud or it is because they are not often used to curb fraud. Hence creating an opportunity to commit fraud. Consequently this study aimed to assess the perceptions of effectiveness and usage of the anti-fraud techniques, in order to establish if the techniques are perceived to be ineffective are not often utilized as a reason for the opportunity for the insurance fraud being perpetrated in the Kenyan motor insurance sector.

2.3 Empirical Review

This section presents a synthesis of the empirical reviews based on studies conducted internationally and locally in line with the specific objectives of the study. The assessment of the past studies will involve discussions of their research outcomes, comparisons and contrasts of their findings and the reasons for the similarities and contrasts.

2.3.1 Perceptions on Effectiveness and the Usage of Fraud Detection and Prevention Techniques.

Studies conducted in the private and public sectors established that fraud detection and prevention techniques with the highest mean rating of effectiveness were forensic accountants, digital analysis, password protection, discovery sampling, data mining and continuous auditing (Bierstaker, Brody & Pacini, 2006; Othman et al., 2015; Met et al. 2013; Efiong, Inyang & Joshua, 2016). The findings of Othman et al. (2015) which revealed that staff rotation as an effective fraud deterrence technique in the Malaysian public sector conflicted with the outcomes of Bierstaker, Brody and Pacini (2006) which established it as an ineffective technique in American private sector. Nanmdi (1991) postulated that the reason for the ineffectiveness of the technique is due to weakness in staff policy.

On the other hand, the findings of Zamzami, Nusa and Timur (2016) in the Indonesian universities conflicted with the findings of (Bierstaker, Brody & Pacini, 2006; Othman et al., 2015; Met et al., 2013; Efiong, Inyang & Joshua, 2016; AKI, 2013; Rahman, 2014). This is because the findings revealed forensic accountants, filtering software, firewalls and virus protection as the techniques with the lowest effectiveness rating. Zamzami, Nusa and Timur (2016) contended that the reason for the perceived ineffectiveness is due to inadequate use of anti-fraud technology in Indonesian universities.

Moreover, the findings of Efiong, Inyang and Joshua, (2016) had revealed that internal controls had the lowest effectiveness rating. The possible reason for weak internal controls is because the internal audit staff have deficient enlightenment on fraud detection and prevention approaches (Muslimat & Hamid, 2012). However, the findings of Efiong, Inyang and Joshua, (2016) conflicted with the findings of Sofia (2016) which established internal controls had a high effectiveness rating among the Big 4 Public Accounting firms in Indonesia. While Bierstaker, Brody and Pacini (2006) and Zamzami, Nusa and Timur (2016) revealed code of conduct had high effectiveness rating, Omar and Abu Bakar (2012) findings found that the technique was perceived to be ineffective. This is because studies have revealed that the employment of code of ethics may suffer the shortage of credibility when it is not actually applied (Hassink et al., 2007; Weaver et al., 1999). It has to be communicated regularly to the employees for them to be aware and understand their obligations to mitigate fraud (Albrecht et al., 2009).

Furthermore, the findings of (Bierstaker, Brody & Pacini, 2006; Rahman, 2014; Omar and Abu Bakar, 2012; Othman et al., 2015; Efiong, Inyang & Joshua, 2016) established whistle blowing policy, fraud hotlines, use of forensic accountants, discovery sampling and data mining were least used techniques even though they were perceived as highly effective. Rahman (2014) argued that digital analysis is least used because accounting practitioners are still unfamiliar with the technique in the Malaysian banking sector. Besides that, Albrecht and Albrecht (2002) contended that although its application is easier, the technique fails to match the symptom revealed with the precise form of fraud.

Furthermore Othman et. al (2015) reasoned that fraud hotlines, whistle blowing policy and forensic accountants are least used because the Malaysian government is yet to enhance whistle blowing policies, deliver more fraud hotlines and institute forensic accounting departments. On the other hand, Bierstaker, Brody & Pacini (2006) contented that forensic accountants, discovery sampling

and data mining are least used because organizations find it hard to capitalize on these techniques since they are very costly. Moreover Kumar, Haat and Ali (2012) argued that even though forensic accountants play an important role in curbing fraud, their services are very expensive consequently making firms with low finances to shy away from their services.

Interestingly a study conducted by Agathee and Ramen (2017) to assess the perceived effectiveness of fraud detection and prevention techniques and their usage in Mauritius established that all the techniques with the highest effectiveness rating were adequately used to combat fraud. The techniques comprised of staff rotation, password protection, bank reconciliation and cash reviews. The findings conflicted with (Bierstaker, Brody & Pacini, 2006; Rahman, 2014; Omar & Abu Bakar, 2012; Othman et al., 2015; Efiong, Inyang & Joshua, 2016) which established that the techniques with the highest effectiveness rating were the least used to curb fraud. On the other hand, Agathee and Ramen (2017) findings conflicted with Bierstaker, Brody and Pacini (2006) and agreed with the research outcomes of Zamzami, Nusa and Timur (2016) when it revealed that discovery sampling and virus protection had the lowest effectiveness rating. Zamzami, Nusa and Timur (2016) argued that discovery sampling and virus protection achieved the lowest effectiveness rating because the Indonesian universities fear to capitalize on the technique because it incurs high administrative costs; hence, the universities are yet to enjoy its true value.

Most of these studies relied on primary data, more specifically structured questionnaires based on likert scale items (Bierstaker, Brody & Pacini, 2006; Efiong, Inyang & Joshua, 2016; AKI, 2013; Othman et al., 2015; Zamzami, Nusa and Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene ,2016; Ramazani & Atani, 2010; Omar & Abu Bakar, 2012; Rahman & Anwar, 2014; Mat et al., 2013). Except for Kummer, Singh and Best (2015) whose study conceived an array of contingency tables to assess the association between the presence of a particular fraud detection mechanism and the actual detection of fraud in NGOs operating in both New Zealand and Australia. The results

of the study revealed that, the most effective fraud detection mechanisms comprised of whistle blowing policies, fraud control policies and fraud risk registers. It also revealed that a gap existed between the most frequently and the most effective fraud detection techniques.

Furthermore most of the studies relied on descriptive statistics to assess the perceived effectiveness and usage of the fraud detection and prevention techniques (Bierstaker, Brody & Pacini, 2006; AKI, 2013; Othman et al., 2015; Zamzami, Nusa and Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene, 2016; Ramazani & Atani, 2010; Omar & Abu Bakar, 2012; Rahman & Anwar, 2014; Mat et al., 2013). Conversely, some studies used inferential statistics for comparative analysis that involved Friedman's test, Pearson Chi-square test and Students' test analysis tools (Agathee & Ramen, 2017; Efiong, Inyang & Joshua, 2016; Sengur, 2012).

Efiong, Inyang & Joshua (2016) used Students' test analysis to assess whether significant difference existed between the perceived effective fraud detection and prevention techniques and their actual usage. The findings established that there was a significant difference. On the other hand, Sengur (2012) used Friedman's test to gauge if there was variation in the perceptions of auditors on the effectiveness of the techniques on the three main types of fraud in Turkey. The findings revealed that there was a significant variation concerning the auditors' ranking of corruption, asset misappropriation and financial statement fraud for corporate code of conduct, external auditors and effective audit committee. Conversely, Agathee (2017) used Pearson Chi-Square test to gauge whether the perceptions on the level of effectiveness and usage are reliant on different profile of the participants. The findings of the study revealed that there was a consensus in perceptions on the effectiveness and usage of anti-fraud techniques regardless of the profile of the participants.

Studies conducted in the general insurance sector in Ghana (Akomea-Frimong, Andoh & Ofosu-Hene, 2016) and locally in the health sector (AKI, 2013), revealed that the anti-fraud techniques with the highest effectiveness rating comprised of; thorough evaluation of insurance claims, insurance training programs, forensic investigative review and electronic alerts. The findings of (AKI, 2013) further established that internal and external audits were least used techniques. These techniques varies from one business sector to another because they operate in different environments. For instance, bank reconciliations, perceived to be effective in the banking sector by Rahman (2014), and Bierstaker, Brody and Pacini (2006) cannot be used in the insurance sector. Furthermore, thorough evaluation of insurance claims perceived to be effective in the insurance sector by (AKI, 2013) cannot be used in the banking sector because they operate in different environments.

2.3.2 Organizational Factors' Influence on the Usage of Fraud Detection and Prevention Techniques

Limited studies have been conducted to determine the organizational factors' influence on the usage of fraud detection and prevention techniques. Few studies like Bierstaker (2006) tried to assess whether the firms' revenue influenced the usage of effective fraud detection and prevention techniques. The study revealed that companies that realizes an annual turnover of more than $1 billion, employed discovery sampling, data mining, digital analysis and forensic accountants to mitigate fraud more than the smaller companies.

Consequently meaning that firms with great financial strength adequately usage effective anti-fraud technology techniques to curb fraud. However there is limited research conducted to show the influence of organization factors (audit committee, financial stability, managerial attention on fraud risk management framework and fraud policy) influence on the usage of fraud detection and prevention techniques.

2.4 Summary of Literature Review and Research Gap

This chapter discussed the existing theories that comprised of the fraud triangle and fraud management life cycle theories that were related to this study. It also revealed the studies done in relation to the objectives of the study. It establised the comparisons and contrasts on the research findings of the past studies and the research methods used to address the objectives related to this study. The researcher identified after the review of past empirical studies that the effectivenss and usage of anti-fraud techniques differ from one sector to another and from one country to another. Furthermore the chapter also revealed that limited research has been done to show the factors that influence the usage of the anti-fraud techniques in order to explain why the techniques are frequently or barely used.

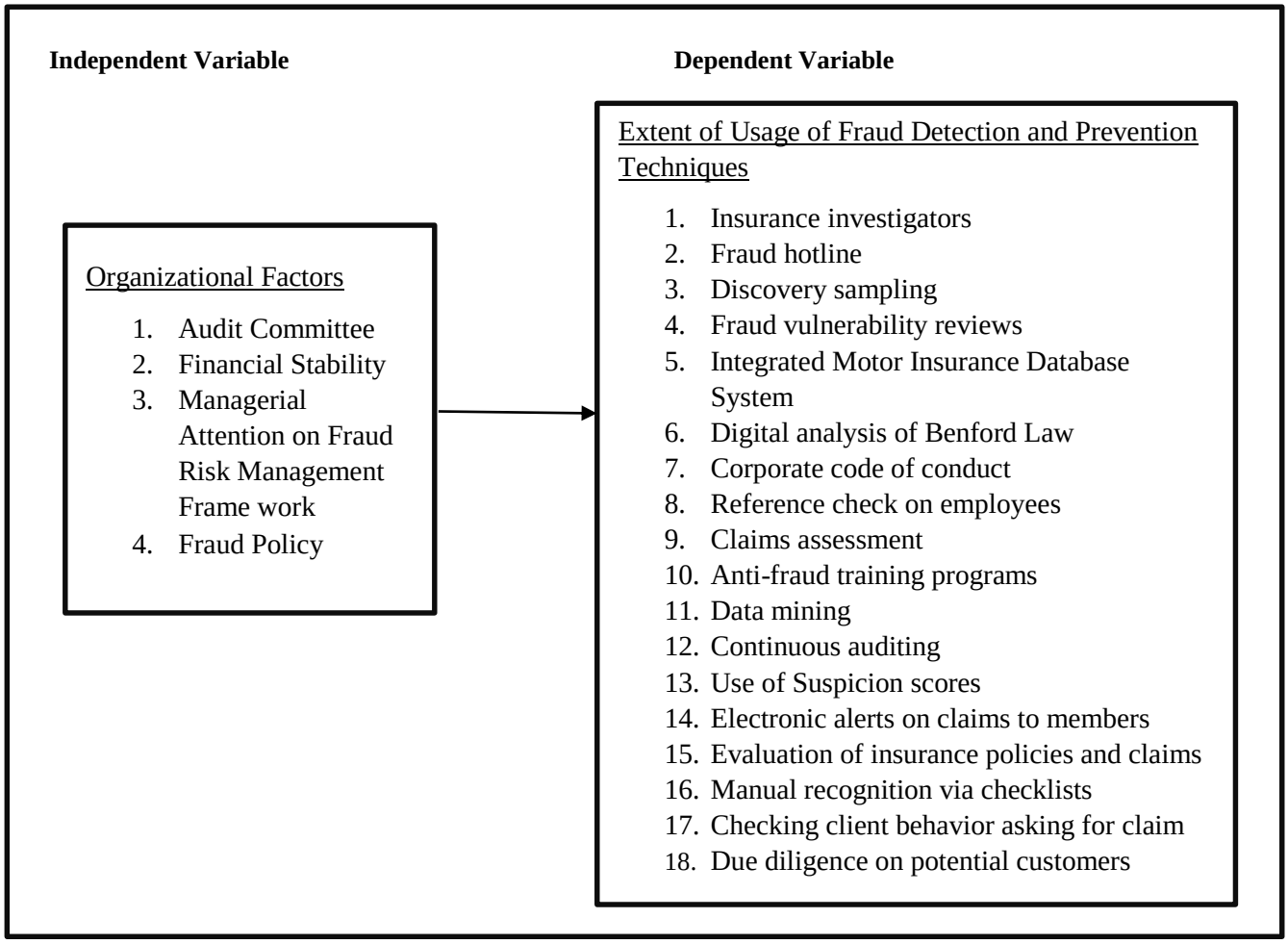
The literature gap to be bridged is concerning the perceptions of effectiveness and usage of fraud detection and prevention techniques in the motor insurance industry. This is because various studies that has been reviewed (Bierstaker, Brody & Pacini 2006; Efiong, Inyang & Joshua, 2016; Kummer, Singh & Best, 2015, AKI, 2013; Othman et al., 2015; Zamzami, Nusa & Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene, 2016; Ramazani & Atani, 2010; Rahman &Anwar, 2014; Mat et al., 2013) focused on the public, education banking, general insurance, health insurance sectors. However, limited research has been carried out to assess the perceptions on effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector. This study sought to bridge that gap. Furthermore there is limited research conducted to show the influence of organization factors influence on the usage of fraud detection and prevention techniques. This study also sought to address the literature deficiency.

2.5 The Conceptual Framework

The conceptual framework presented in figure 2.1 in the next page depicts the relationship between the organizational factors as an independent variables and the extent of usage of fraud detection

and prevention techniques, which was the dependent variable of the study. This is because the study sought to assess the influence of organizational factors on the usage of fraud detection and prevention techniques. The organizational factors that the study assessed were the audit committee, managerial attention of fraud risk management strategies, financial stability and fraud policy. The fraud detection and prevention techniques whose extent of usage was tested based on perceptions of the motor insurance stakeholders comprised of 18 techniques that was presented in figure 2.1 in the next page.

Figure 2.1: Organizational factors' influence on usage of Fraud Detection and Prevention Techniques



Source: Author (2018)

2.6 Operationalization of variables

The operationalization and of the variables (depicted in the conceptual framework in Figure 2.1 in the previous page) and how they were measured is summarized in table 2.1 below.

Table 2.1: Operationalization of Variables

Independent Variable	Construct	Operational Construct	Measurement	Supporting Literature	Supporting Theory
	Audit Committee	Agreement level that there exists a robust and dedicated audit committee	A 5-point Likert Scale of agreement was used	KPMG (2016); AICPA (2003); Othman et al. (2015)	Fraud Triangle Theory
	Financial Stability	Agreement level that the firm is financially stable to fund IT Technology and forensic investigators	A 5-point Likert Scale of agreement was used	Bierstaker, Brody and Pacini (2006)	Fraud Triangle Theory
	Managerial attention on Fraud Risk Management framework strategies	Agreement level that there is increased Managerial attention on Fraud Risk Management framework strategies	A 5-point Likert Scale of agreement was used	Rezaee (2002); Messier et al. (2008)	Fraud Triangle Theory
	Fraud Policy	Agreement level that fraud policy is strictly adhered to	A 5-point Likert Scale of agreement was used	Agathee and Ramen (2017)	Fraud Triangle Theory
Dependent Variable (Fraud Detection and Prevention Techniques)	Fraud hotline	The effectiveness and the usage of Fraud hotline	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI (2013); Efiong, Inyang	Fraud management life cycle; and Fraud Triangle Theory

	Corporate Code of conduct/Ethics policy	The effectiveness and the usage of Corporate Code of conduct/Ethics policy	A 5-point Likert Scale of effectiveness and frequency of usage was used	Efiong, Inyang and Joshua (2016) and Met et al.(2013); Othman et al. (2015)	Fraud management life cycle; and Fraud Triangle Theory
	Integrated Motor Insurance Database System	The effectiveness and the usage of Integrated Motor Insurance Database System	A 5-point Likert Scale of effectiveness and frequency of usage was used	IRA (2015); IRA (2016) and IRA(2017)	Fraud management life cycle; and Fraud Triangle Theory
	Organizational use of insurance fraud investigators	The effectiveness and the usage of insurance fraud investigators	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI(2013)	Fraud management life cycle; and Fraud Triangle Theory
	Discovery sampling	The effectiveness and the usage of Discovery sampling	A 5-point Likert Scale of effectiveness and frequency of usage was used	Agathee and Ramen (2017); AKI(2013);Othman et al. (2015) Bierstaker, Brody and Pacini (2006)	Fraud management life cycle; and Fraud Triangle Theory
	Reference check on employees	The effectiveness and the usage of Reference check on employees	A 5-point Likert Scale of effectiveness and frequency of usage will be used	Efiong, Inyang and Joshua (2016)	Fraud management life cycle; and Fraud Triangle Theory
	Claims assessments through interviewing claimants and conduction of special investigations	The effectiveness and the usage of Claims assessments through interviewing claimants and conduction of special investigations	A 5-point Likert Scale of effectiveness and frequency of usage was used	IAIS (2011)	Fraud management life cycle; and Fraud Triangle Theory

	Digital analysis Benford law	The effectiveness and the usage of Digital analysis Benford law	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI (2013)	Fraud management life cycle; and Fraud Triangle Theory
	Sufficient insurance fraud prevention and detection training programs	The effectiveness and the usage of Sufficient insurance fraud prevention and detection training programs	A 5-point Likert Scale of effectiveness and frequency of usage was used	Akomea-Frimong, Andoh and Ofosu-Hene (2016); IAIS (2011) and AKI (2013); Bierstaker, Brody and Pacini (2006)	Fraud management life cycle; and Fraud Triangle Theory
	Proper due diligence on potential customers	The effectiveness and the usage of Proper due diligence on potential customers	A 5-point Likert Scale of effectiveness and frequency of usage was used	IAIS (2011)	Fraud management life cycle; and Fraud Triangle Theory
	Systematic manual recognition via checklists	The effectiveness and the usage of Proper due diligence on potential customers	A 5-point Likert Scale of effectiveness and frequency of usage was used	IAIS (2011); AKI(2013); Efiong, Inyang and Joshua (2016)	Fraud management life cycle; and Fraud Triangle Theory
	Data mining	The effectiveness and the actual usage of Data mining	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI (2013); Bierstaker, Brody and Pacini (2006); Othman et al. (2015); Agathee and Ramen (2017)	Fraud management life cycle; and Fraud Triangle Theory
	Electronic alerts to the company on claims	The effectiveness and the usage of Electronic alerts to the company on claims	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI (2013)	Fraud management life cycle; and Fraud Triangle Theory
	Continuous Auditing	The effectiveness and the usage	A 5-point Likert Scale of	Sofia (2016)	Fraud management life cycle;

		of Continuous Auditing	effectiveness and frequency of usage was used		and Fraud Triangle
	Thorough evaluation of insurance policies and claims	The effectiveness and the usage of Thorough evaluation of insurance policies and claims	A 5-point Likert Scale of effectiveness and frequency of usage was used	Akomea-Frimong, Andoh and Ofosu-Hene (2016)	Fraud management life cycle; and Fraud Triangle Theory
	Continuous reviewing and rescoring claims using Suspicion Scores	The effectiveness and the usage of Thorough evaluation of insurance policies and claims	A 5-point Likert Scale of effectiveness and frequency of usage was used	IAIS (2011)	Fraud management life cycle
	Checking client behaviour asking for claim payment	The effectiveness and the usage of Checking client behaviour asking for claim payment	A 5-point Likert Scale of effectiveness and frequency of usage was used	AKI (2013)	Fraud management life cycle; and Fraud Triangle Theory
	Fraud vulnerability reviews	The effectiveness and the usage of Fraud vulnerability reviews	A 5-point Likert Scale of effectiveness and frequency of usage was used	IAIS (2011) and AKI (2013)	Fraud management life cycle; and Fraud Triangle Theory

Source: Author (2018)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the methods that was employed in respect to the philosophical approach, research design, sampling techniques, research instruments, data collection procedure, data analysis and ethical considerations that addressed the research objectives. According to Marczyk, De-Matteo and Festinger (2005) research methodology is a collection of procedures, principles and practices that directs the study. Zikmund et al (2010) pointed that research methodology involves the portrayal of methods used in conducting research investigations.

3.2 Research Philosophy

This study employed an interpretive research philosophical approach. In this research philosophy, the researcher pays critical attention on personal subjective significance about human beings conceiving logic of their environment and conveying meanings to it (Sarantakos, 2005). The major impact of this paradigm is that all the knowledge depends on the person interpreting it based on his or her experience and understanding (Davis, 2007).This is the reason why this study sought the opinions from the relevant respondents. This is in regard to people who have been able to utilize these fraud detection and prevention techniques or are enlightened about them in motor insurance industry. Interpretive research is a well-suited approach in identifying unknown reasons behind complex or interrelated social processes because it extends beyond observable facts unlike positivism that is exclusively limited to observed data (Bhattachejee, 2012). Moreover collecting data based on the nature of this study was purely based on the experience and knowledge of the respondents.

3.3 Research Design

This study employed descriptive design in order to find out what is the popularity level of anti-fraud techniques and their usage through data collection based on a survey method from a selected sample of motor insurance stakeholders operating in Nairobi. The descriptive design approach was appropriate because the study looked at factors influencing the usage of these anti-fraud techniques in order to answer the why question.

Descriptive studies are concerned about what is or what exists to some preceding event that has affected the present condition or event and how to get there (Cohen, Manion, & Morrison, 2007) and (Singh, 2006). The study was conducted on a field-setting enviroment where daily activities proceeded normally with minimum interference from the researcher. Furthermore the study's nature of investigation was non-experimental because the researcher did not manipulate the variables unlike the experimental or quasi-experimental approaches of study. Moreover it adopted a cross-sectional design approach in respect to the time horizon because data was collected at one point in time. It also employed a communication design approach with regards to data collection, because primary data was retrieved from the respondents through questionnaires.

3.4 Population of the Study

According to Sekaran and Bougie (2011), a population of study refers to all the people, objects or events of interest that the research investigator aspires to study. Kombo and Tromp (2009) defined a target population as a set or group of people or objects whose attributes would be analyzed. The study area of the population was Nairobi County. The study area was deemed appropriate because a huge percentage of the study's population operates in Nairobi County, which happens to be the capital city of Kenya. Furthermore, the area proved convenient to the researcher in regard to data collection because he resides in that county. The population of this study, comprised of the employees was drawn from all the 35 motor insurance companies. It also consisted of; insurance

agents offering services to the motor insurance firms, insurance brokers from 20 insurance broker firms and the motor valuers drawn from 20 motor valuers and assessors firms.

The unit of analysis for this study was the motor insurance firm. The individuals represented the firm as its unit of analysis. This is because according to Bhattachejee (2012) individuals are supposed to represent or signify their company's views or decisions.

3.5 Sample and Sampling Techniques

The research opted for a sample design because it was impossible to study the whole target population of the motor insurance sector. According to Cohen, Manion and Morrison (2007) the total expenditure for studying a whole population can be overwhelming and unfeasible to be incurred based on the researcher's budgetary constraints. Both non-probability and probability sampling techniques was used in the study. Concerning about non-probability technique, convenience-area sampling was used to sample Nairobi County for the study. This is because the population to be sampled was easily accessed by the researcher who resided in Nairobi (Kothari, 2004). Purposive sampling was used to sample the participants relevant to this study who had knowledge about the anti-fraud techniques used in the motor insurance industry. They comprised of employees (claims assessors and insurance underwriters), insurance brokers, motor valuers, assessors, and insurance agents.

Simple random sampling, a probability technique, was used to sample the aforementioned participants for the study. The study settled for simple random sampling because according to Kothari (2004) it gives each component of the population an equal chance of being picked up for the sample and all choices are independent from each other. Moreover when compared to systematic random sampling, it does not portray the danger of order bias (Mugenda, 2008). Tippett's random numbers table was used for the random selection of the respondents. Whereby the names of the targeted participants were coded with serial numbers and a random selection

made. In cases where the selected respondents were uncooperative to provide data, convenience sampling was used. This was actualized when the researcher collected data from the respondents he came face to face with in the research field (the offices of the motor insurance, motor valuers and brokerage companies).

The sample size of the study was determined by the formula recommended by Mugenda and Mugenda (2003) for a population of more than ten thousand sampling elements. A minimum number of 384 elements is recommended. The table below illustrates how the value of the sample size was determined.

The sample size was determined by the formula below:

$$N = \frac{Z^2 pq}{d^2}$$

Where:

n = Sample size

Z = Normal distribution Z score value 1.96 which corresponds to a 95% confidence level

p = Estimated proportion of the target population (normally the number of respondent to participate in a study is taken to be half of the population which is 50% or 0.5)

q= 1-p

d = margin of error (0.05)

n= 384

The sample size comprised of 114 employees (claims assessors and insurance underwriters) that would participate in the study from the motor insurance firms. Furthermore, it comprised of 90 insurance brokers from insurance brokerage firms, 90 motor valuers and assessors from motor valuers firms and 90 insurance agents providing their services to motor insurance firms. This formed 384 insurance stakeholders from the motor insurance firms.

Table 3.1 below illustrates how the sample size of the targeted insurance stakeholders was distributed among the respondents in each of the firm as presented below.

Table 3.1: Sample Size Distribution of the Targeted Insurance Stakeholder based on each Targeted Firm

SAMPLE SIZE DISTRIBUTION ON EACH TARGETED FIRM						
Motor Insurance Firm	Employee Sample size Distribution	Insurance Agent Sample size Distribution	Insurance Broker Ltd	Insurance Broker Sample size Distribution	Motor Valuer Ltd	Motor Valuer Sample size Distribution
1	4	5	1	5	1	5
2	4	5	2	5	2	5
3	4	5	3	5	3	5
4	4	5	4	5	4	5
5	4	5	5	5	5	5
6	4	5	6	5	6	5
7	4	5	7	5	7	5
8	4	5	8	5	8	5
9	4	5	9	5	9	5
10	3	5	10	5	10	5
11	3	4	11	4	11	4
12	3	4	12	4	12	4
13	3	4	13	4	13	4
14	3	4	14	4	14	4
15	3	4	15	4	15	4
16	3	4	16	4	16	4
17	3	4	17	4	17	4
18	3	4	18	4	18	4
19	3	4	19	4	19	4
20	3	4	20	4	20	4
21	3	-	-	-	-	-
22	3	-	-	-	-	-
23	3	-	-	-	-	-
24	3	-	-	-	-	-
25	3	-	-	-	-	-
26	3	-	-	-	-	-
27	3	-	-	-	-	-
28	3	-	-	-	-	-
29	3	-	-	-	-	-
30	3	-	-	-	-	-
31	3	-	-	-	-	-
32	3	-	-	-	-	-
33	3	-	-	-	-	-
34	3	-	-	-	-	-
35	3	-	-	-	-	-
TOTAL	114	90		90		90

Source: Author (2018)

3.6 Data Collection Methods

The study used primary data, which was collected through structured questionnaires. The questionnaires were directed to the employees of motor insurance firms, insurance brokers, motor valuers and assessors and insurance agents. The questionnaires were administered through a drop and pick later method. Questionnaires were used as a research instrument because it is a cheap and faster method of collecting data when compared to other research instruments (Kothari, 2004). The instrument gives the respondents adequate time to provide well thought answers compared to other methods (Kothari, 2004). Moreover, it is free from interview's biasness when compared to interviews (Kothari, 2004). Additionally it cover a very large sample of participants when compared to interviews (Peil & Rimmer, 1995). Finally, this type of research instrument can provide the best responses when the participant are assured of their privacy (Peil & Rimmer, 1995).

The first questionnaire that targeted motor insurance employees and insurance agents contained five sections. Section A and B comprised of three and four questions respectively that elicited demographic information about the organization and the respondent respectively. Section C and Section D comprised 18 items assessed with a five-point Likert scale. A Likert scale was used in the questionnaire because it helps in converting qualitative responses into quantitative values that can statistically be analyzed (Mugenda & Mugenda 2003 and Zikmund et al. 2010). Sections C and D addressed the first specific objective of the study that sought to establish the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector.

Section C was used to assess the perception of effectiveness ("Very Ineffective"; "Ineffective"; "Cannot Tell"; "Effective") and Section D was used to assess the level of usage of the anti-fraud techniques based on perceptions ("Never"; "Rarely"; "Cannot Tell"; "Often"; "Always"). Section E was used to address the second specific objective of the study, which sought to establish the

organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector. Section E comprised of four items on a 5-point Likert scale representing operationalized organizational factors. The likert scale was based on a 5-point agreement level ("Strongly Disagree"; "Disagree"; "Undecided"; "Agree"; "Strongly Agree").

The second questionnaire targeting insurance brokers and motor valuers contained four sections. Section A sought to retrieve demographic information about the respondent's profile that comprises of four questions. Section B and C was the same as Section C and D of the first questionnaire. Section D will also be the same as Section E of the first questionnaire.

The research study relied on primary data only because no organization would have been willing to provide secondary data related to the effectiveness and usage of the anti-fraud techniques. This explains why most studies Bierstaker, Brody & Pacini 2006; Efiong, Inyang & Joshua, 2016; Kummer, Singh & Best, 2015; Othman et al., 2015; Zamzami, Nusa & Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene, 2016; Ramazani & Atani, 2010; Rahman &Anwar, 2014; Mat et al., 2013) that sought to establish the effectiveness and usage of anti-fraud techniques were based on perceptions that exclusively relied on primary data. Furthermore, primary data is better than secondary data because according to Akrani (2014) it is more reliable because data it is retrieved originally from the research field and not from secondary sources that can be prone to errors, inaccuracies or can even be outdated.

3.7 Research Quality

The reliability and internal consistency was evaluated using Cronbach's Alpha. The test is utilized to check if questionnaires with multiple Likert scale questions are reliable. SPSS software was used to compute the Cronbach's Alpha. George and Mallery (2003) recommended a value of 0.7 or greater as acceptable for the reliability test (Waithera, 2015). 0.7 was the benchmark value the study used to test the reliability of the questionnaire.

Pilot study was conducted on 38 respondents who accounted for 10% of the total sample size. They comprised of the insurance brokers, insurance underwriters, claim assessors, motor assessors and valuers, insurance regulators and insurance fraud investigators. The results of the reliability test were presented in Table 3.2 below.

Table 3.2: Cronbach's Alpha Test

Reliability test for the questionnaires		
Variables of the Study Tested	**Cronbach's Alpha**	**No. of Items**
Effectiveness of Fraud Prevention and Detection Techniques	0.716	18
Extent of Usage of Fraud Prevention and Detection Techniques	0.840	18
Organizational factors influence on Usage of Fraud Detection and prevention Techniques	0.909	4

Source: Author (2018)

3.8 Data Collection Procedure

The researcher sought a research permit letter from school that aided in dropping questionnaires and conducting interviews to the sampled respondents. The researcher requested the participants to participate in the study through personally going to their organizations and through email messaging. The researcher personally administered the questionnaires during the appointed time given by the organizations. The participants were given a limited period of four days to fill the questionnaires, those who failed to respond on time were given an extension of three days. Necessary follow-ups were made via emails and phone calls to ensure that the participants respond to the questionnaires given in time. The primary data was collected between 17th January and 7th March in 2018. The data collection exercise took a relatively long period because most of the respondents were uncooperative and some feared to provide data, which was deemed too sensitive. Consequently, the researcher had to convince the participants that the data for the study was to enable him to attain a Master degree, which in most cases assisted him to obtain the necessary

data. Furthermore, most of the respondents were slow to fill in the questionnaires and necessary follow-ups had to be made to ensure that they respond in time. Additionally there were cases where the respondents misplaced or lost the questionnaires given to them. Hence, the researcher was forced to print new questionnaires for distribution and made sure that they filled them before going to other targeted areas of the study.

3.9 Data Analysis Techniques

The researcher after collecting data checked the questionnaires to ensure for completeness, accuracy and uniformity. This was done with the purpose of identifying and eliminating errors. Data was entered into the database system and coded based on the detailed codebook developed by the researcher. The study used frequencies and percentages to analyze demographic information and response rate. This study used both descriptive and inferential statistical techniques to analyze data. The descriptive techniques comprised on mean scores and ranking method. While the inferential statistical tools used were Friedman test, factor analysis and Spearman's rho correlation. IBM SPSS software was used for both descriptive and inferential analysis of the primary data obtained. The subsections below illustrates the data analysis techniques used based on each specific objective of the study and the justification for their usage.

3.9.1 Perceptions on Effectiveness and Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

Descriptive statistics was used to assess the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector, which was the first specific objective. They analysis comprised on mean scores and ranking method. Means scores was used to assess the average rating of effectiveness and usage based on the aggregate views of all the motor insurance stakeholders targeted. Ranking method was used to establish the perceived

effective techniques with the highest mean rating in a descending order to the perceived least effective techniques.

Past studies (Agathee & Ramen, 2017; Bierstaker, Brody & Pacini, 2006; Othman et al. 2015; Zamzami, Nusa and Timur, 2016; Akomea-Frimong, Andoh & Ofosu-Hene, 2016; Ramazani & Atani, 2010; Omar & Abu Bakar, 2012; Rahman & Anwar, 2014; Mat et al. 2013) that sought to establish the perception of effectiveness and usage of anti-fraud techniques used the descriptive analysis approach to address their objectives. Hence, the descriptive analysis method was deemed appropriate for the study. The data analysis results were presented in tables for interpretation.

Friedman test was used assess if there was a significant variation in the perceptions of the insurance stakeholders concerning the effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector. The stakeholders whom their perceptions on the effectiveness and usage of the techniques were to be tested for significant variation, comprised of, employees, insurance brokers, motor valuers and insurance brokers. The model was deemed fit for the study, because the study consisted of one group measure on three different occasions. Furthermore the group was a random sample from the target population and the dependent variable was ordinal (Lund Research, 2018). In this study, the dependent variable for the Friedman test analysis was the perceived effectiveness and usage of the anti-fraud techniques measured at an ordinal level by a 5-point Likert scale. This is because data on perceptions varies based on different people. On the other hand, the independent variable was the targeted insurance stakeholders of the study aforementioned above. This is because they embodies the views and perceptions, which could be uniform or vary based on their knowledge of the anti-fraud techniques.

The Friedman test results with p-values of less than 0.05 and high Chi-square values indicated that a significant variation existed in the perceptions of the insurance stakeholders about the effectiveness and usage of anti-fraud techniques (Green & Salkind, 2008; Sengur, 2012).

Furthermore, the Friedman test results with p-values of more than 0.05 and low Chi-square values indicated that no significant variation existed in the perceptions of insurance stakeholders concerning the effectiveness and usage of anti-fraud techniques (Green & Salkind, 2008; Sengur, 2012).

Friedman test was considered the best for the study when compared to its alternative, one-way ANOVA with repeated measures. This is because according to Lund Research (2018) Friedman test is best suited for depicting variations in ordinal data/variables compared to one-way ANOVA with repeated measures which is only applicable in showing differences based on interval or ratio variables. In this study, the type data/variable for comparative analysis was ordinal hence Friedman test model was considered applicable. Furthermore, according to Lund Research (2018) one-way ANOVA with repeated measures demands that the dependent variable should be normally distributed. Conversely, Friedman test model does not demand for this condition to be met given that in most cases ordinal data is not normally distributed. Additionally, Zimmerman and Zumbo (1993) contended that Friedman test possess a high statistical power for both normal and non-normal distributions when compared to Kruskal-Wallis test another model for testing variations in ordinal data. Another model that is popular for testing variations known as the Wilcoxon test was not considered appropriate for this study because unlike the Friedman test model it only test differences between two conditions or if the participants are matched in pairs (Green & Salkind, 2008).

3.9.2 Organizational Factors' Influence on Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

Descriptive statistics was also used to measure the level of agreement of the organizational factors' influence on usage of fraud detection and prevention techniques. The descriptive statistics comprised of mean scores and ranking method. A high mean score indicated a strong agreement

level and a low mean score indicated a weak agreement level**.** Correlation analysis was used to establish the association between the organizational factors and the usage of fraud detection and prevention techniques. Factor analysis was used to compress the dependent variable that had many components into factors which was used for the correlation analysis to test its association with the independent variables. Factor analysis was appropriate for the study since the dependent variable that many components, hence it was necessary to group the components into factors that accounted for significant variation in the dataset. This is the reason why regression analysis was not appropriate for the study because the Y-factor, which was supposed to be a single factor, comprised of six factors. Consequently, correlation analysis was the only model that the study could use to test the association of the study's variables. The Spearman's rho correlation model was deemed fit for the study. This is because the variables measured were all in an ordinal scale and there was a monotic relationship between the two variables tested (Lund Research, 2018).

Spearman's rho correlation model was considered more appropriate when compared to Pearson correlation model. This is because Pearson correlation model is only applicable in showing association between interval variables compared to Spearman's rho correlation model that is best suit in depicting association between ordinal variables (Chok, 2010). Moreover, Spearman's rho correlation model has high statistical power for both interval and ordinal data when compared to Kendall's correlation model (Siegel, 1957; Lieberson, 1964; Corty, 2007). This is because Spearman's rho correlation model shows the proportion of variability accounted for in determining the association between variables compared to Kendall' s correlation model that signifies the variation between the probability that the observed data are in the same order versus the probability that observed data are not in the same order (Hauke & Kossowski, 2011). The summary of the data analysis methods used were summarized in Table 3.3 in the next page.

Table 3.3: Data Analysis and Presentation Techniques of the Study

ITEM	DATA ANALYSIS TECHNIQUES	TYPE OF VARIABLE TO BE MEASURED	PRESENTATION TOOL
Organization's Profile	**Descriptive Statistics** Percentages & Frequencies	Dichotomous variable: Qualitative data Continuous variable: Quantitative data	Tables
Respondent's Profile	**Descriptive Statistics** Percentages & Frequencies	Dummy variable: Qualitative/nominal data Continuous variable: Quantitative data	Table
First Objective To establish the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector	**Descriptive Statistics** Mean Scores & Ranking **Inferential Statistics** Friedman test for Comparative analysis	Categorical Ordinal Variable: Qualitative data	Tables
Second Objective To establish the organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector	**Descriptive Statistics** Mean Scores & Ranking **Inferential Statistics** Factor Analysis & Correlation analysis	Categorical Ordinal Variable: Qualitative data	Tables and Scree chart

Source: Author (2018)

3.10 Ethical Considerations

Integrity and honesty was achieved by ensuring that published and unpublished writings, ideas, data, information and concepts that were used in this study were clearly acknowledged through citations and references. The information and ideas borrowed from these sources were carefully paraphrased to avoid plagiarism. The researcher sought permission to collect data from the participants by using a research permit letter that has been approved by the university in which the researcher schools at. The researcher ensured that no participant was be subjected in a state of being harmed psychologically because of being involved in this study.

The study maintained confidentiality and anonymity by making it clear to the participants in the questionnaires that their names will not be used. Finally, all the responses that were obtained from the participants were aggregated for statistical analysis and interpretation without specifically profiling each of motor insurance firm by their names, based on the responses retrieved. The researcher allowed the respondents to participate in this study freely out of their own willingness without being coerced or unfairly pressurized. Furthermore the researcher respected the right of the participants not to take part of the research study.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter encompasses the analysis and presentation of the research findings. The findings addressed the insurance stakeholders' perceptions on the effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector. The study used frequencies and percentages to analyze demographic information and response rate. Moreover, concerning about the first specific objective, descriptive statistics was used to measure the popularity level of effectiveness and usage of fraud detection and prevention techniques. Inferential statistics that comprised of Friedman test was used to do a comparative analysis between the targeted stakeholders in motor insurance sector on their perceptions on effectiveness and usage of fraud detection and prevention techniques. Additionally, concerning the second specific objective, Spearman's rho correlation analysis was used to gauge the organizational factors' influence on the usage of fraud detection and prevention techniques in the Kenyan motor insurance sector. Spearman's rho correlation analysis was employed after using factor analysis to compress the anti-fraud techniques, which was the dependent variable into a few factors.

4.2 Response Rate

An aggregate number of 154 questionnaires were completed and worthwhile for the analysis out of the 384 questionnaires given out to the participants. This signified a response rate of 40.1 as illustrated in table 4.1 and 4.2 respectively. The response rates of fraud studies are usually low because people fear to share information in relation to fraud. For instance past studies that investigated the perceptions of effectiveness of fraud detection and prevention techniques like Omar and Abu Bakar (2012), Rahman and Anwar (2014), Mat et al. (2013), Othman et al. (2015) and Zamzami Musa and Timur (2016) recorded a response rate of below 60%. The main reason

for non-response rate was because participants were uncooperative to give information and some firms actually bluntly refused to give the researcher permission to collect data from its employees. The general response rate was presented in table 4.1 below.

Table 4.1: Response Rate

	Frequency	**Percentage (%)**
Responded	154	40.1
Failed to Respond	230	60.9
Total	384	100

Source: Author (2018)

Table 4.2 below, presents in details the response rate the study managed to achieve in respect to each stakeholder it targeted. The stakeholders relevant to the study comprised of the employees, insurance brokers, insurance agents, motor valuers and assessors. The motor valuers and assessors had the highest response rate of 44.44%, followed by employees with 42.98%, the insurance brokers with 36.67% and insurance agents with 35.56%. Furthermore, 14 out of the 35 motor insurance firms targeted allowed the researcher to collect data from its employees and insurance agents. In addition, the researcher was able to retrieve data from 11 out of the 20 insurance brokerage firms targeted. Finally, he also managed to retrieve data from 10 out of 20 motor valuer and assessor firms targeted. The information was presented in Table 4.2 below.

Table 4.2: Response Rate based on Each Motor Insurance Stakeholder Targeted

	Targeted Sample	Frequency of Response	Percentage (%)	No. of firms studied	Frequency of Non-Response	Percentage (%)
Employees	114	49	42.98	14	65	57.02
Insurance Brokers	90	33	36.67	11	57	63.33
Motor Valuers and Assessors	90	40	44.44	10	50	55.56
Insurance Agents	90	32	35.56	14	58	64.44
Total	384	154			230	

Source: Author (2018)

4.3 Motor Insurance Firm Profile

This section presents and discusses the general information of insurance firms offering motor insurance services in Kenya. Motor insurance firms was the study's unit of analysis. The firm profile illustrates the registration status of the motor insurance firms in the NSE, the number of years the firms have been in existence in the motor insurance market and their average annual revenue. The findings were presented in Table 4.3 below.

Table 4.3: Motor Insurance Firm Profile

		Frequency	**Percent**
Registered in NSE	Yes	37	75.5
	No	12	24.5
Years of Existence in the market	0-3 years	-	-
	4-9 years	10	20.4
	10-20 years	27	55.1
	More than 20 years	12	24.5
Annual Turnover	0-50 Million Kenyan Shillings	-	-
	51-250 Million Kenyan Shillings	10	20.4
	251-500 Million Kenyan Shillings	8	16.3
	501-1000 Million Kenyan Shillings	19	38.8
	More than 1 Billion Kenyan Shillings	12	24.5

Source: Author (2018)

In Table 4.3 above, 75.5% of the responses accounted for the motor insurance firms in Kenya that were registered in the NSE. On the other hand, 24.5% accounted for the firms that were not registered in the NSE. Years of existence in the market: 55.1 % of the responses accounted for the insurance firms that have been in the market for 10-20 years. Moreover, 24.5% accounted for the motor insurance firms that have been in the market for more than 20 years and 20.4% accounted for the firms that have operated in the insurance market for 4-9 years. Annual turnover; Majority of the responses, 38.8% accounted for insurance firms that have an annual average turnover of

501-1000 Million Kenyan shillings, followed by 24.5% that accounted for 1 billion Kenyan shillings.

4.4 Demographic Information of the Motor Insurance Stakeholders

This section presents the demographic aspects of the targeted respondents of the study. The respondents were required to provide information about their occupation, academic qualification, professional qualification and work experience. The data obtained was analyzed using SPSS software to generate frequencies in count and percentages. Demographic information was obtained from employees, insurance brokers, motor valuers and insurance agents. The demographic information was presented in Table. 4.4 below.

Table 4.4: Demographic Information of Motor Insurance Stakeholders

Demographic Information on Motor Insurance Stakeholders		Frequency	Percentage (%)
OCCUPATION	Employees (Insurance Underwriters; Claims Assessors)	49	31.81
	Insurance Brokers	33	21.43
	Motor Valuers and Assessors	40	25.97
	Insurance Agents	32	20.78
WORK EXPERIENCE	0-2 years	16	10.39
	3-5 years	47	30.52
	6-10 years	57	37.01
	11-15 years	29	18.83
	16-25 years	5	3.3
	26-30 years	-	
ACADEMIC QUALIFICATION	Diploma	40	25.97
	Degree	82	53.25
	Higher Diploma	27	17.53
	Masters	5	3.25
	PhD Degree	-	-
PROFESSIONAL QUALIFICATION	ATC	-	-
	CPA	14	28.6
	CISA	-	-
	CFA	-	-
	ACCA	-	-
	CFE	-	-
	Other (CII)	35	71.4

Source: Author (2018)

In Table 4.4 in the previous page, in regard the employees accounted for more responses of 31.81% compared to the motor valuers, insurance brokers, and insurance agents who accounted for 25.97%, 21.43% and 20.78% respectively of the total responses. Work experience: Most of the participants had 6-10 years of work experience, which accounted for 37.01% followed by 3-5 years of work experience that accounted for 30.52%. Academic qualification: Participants with a bachelor's degree qualification accounted for the highest responses rate of 53.25%, followed by diploma with 25.97% and Higher Diploma with 17.53%. Professional Qualification: Majority of the participants, 71.4% have CII professional qualification, while 28.6% have CPA professional qualification. The professional qualification aspect was solely based on employees working in motor insurance firms. This is because for the rest of the stakeholders the minimum requirement for their job profiles was academic qualification (either degree or diploma in most cases).

4.5 Perceptions on Effectiveness and Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

The data analysis results were presented in line with the specific objectives of the study. Subsection 4.5.1 presents the data analysis results to address the first specific objective that sought to establish the motor insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector. Subsection 4.5.2 presents the data analysis results to address the second specific objective that sought to establish the organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector.

4.5.1 Insurance Stakeholders' Perceptions on Effectiveness and Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

The study pursued to establish perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector. To achieve the objective employees, insurance brokers, motor valuers and insurance agents drawn from the motor insurance sector were asked to rate the level of effectiveness of the fraud detection and prevention techniques. The rating scale of the Likert scale used was 1 to 5, whereby; 1 = Very ineffective, Ineffective = 2, Cannot tell = 3, Effective = 4, Very Effective = 5. Furthermore, they aforementioned respondents were asked to rate the level of usage of anti-fraud techniques. The rating scale of the Likert scale used was 1 to 5, whereby; 1 = Never, Rarely = 2, Cannot tell = 3, Often = 4, Always = 5.

Table 4.5 in the next page presents the descriptive analysis results of the perceptions of motor insurance stakeholders' on the effectiveness and usage of fraud detection and prevention techniques.

Table 4.5: Descriptive Results Presentation on Insurance Stakeholders Perceptions on Effectiveness and Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

Fraud Detection and Prevention Techniques	Mean of Perceived Effectiveness	Standard Deviation	Popularity of Effectiveness	Mean of Perceived Usage	Standard Deviation
Proper due diligence on potential customers	4.643	0.556	1	2.662	1.049
Organizational use of insurance fraud investigators	4.630	0.484	2	2.571	1.047
Thorough evaluation of insurance policies and claims	4.597	0.492	3	3.312	1.135
Integrated Motor Insurance Database System	4.591	0.622	4	2.162	1.026
Claims assessment through interviewing claimants and conduction of special investigations	4.539	0.500	5	3.442	1.054
Insurance fraud prevention and detection training programs	4.435	0.636	6	3.039	1.028
Systematic manual recognition via checklists	4.403	0.763	7	3.838	0.939
Continuous Auditing	4.390	0.598	8	3.403	1.000
Checking client behavior asking for claim payment	4.364	0.899	9	3.370	1.143
Electronic alerts to the company on claims	4.292	0.713	10	3.247	0.966
Reference check on employees	4.273	0.660	11	4.104	0.826
Continuous review through suspicion scores	4.169	0.892	12	3.071	1.042
Fraud vulnerability reviews	4.130	0.644	13	3.721	1.045
Data mining	4.039	0.808	14	3.214	0.885
Fraud hotlines	3.948	1.065	15	4.312	0.754
Digital analysis of Benford Law	3.714	0.988	16	2.896	0.916
Discovery sampling	3.708	0.963	17	3.149	0.975
Corporate code of conduct	3.656	1.217	18	4.312	0.681
Total Mean Score	4.274	0.732		3.487	0.973

Source: Author (2018)

In Table 4.5 in the previous page, the fraud detection and prevention techniques that were perceived to be effective with the highest effectiveness rating were due diligence on potential customers, organizational use of insurance fraud investigators, thorough evaluation of insurance policies and claims, Integrated Motor Insurance Database System, claims assessment and fraud prevention and detection training programs.

The findings of the study concurred with Othman et al.(2015), Efiong, Inyang and Joshua (2016) and Bierstaker, Brody and Pacini (2006) who had established that the use of forensic investigators was perceived to be an effective technique in detecting and preventing fraud. The findings also concurred with Akomea-Frimong (2016) which revealed that thorough evaluation of insurance policies and claims ranked was the most effective fraud detection and prevention technique.

On the other hand anti-fraud techniques with lowest perceived effectiveness rating, were digital analysis of Benford Law, discovery sampling and corporate code of conduct. The findings of the study conflicted with the research outcomes of (Bierstaker, Brody & Pacini, 2006; Othman et al., 2015; Met et al., 2013; Efiong, Inyang & Joshua, 2016) whose findings had established that the techniques were perceived to be effective. However, the findings of the study agreed with Omar and Abu Bakar (2012) whose findings established that digital analysis of Benford law was perceived to be ineffective. Furthermore, the findings of the study also coincided with the research outcomes of (Agathee & Ramen, 2017; Zamzami, Nusa & Timur, 2016) which established that discovery sampling was perceived as an ineffective anti-technique.

The findings of the study, concerning about the perceptions of the usage of the anti-fraud techniques, it established that corporate code of code, reference checks on employees and systematic manual recognition via checklists were perceived as the most often used techniques to curb fraud. Conversely, anti-fraud techniques perceived as least used to curb fraud, were Integrated Motor Insurance Database System, due diligence on potential customers, fraud prevention and

detection training programs, organizational use of insurance fraud investigators, digital analysis of Benford law and thorough evaluation of insurance policies and claims.

Interesting the anti-techniques that were perceived to be least used were perceived to be effective in curbing fraud as illustrated in table 4.5. These findings coincides with the research outcomes of (Bierstaker, Brody & Pacini, 2006; Rahman, 2014; Omar & Abu Bakar, 2012; Othman et al. 2015; Efiong, Inyang & Joshua, 2016) whose findings established that the anti-fraud techniques perceived to be effective were also perceived as least used to curb fraud. However, these findings conflicted with research outcomes Agathee and Ramen (2017) whose findings established that the fraud detection and prevention techniques perceived to be effective were also perceived as frequently used techniques to curb fraud.

4.5.2 Comparative Analysis of the Perceptions of Insurance Stakeholders on the Effectiveness and Usage of Fraud Detection and Prevention Techniques in the Kenyan Motor Insurance Sector

This section presents a comparative analysis of perceptions of employees, insurance brokers, motor valuers and insurance agents on the effectiveness and usage of the anti-fraud techniques in the Kenyan motor insurance sector. To examine if a significant variation existed on the perceptions of effectiveness and usage of anti-fraud techniques among the motor insurance stakeholders mentioned above, Friedman test model was employed for the comparative analysis.

Friedman test analysis was employed on each fraud detection and prevention technique by using SPSS software. Table 4.6, in the next page presents the outcomes of the Friedman tests on the differences in perceptions in the perceived effectiveness and usage of fraud detection and prevention techniques.

Table 4.6: Friedman Test Comparative Analysis of the Perceptions of Employees, Insurance Brokers, Motor Valuers and Assessors and Insurance Agents on the Effectiveness and Usage of Fraud Detection and Prevention Techniques in the Kenyan Motor Insurance Sector

Friedman Test							
	N	Perception on Effectiveness			Perception on Usage		
Fraud Detection and Prevention Technique		Chi-Square (X^2)	df	Asymp. Sig.	Chi-Square (X^2)	df	Asymp. Sig.
Organizational use of insurance fraud investigators	128	4.446	3	0.217	8.159	3	0.043
Fraud hotlines	128	40.712	3	0.000	10.500	3	0.015
Discovery sampling	128	8.641	3	0.034	5.619	3	0.132
Fraud vulnerability reviews	128	4.721	3	0.193	10.839	3	0.013
Integrated Motor Insurance Database System	128	20.346	3	0.000	13.853	3	0.003
Digital Analysis of Benford Law	128	31.860	3	0.000	5.804	3	0.122
Corporate Code of conduct	128	17.536	3	0.001	5.250	3	0.154
Reference check on employees	128	10.720	3	0.013	28.472	3	0.000
Claims assessment through interviewing claimants and conduction of special investigations	128	6.211	3	0.102	27.582	3	0.000
Insurance fraud prevention and detection training programs	128	13.083	3	0.004	37.657	3	0.000
Data mining	128	11.678	3	0.009	7.646	3	0.054
Continuous Auditing	128	3.862	3	0.277	33.680	3	0.000
Continuous review through suspicion scores	128	4.879	3	0.181	11.329	3	0.000
Electronic alerts to the company on claims	128	7.925	3	0.048	40.836	3	0.000
Thorough evaluation of insurance policies and claims	128	3.414	3	0.332	18.714	3	0.000
Systematic manual recognition via checklists	128	10.432	3	0.015	11.816	3	0.013
Checking client behavior asking for claim payment	128	12.326	3	0.006	10.185	3	0.017
Proper due diligence on potential customers	128	12.701	3	0.005	11.599	3	0.009

Source: Author (2018)

In Table 4.6 above, the findings of the Friedman test analysis revealed that there was a significant difference on the perceptions of the motor insurance stakeholders on the effectiveness of Integrated Motor Insurance Database System, fraud hotlines, discovery sampling, digital analysis of Benford law, corporate code of conduct, reference checks on employees and proper due diligence on

potential customers. This is because their P-values were less than 0.05 as shown in Table 4.6 in the previous page. Conversely, the Friedman test analysis revealed there was no significant difference on the perceptions of the motor insurance stakeholders on the effectiveness of organizational use of forensic accountants, continuous auditing, claims assessment, review through suspicion scores, fraud vulnerability review, thorough evaluation of insurance policies and claims. This is because the anti-fraud techniques had P-values of more than 0.05 as shown in Table 4.6 in the previous page.

The Friedman test results revealed that there was a significant difference on motor insurance stakeholders' perceptions in regard to the usage of insurance fraud investigators, continuous auditing, claims assessment, reference checks on employees, insurance fraud prevention and detection training programs, electronic alerts to the company on claims, proper due diligence on customers and thorough evaluation of insurance policies and claims. This is because these anti-fraud techniques recorded P-values of less than 0.05 as shown in table 4.6. On the other hand, the Friedman test results revealed that there was no significant variation on perceptions of the motor insurance stakeholders' on the usage of discovery sampling, corporate code of conduct and digital analysis of Benford law. This is because the techniques recorded P-values of more than 0.05 as shown in table 4.6 in page 43.

4.6 Organizational Factors' Influence on the Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

4.6.1 Descriptive Statistics Analysis and Presentation

To address the second objective, which pursued to establish the organizational factors that influence the actual usage of fraud detection and prevention techniques. The respondents were asked to rate the level of agreement the factors that influence the actual usage of fraud detection

and prevention techniques. The rating scale of the Likert scale used was 1 to 5, whereby; 1 = Strongly Disagree, Disagree = 2, Not Sure = 3, Agree = 4, Strongly agree = 5.

Table 4.7 below, presents the descriptive analysis of organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan Motor Insurance Sector. The results were based on the aggregate responses of the employees, insurance brokers, motor valuers and assessors and insurance agents.

Table 4.7: Descriptive Results Presentation on Organizational factors' Influence on the Actual Usage of Fraud Detection and Prevention Techniques based on Responses from Employees, Insurance Brokers, Agents and Motor Valuers and Assessors

Reasons for Usage of Fraud Detection and Prevention Techniques	Mean	Standard Deviation
Increased managerial attention on fraud risk management framework and strategies	3.864	1.029
The firm is financially stable to fund IT technology and forensic investigators	3.857	1.087
There exists a robust and dedicated Audit Committee	3.442	1.231
Fraud policy is strictly adhered to	3.130	1.192
Total Mean Score	3.636	1.097

Source: Author (2018)

In Table 4.7 above, the findings revealed that there was a strong agreement based on the responses of the motor insurance stakeholders that increased managerial attention on fraud risk management framework and strategies and the firm is financial stability influenced the usage of the fraud detection and prevention techniques. On the other hand, there was a weak agreement that there exists a robust and dedicated audit committee and fraud policy is strictly adhered to influence the actual usage of fraud detection and prevention techniques.

4.6.2 Inferential Statistics Analysis and Presentation

In order to adequately address the second objective, correlation analysis was applied to determine the association between the organizational factors and usage of fraud detection and prevention

techniques. The aim was to establish if the low mean ratings of usage of the anti-fraud techniques based on perceptions was explained by the low level of agreement that the organizational factors adequately led to the usage of the anti-fraud techniques and the vice versa. Factor analysis was employed to reduce the dependent variable (perceived usage of fraud detection and prevention techniques) into a few factors to be correlated against the organizational factors consisting of four variables (Managerial attention on fraud risk management framework, audit committee, financial stability and fraud policy).

4.6.2.1 Factor Analysis and Presentation

The main objective of factor analysis is to explain various variables with fewer numbers of factors. The process involved testing for sampling adequacy in order to know whether it is proper to proceed with factor analysis. The study developed a factor variance table and rotation matrix that led to picking up a few factors based on variables that accounts for more variability.

Kaiser (1974) recommended that a KMO value more than 0.5 means that the sample adequacy of the data set is satisfactory and that Bartlett's test of sphericity should be greater than 150. The results of the KMO and Bartlett's Test of the study indicated that factor analysis were suitable for the data set. This is because the KMO value was 0.654 and the Bartlett's Test of Sphericity was 759.182 surpassed the recommended benchmark values. The results were presented in Table 4.8 in the next page.

Table 4.8: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meye-Olkin Measure of Sample Adequacy		0.654
Bartlett's Test of Sphericity	Approx. Chi-Square	759.182
	df	153
	Sig	0.000

Source: Author (2018)

Principal component analysis was employed to isolate the variables that accounts for more variability and extract new factors based on the total variance explained as displayed in the table 4.9 below.

Table 4.9: Total Factor Variance Explained

	Extractions Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.624	20.134	20.134	2.883	16.019	16.019
2	2.312	12.844	32.977	1.842	10.233	26.252
3	1.585	8.808	41.785	1.817	10.094	36.347
4	1.522	8.453	50.238	1.808	10.045	46.391
5	1.424	7.908	58.147	1.713	9.515	55.906
6	1.168	6.490	64.637	1.572	8.731	64.637

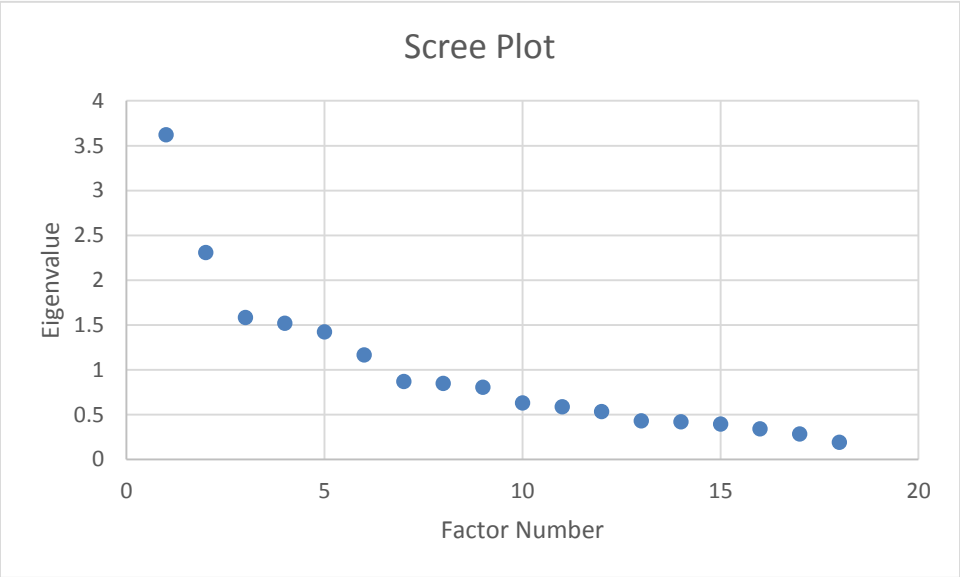
Source: Author (2018)

In table 4.9 above, factor one accounted for a huge percentage of variance (20.134%) more than the rest of the remaining five factors. The information was retrieved from extraction sums of squared loadings from the first part of Table 4.9 above. Furthermore, all the six factors accounted

for 64.637% of the total variation compared to the remaining twelve factors that were offset before developing Table 4.9.

Figure 4.1 below presents the scree plot, which shows the fraction of the aggregate variance in the data set together with the eigenvalues that is associated with the number of factors.

Figure 4.1: Scree plot



In Figure 4.1 above, there were eighteen factors. Each of the factor had its eigenvalue as plotted. The factors that had eigenvalues that were greater than one were considered as the main factors of the analysis. They comprised of only six factors. The factors for the analysis are retained when the curve is steep; consequently, six factors were retained before the curve started to flatten out.

The factors were only rotated once, which produced six factors and eighteen variables. Each factor had a value of more than 0.4, hence there was no need for another rotation. Factor 1 produced 5 variables, factor 2 produced 3 variables, factor 3 produced 2 variables, factor 4 produced 3 variables, factor 5 produced 3 variables and factor 6 produced 2 variables. The rotated factor matrix results were presented in table 4.10 in the next page.

Table 4.10: Rotated Factor Matrix

Fraud Detection and Prevention Technique	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Factor 1						
1. Digital analysis of Benford law	0.837					
2. Use of insurance fraud investigators	0.740					
3. Integrated Motor Insurance Database System	0.735					
4. Claims assessments through interviewing claimants and conduction of special investigations	0.734 0.489					
5. Fraud Detection and Prevention training programs						
Factor 2						
1. Use of Suspicion scores		0.791				
2. Electronic alerts to company on claims		0.680				
3. Corporate code of conduct		0.581				
Factor 3						
1. Data mining			0.783			
2. Proper due diligence on potential customers			0.776			
Factor 4						
1. Reference checks on employees				0.804		
2. Systematic manual recognition via checklists				0.574		
3. Fraud hotlines				0.566		
Factor 5						
1. Continuous auditing					0.705	
2. Thorough evaluation of insurance policies and claims					0.650 0.460	
3. Discovery sampling						
Factor 6						
1. Fraud vulnerability reviews						0.830
2. Checking client behaviour asking for claim						0.576

Source: Author (2018)

In Table 4.10 above, all the 6 factors were fraud detection and prevention of techniques whose usage was tested based on perceptions. Factor 1 had 5 variables loaded in it, the variables comprised; digital analysis of Benford law, use of insurance fraud investigators, Integrated Motor Insurance Database System, claims assessments through interviewing claimants and conduction

of special investigations and fraud Detection and Prevention training programs. All the variables in factor 1 recorded a value of 0.48 and above. Factor 2 had 3 variables loaded in it, which were, the use of Suspicion scores, electronic alerts to company on claims and corporate code of conduct. All the variables in factor 2 recorded a value of 0.58 and above. Factor 3 had 2 variables which consisted of data mining and proper due diligence on potential customers. All the variables in factor 3 recorded a value of 0.7 and above. Factor 4 comprised of three variables, which were, reference checks on employees, systematic manual recognition via checklists and fraud hotlines. All the variables in factor 4 recorded a value of 0.56 and above. Factor 5 consisted of three variables, namely, continuous auditing, thorough evaluation of insurance policies and claims and discovery sampling. All the variables in factor 5 recorded a value of 0.46 and above. Finally, factor 6 was loaded with two variables; they consisted of fraud vulnerability reviews and checking client behaviour asking for claim. All the variables in factor 6 recorded a value of 0.57 and above.

4.6.2.2 Correlation Analysis and Presentation

Spearman's correlation analysis was used to examine the association between organizational factors and the usage of fraud detection and prevention techniques. The associations with P-values of below 0.01 were deemed significant. The correlation co-efficient values with P-values of above 0.01 were considered insignificant. The correlation analysis results were presented in Table 4.11 in the next page.

Table 4.11: Spearman's rho Correlation Analysis Results

		ORGANIZATIONAL FACTORS			
EXTENT OF USAGE OF FRAUD DETECTION AND PREVENTION TECHNIQUES		There Exists a Robust and Dedicated Audit Committee	The Firm is Financially Stable to Fund IT Technology and Forensic Investigators	Increased Managerial Attention on Fraud Risk Management Framework Strategies	Fraud Policy in Strictly Adhered to
<u>Factor 1</u> 1. Digital analysis of Benford law 2. Use of insurance fraud investigators 3. Integrated Motor Insurance Database System 4. Claims assessments through interviewing claimants and conduction of special investigations 5. Fraud Detection and Prevention training programs	Correlation Co-efficient	**0.230****	0.067	0.151	**0.269****
	Sig.(2-tailed)	**0.004**	0.408	0.061	**0.001**
	N	154	154	154	154
<u>Factor 2</u> 1. Use of Suspicion scores 2. Electronic alerts to company on claims 3. Corporate code of conduct	Correlation Co-efficient	0.120	-0.005	0.070	0.088
	Sig.(2-tailed)	0.139	0.947	0.391	0.276
	N	154	154	154	154
<u>Factor 3</u> 1. Data mining 2. Proper due diligence on potential customers	Correlation Co-efficient	-0.081	0.031	-0.021	-0.098
	Sig.(2-tailed)	0.315	0.699	0.806	0.228
	N	154	154	154	154
<u>Factor 4</u> 1. Reference checks on employees 2. Systematic manual recognition via checklists 3. Fraud hotlines	Correlation Co-efficient	-0.138	-0.114	-0.021	0.006
	Sig.(2-tailed)	0.087	0.159	0.795	0.940
	N	154	154	154	154
<u>Factor 5</u> 1. Continuous auditing 2. Thorough evaluation of insurance policies and claims	Correlation Co-efficient	0.075	-0.111	-0.040	0.055
	Sig.(2-tailed)	0.358	0.170	0.619	0.496

3. Discovery sampling	N	154	154	154	154
Factor 6 1. Fraud vulnerability reviews 2. Checking client behaviour asking for claim	Correlation Co-efficient	-0.094	-0.080	-0.165	0.092
	Sig.(2-tailed)	0.249	0.324	0.061	0.258
	N	154	154	154	154

Source: Author (2018)

In table 4.11 above, at 0.01 significance level there was a significant relationship between audit committee (operationalized, as there exists a robust and dedicated audit committee) and perceived level of usage of fraud detection and prevention techniques in factor 1. This was justified with a correlation co-efficient value of 0.234 and a P-value of 0.004. Furthermore, there was a significant relationship between fraud policy (operationalized as fraud policy is strictly adhered to) and perceived level of usage of fraud detection and prevention techniques in factor 1. This was justified with a correlation co-efficient value of 0.269 and a P-value of 0.001. However, the positive association was weak, because the correlation co-efficient values were below the benchmark value of 0.5.

4.7 Summary of Data Analysis Findings

The outcomes of the descriptive analysis, based on the first specific objective, revealed that fraud detection and prevention techniques with the highest effectiveness rating based on perceptions of motor insurance stakeholders comprised of, proper due diligence on customers, use of insurance fraud investigators, evaluation of insurance policies and claims, Integrated Motor Insurance Database System, claims assessment and anti-fraud training programs. Interestingly the findings of the study revealed that the techniques with the highest effectiveness rating were perceived to be least used to curb fraud. The findings also revealed that the anti-fraud techniques with the lowest effectiveness rating based on perceptions of motor insurance stakeholders comprised of corporate code of conduct, discovery sampling and digital analysis of Benford law. Interestingly corporate

code of conduct was perceived to be often used. This was in sharp contrast in regard to discovery sampling and digital analysis of Benford law, which was perceived to be rarely used. The Friedman test analysis, revealed that a significant difference existed in the views of the motor insurance stakeholders on the effectiveness of fraud hotlines, digital analysis of Benford Law, Integrated motor insurance database system and corporate code of conduct. Furthermore, there was no significant difference concerning the views of insurance stakeholders on the effectiveness on forensic investigators, thorough evaluation of insurance policies and claims, continuous auditing and fraud vulnerability reviews.

Furthermore in regard to the motor insurance stakeholders' perceptions on usage of these anti-fraud techniques. The findings of the Friedman test revealed that there was significant variation of perceptions amongst the targeted insurance stakeholders on the usage of insurance fraud investigators, continuous auditing, claims assessment and proper due diligence on customers. On the other hand, there was a consensus concerning the perceptions of the motor insurance stakeholders on the usage of discovery sampling, corporate code of conduct and digital analysis of Benford law.

In regard to the second specific objective, the descriptive analysis revealed that there was a weak agreement level among the motor insurance stakeholders that there exists a robust and dedicated audit committee and fraud policy is strictly adhered to as reasons for usage of the anti-fraud techniques in the motor insurance sector. Furthermore, the correlation analysis results revealed that there was a positive relationship between organizational factors (audit committee and fraud policy) and the usage of anti-fraud techniques grouped as factor 1 by factor analysis. These techniques were digital analysis of Benford law, use of insurance fraud investigators, Integrated Motor Insurance Database System, claims assessments and fraud detection and prevention training programs.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented a summary of discussions of the research findings with the main objective being to establish insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in the Kenyan motor insurance sector. The chapter also presented conclusions, recommendations to the management, policy makers and contribution to literature knowledge. Finally, it also presented limitations of the study and future research.

5.2 Discussions of the findings

The main purpose of the study was to establish insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector. The main objective was addressed by two specific objectives; to establish the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector and to establish the organizational factors' influence on usage of fraud detection and prevention techniques in Kenyan motor insurance sector. The research outcomes were produced using primary data analysis that comprised of descriptive analysis, comparative analysis and correlation analysis. The ensuing sections discussed the research outcomes based on the two specific objectives of the study.

5.2.1 Perceptions on Effectiveness and Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

The findings of the study based on descriptive analysis, that sought to establish the perceptions on effectiveness and usage of fraud detection and prevention techniques in Kenyan motor insurance sector revealed that the anti-fraud techniques with the highest effectiveness rating comprised of ; proper due diligence on customers, use of insurance fraud investigators, evaluation of insurance

policies and claims, Integrated Motor Insurance Database System, claims assessment and anti-fraud training programs. The findings concurred with the research outcomes of (Othman et al., 2015; Efiong, Inyang & Joshua, 2016; Bierstaker, Brody & Pacini, 2006) which established that the use of forensic investigators was perceived to be an effective technique in detecting and preventing fraud. The findings also concurred with Akomea-Frimong (2016) which revealed that thorough evaluation of insurance policies and claims ranked was the most effective fraud detection and prevention technique.

On the other hand, these anti-fraud techniques perceived to be effective in curbing insurance fraud recorded the lowest level of usage. The research outcomes agreed with the findings of (Bierstaker, Brody & Pacini, 2006; Rahman, 2014; Omar & Abu Bakar, 2012; Othman et al. 2015; Efiong, Inyang & Joshua, 2016) which established that the anti-fraud techniques perceived to be effective were also perceived to be rarely employed to curb fraud. However, the findings of this study conflicted with research outcomes Agathee and Ramen (2017) whose findings established that anti-fraud techniques perceived to be effective were also perceived as often-used techniques to curb fraud. Bierstaker, Brody & Pacini (2006) argued that firms are reluctant to employ the services of fraud investigators and IT technology because they are very expensive. This could explain why motor insurance firms are perceived to rarely use fraud investigators and the Integrated Motor Insurance Database System. This enlightens the reason why a few motor insurance firms have registered in Integrated Motor Insurance Database System (IRA, 2017; AKI, 2017). Another possible reason as to why the motor insurance firms are perceived to rarely use insurance fraud investigators offered by IRA through IFIU apart from the independent fraud investigators, is that most of the motor insurance firms fear their reputation would be at stake and consequently lose public confidence (Odhiambo, 2016).

Furthermore, the findings of the study in regard to anti-fraud techniques with the lowest effectiveness rating were corporate code of conduct, discovery sampling and digital analysis of Benford law. Interestingly corporate code of conduct was perceived to be often used. The findings agreed with Omar and Abu Bakar (2012) whose research outcomes revealed that code of ethics was perceived to be ineffective. Code of ethics can only be effective when it is regularly communicated to employees to be aware about fraud and their obligations to curb it (Albrecht et al. 2009; Hassink et al. 2007; Weaver et al. 1999). On the other hand, besides discovery sampling and digital analysis of Benford law being perceived to be ineffective, they were also perceived to be least used to curb fraud. The possible reasons why discovery sampling and digital analysis on Benford law are perceived to be ineffective and rarely used is due to their inadequate use due to high costs or the organizations are still unfamiliar about these techniques (Zamzami, Nusa & Timur, 2016; Rahman, 2014).

The comparative analysis results produced by Friedman test model showed that the perceptions of motor insurance stakeholders varied in regard to the effectiveness of digital analysis of Benford Law, fraud hotlines, Integrated Motor Insurance Database System and corporate code of conduct. Furthermore, the results revealed that all the targeted motor insurance stakeholders generally agreed that thorough evaluation of insurance policies and claims, forensic investigators, continuous auditing and fraud vulnerability reviews were effective in mitigating insurance fraud. Additionally, in regard to the motor insurance stakeholders' perceptions on usage of these anti-fraud techniques. The outcomes of the Friedman test analysis discovered that there was a significant variation on the perceptions of insurance stakeholders on the level usage of insurance fraud investigators, continuous auditing, claims assessment and proper due diligence on customers to curb fraud. However, there was a common agreement across all the motor insurance

stakeholders that corporate code of conduct was often used to mitigate fraud and discovery sampling and digital analysis of Benford law were least anti-fraud techniques.

5.2.2 Organizational Factors' Influence on Usage of Fraud Detection and Prevention Techniques in Kenyan Motor Insurance Sector

Descriptive analysis and correlation analysis was used to address the second specific objective, which sought to establish the organizational factors' influence on usage of fraud detection and prevention techniques in the Kenyan motor insurance sector. The research outcomes of the study revealed that motor insurance stakeholders strongly agreed that increased managerial attention on fraud risk-management framework and firm being financially stable to fund IT technology forensic investigators were the reasons for usage of the anti-fraud techniques. On the other hand, the motor insurance stakeholders disagreed that there exists a robust and dedicated audit committee and fraud policy is strictly adhered to influence the actual usage of fraud detection and prevention techniques. According to AICPA (2003) and Othman et. al. (2015) the audit committee is responsible to certify that the firm implements anti-fraud programs and policies in order to curb fraud. Furthermore, Agathee and Ramen (2017) contended that it is essential for employees to know the contents of fraud policy, which motivates them to sufficiently implement anti-fraud techniques in order to mitigate fraud. From the findings, it can be established that lack of a robust audit committee and adherence to fraud policy could explain the reason why most of the anti-fraud techniques in the Kenyan motor insurance sector were perceived to be least used.

Furthermore, the findings of correlation analysis showed that there was a positive relationship between organizational factors (audit committee and fraud policy) and the usage of anti-fraud techniques grouped as factor 1 by factor analysis. These techniques comprised of digital analysis of Benford law, use of insurance fraud investigators, Integrated Motor Insurance Database System, claims assessments and fraud detection and prevention training programs. However, the

relationship was weak. This is because the motor insurance stakeholders strongly disagreed that there exists a robust and dedicated audit committee and fraud policy is strictly adhered hence recording a low level of agreement. In addition, motor insurance stakeholders perceived that all the techniques in Factor 1 were not often used to mitigate fraud, which recorded a low level of usage rate. According to KPMG (2016), the audit committee should advise the management and ensure that the firm invests in appropriate ant-fraud tools, improve fraud policies and encourage anti-fraud training programs in order to mitigate fraud. The findings of the study in this case, revealed that the audit committee is yet to encourage and ensure that motor insurance firms in Kenya invest in insurance fraud investigators, anti-fraud training programs and IT-technology like Integrated Motor Insurance Database System and digital analysis of Benford law.

5.3 Conclusions

In conclusion, the study established that the most perceived effective fraud detection and prevention techniques were rarely used to combat insurance fraud. These techniques comprised of proper due diligence on customers, use of insurance fraud investigators, evaluation of insurance policies and claims, Integrated Motor Insurance Database System, claims assessment and anti-fraud training programs. Though the perceptions of motor insurance stakeholders on the effectiveness of Integrated Motor Insurance Database System and proper due diligence on customers varied. On the other hand, the motor insurance stakeholders generally agreed that the use of insurance fraud investigators, evaluation of insurance policies and claims and anti-fraud training programs were effective in curbing insurance fraud. Furthermore, In regard to the factors influencing the actual usage of fraud detection and prevention techniques. The study established that fraud policy is not strictly adhered to and there is lack of a robust and dedicated audit committee as the factors that influence low usage of fraud detection and prevention techniques in the motor insurance industry. This was in specific reference to digital analysis of Benford law, use

of insurance fraud investigators, Integrated Motor Insurance Database System, claims assessments and fraud detection and prevention training programs.

5.4 Recommendations

5.4.1 Managerial Recommendations

The study had found out that the perceived effective anti-fraud techniques with the highest mean rating to be; proper due diligence on potential customers, use of insurance fraud investigators, evaluation of insurance policies and claims, Integrated Motor Insurance Database System, claims assessment and insurance fraud prevention and detection training programs. Moreover the study established that these techniques are barely utilized to curb fraud. The management should adequately employ these techniques in their fraud risk management policies in order to curb fraud in the motor insurance sector. Moreover, they have to see to it that fraud policies are strictly adhered to and ensure that the audit committee is dedicated to ensuring that these most effective fraud detection and prevention techniques are actually used to curb insurance fraud.

5.4.2 Policy Recommendations

The government through the IRA should formulate fraud risk management frameworks that incorporates all the fraud detection and prevention techniques illustrated in the previous section. For instance it should follow up and ensure that each and every motor insurance firm has registered in the Integrated Motor Insurance Database system, considering the fact that less than ten insurance firms have registered in the system (IRA, 2017; AKI, 2017). Given the fact that the technique is very effective in curbing insurance fraud based on the findings of the study. The IRA had established IFIU where insurance firms can report insurance fraud cases, but the firms actually fear to do so because they feel that their reputation would be at stake (Odhiambo, 2016). It should also encourage insurance firms to frequently use of insurance fraud investigators in the IFIU

immediately they sense fraud has been committed or is undergoing because it will help the firms to avoid huge financial losses from insurance fraud which is far much worse than reputational risk.

5.4.3 Contribution to Knowledge

The study contributes to the existing literature of effectiveness of fraud detection and prevention techniques by lengthening the literature to the motor insurance sector considering the fact that limited research has been conducted in this particular area. The study contributed to the field of knowledge by paying more attention on fraud detection and prevention techniques like the integrated motor insurance database system and the use of suspicion scores relevant to the motor insurance sector compared to the past studies. Moreover it contributed to the body of knowledge by trying to assess the factors that influence the usage of the fraud detection and prevention techniques which is a new aspect in the literature of effectiveness of fraud detection and prevention techniques.

5.5 Limitations of the Study and Suggestions for Future Research

The first limitation of the study is that it achieved a considerably low response rate of 40.1% for generalizability. This is because a large number of respondents were uncooperative to participate in the study and some companies completely refused to permit the researcher to collect data from the targeted participants. The study sought to use interview guides to collect data but it proved to be very frustrating and futile to get an appointment with the targeted respondents in the managerial level. Because of the limited time period the researcher had to collect, analyze and write the research report, the study resorted to utilize questionnaires to collect data. Furthermore secondary data was not considered for the study to establish the effectiveness and usage of the anti-fraud techniques, because the researcher feared that the motor insurance firms would be reluctant to provide the secondary information needed. This is after the study suffered from a low response rate because of unwillingness from participants to provide data.

Future research studies can explore to determine the factors influencing the effectiveness and usage of fraud detection and prevention techniques by using both primary and secondary data. That is if the targeted unit of analysis, for instance firms are willing to provide the information. Moreover in Kenya the public sector has been experiencing a serious fraud problem with respect to corruption, procurement fraud and public funds embezzlement. A study can be conducted to determine the most effective fraud detection and prevention techniques that can mitigate these types of fraud in the public sector based on the perceptions of the auditors, accountants, the top management and the forensic accountants.

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APPENDIX ONE: RESEARCH PERMIT LETTER

Strathmore UNIVERSITY

26th February, 2018

TO WHOM IT MAY CONCERN

Academic Reference for Otieno John Omondi No. 062132

Mr Otieno John Omondi is a postgraduate student in our Master of Commerce (MCom) programme. In partial fulfilment of the MCom degree, students are required to carry out a research project and write a thesis on a contemporary subject within their field of specialisation. Among other activities, the project involves data collection and analysis.

Omondi is requesting to gather information to be used in his research. The information he will obtain from your organization will be used for this academic purpose only and will be kept confidential. The results of the survey will be in summary form and will not disclose any individual, company name or company information in any way.

The research study is entitled **"To establish the motor insurance stakeholders' perception on the effectiveness of fraud detection and prevention techniques in Kenyan motor insurance sector"**

We hope that your organization can assist by providing information to the above named student.

Yours faithfully,

Mr Quindos Karanja
Coordinator – Master of Commerce
School of Management and Commerce
Email: qkaranja@strathmore.edu

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APPENDIX TWO: QUESTIONNAIRE ONE

MOTOR INSURANCE COMPANY FRAUD QUESTIONNAIRE

The general objective of this survey is to determine the insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in the Kenyan motor insurance sector. You are humbly asked to answer the questions truthfully. All the responses that you will provide in this survey will be treated confidentially and will only be published in summary and statistical form. You the respondent or the organization will not be identified in any way. Your voluntary participation will be highly appreciated.

(Please tick √ inside the box ☐ where applicable)

SECTION A: COMPANY'S PROFILE

1. Is your company publicly held in the Nairobi Stock Exchange? Yes ☐ No ☐

2. How long has the company operated in the industry?

   0 – 3 years ☐ 4 – 9 years ☐ 10 – 20 years ☐ More than 20 years ☐

3. What is the annual average revenue of your firm (in Millions of Kenyan Shillings)?

   0 – 50 ☐ 51 -250 ☐ 251-500 ☐ 501- 1000 ☐ More than 1000 ☐

SECTION B: RESPONDENT'S PROFILE

1. What is your job title?

Insurance Underwriter ☐ Claims Assessor ☐ Insurance Agent ☐

2. What is your highest education level?

   Diploma ☐ Bachelor Degree ☐ Higher Diploma ☐ Master's Degree ☐
   PhD Degree ☐

3(a). What is your current certification?

ATC ☐ CPA ☐ CISA ☐ CFA ☐ ACCA ☐ CFE ☐ Other ☐

(b). If other please specify……...

4. Please indicate your years of professional experience below;

   ☐ 0-2 years ☐ 3-5 years ☐ 6-10 years ☐ 11-15 years ☐ 16-25 years

   ☐ 26-30 years

SECTION C: PERCEPTION OF EFFECTIVENESS OF FRAUD PREVENTION AND DETECTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.

(Rating Scale; Very ineffective =1, Ineffective = 2, Cannot Tell = 3, Effective = 4, Very Effective = 5)

No.	Fraud Detection and Detection Technique	Very ineffective	Ineffective	Cannot Tell	Effective	Very Effective
1.	Organizational use of insurance fraud investigators					
2.	Fraud hotline					
3.	Discovery sampling					
4.	Fraud vulnerability reviews					
5.	Integrated Motor Insurance Database System					
6.	Digital analysis Benford law					
7.	Corporate Code of conduct					
8.	Reference check on employees					
9.	Claims assessments through interviewing claimants and conduction of special investigations					
10.	Sufficient insurance fraud prevention and detection training programs					
11.	Data mining					
12.	Continuous Auditing					
13.	Continuously reviewing and rescoring claims using Suspicion Scores					
14.	Electronic alerts to the company on claims					
15.	Thorough evaluation of insurance policies and claims					
16.	Systematic manual recognition via checklists					
17.	Checking client behaviour asking for claim payment					
18.	Proper due diligence on potential customers					

SECTION D: EXTENT OF USAGE OF FRAUD PREVENTION AND DETECTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.

(Rating Scale; Never =1, Rarely = 2, Cannot tell = 3, Often = 4, Always= 5)

No.	Fraud Detection and Detection Technique	Never	Rarely	Cannot Tell	Often	Always
1.	Organizational use of insurance fraud investigators					
2.	Fraud hotline					
3.	Discovery sampling					
4.	Fraud vulnerability reviews					
5.	Integrated Motor Insurance Database System					
6.	Digital analysis Benford law					
7.	Corporate Code of conduct					
8.	Reference check on employees					
9.	Claims assessments through interviewing claimants and conduction of special investigations					
10.	Sufficient insurance fraud prevention and detection training programs					
11.	Data mining					
12.	Continuous Auditing					
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15.	Thorough evaluation of insurance policies and claims					
16.	Systematic manual recognition via checklists					
17.	Checking client behaviour asking for claim payment					
18.	Proper due diligence on potential customers					

SECTION E: ORGANIZATIONAL FACTORS' INFLUENCE ON USAGE OF FRAUD DETECTION AND PREVENTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.
(Rating Scale; Strongly Disagree =1, Disagree = 2, Undecided= 3, Agree = 4, Strongly Agree= 5)

No.	Reasons for the Actual Usage of Effective Fraud Detection and Prevention Techniques	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	There exists a robust and dedicated Audit Committee					
2.	The firm is financially stable to fund IT Technology and forensic investigators					
3.	Increased Managerial Attention on Fraud Risk Management Framework Strategies					
4.	Fraud Policy is strictly adhered to					

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

AND PLEASE CHECK IF YOU HAVE ANSWERED ALL THE QUESTIONS

APPENDIX THREE: QUESTIONNAIRE TWO

MOTOR INSURANCE BROKER AND MOTOR VALUER AND ASSESSOR FRAUD QUESTIONNAIRE

The general objective of this survey is to determine the insurance stakeholders' perceptions on effectiveness and usage of fraud detection and prevention techniques in the Kenyan motor insurance sector. You are humbly asked to answer the questions truthfully. All the responses that you will provide in this survey will be treated confidentially and will only be published in summary and statistical form. You the respondent or will not be identified in any way. Your voluntary participation will be highly appreciated.

(Please tick √ inside the box ☐ where applicable)

SECTION A: RESPONDENT'S PROFILE

1. What is your job title?

Motor Insurance Broker ☐ Motor Valuer and Assessor ☐

2. Which organization do you work in?

Insurance Broker Ltd ☐ Motor Valuers and Assessors Ltd ☐

3. What is your highest education level?

Diploma ☐ Bachelor Degree ☐ Higher Diploma ☐ Master's Degree ☐
PhD Degree ☐

4. Please indicate your years of professional experience below;

☐ 0-2years ☐ 3-5years ☐ 6-10years ☐ 11-15years ☐ 16-25 years ☐ 26-30 years

SECTION B: PERCEPTION OF EFFECTIVENESS OF FRAUD PREVENTION AND DETECTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.

(Rating Scale; Very ineffective =1, Ineffective = 2, Cannot Tell = 3, Effective = 4, Very Effective =5)

No.	Fraud Detection and Detection Technique	Very ineffective	Ineffective	Cannot Tell	Effective	Very Effective
1.	Organizational use of insurance fraud investigators					
2.	Fraud hotline					
3.	Discovery sampling					
4.	Fraud vulnerability reviews					
5.	Integrated Motor Insurance Database System					
6.	Digital analysis Benford law					
7.	Corporate Code of conduct					
8.	Reference check on employees					
9.	Claims assessments through interviewing claimants and conduction of special investigations					
10.	Sufficient insurance fraud prevention and detection training programs					
11.	Data mining					
12.	Continuous Auditing					
13.	Continuously reviewing and rescoring claims using Suspicion Scores					
14.	Electronic alerts to the company on claims					
15.	Thorough evaluation of insurance policies and claims					
16.	Systematic manual recognition via checklists					
17.	Checking client behaviour asking for claim payment					
18.	Proper due diligence on potential customers					

SECTION C: EXTENT OF USAGE OF FRAUD PREVENTION AND DETECTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.

(Rating Scale; Never =1, Rarely = 2, Cannot tell = 3, Often = 4, Always= 5)

No.	Fraud Detection and Detection Technique	Never	Rarely	Cannot Tell	Often	Always
1.	Organizational use of insurance fraud investigators					
2.	Fraud hotline					
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4.	Fraud vulnerability reviews					
5.	Integrated Motor Insurance Database System					
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11.	Data mining					
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14.	Electronic alerts to the company on claims					
15.	Thorough evaluation of insurance policies and claims					
16.	Systematic manual recognition via checklists					
17.	Checking client behaviour asking for claim payment					
18.	Proper due diligence on potential customers					

SECTION D: ORGANIZATIONAL FACTORS' INFLUENCE ON THE ACTUAL USAGE OF FRAUD DETECTION AND PREVENTION TECHNIQUES

Please respond to the statements in table below by ticking **(√)** in the appropriate column.
(Rating Scale; Strongly Disagree =1, Disagree = 2, Undecided= 3, Agree = 4, Strongly Agree= 5)

No.	Reasons for the Actual Usage of Effective Fraud Detection and Prevention Techniques	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	There exists a robust and dedicated Audit Committee					
2.	The firm is financially stable to fund IT Technology and forensic investigators					
3.	Increased Managerial Attention on Fraud Risk Management Framework Strategies					
4.	Fraud Policy is strictly adhered to					

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

AND PLEASE CHECK IF YOU HAVE ANSWERED ALL THE QUESTIONS

APPENDIX FIVE: LIST OF MOTOR INSURANCE FIRMS IN KENYA

No.	Motor Insurance Provider
1.	AAR Insurance Kenya Ltd
2.	African Merchant Assurance Ltd
3.	AIG Insurance Company Ltd
4.	Allianz Insurance Company Ltd
5.	APA Insurance Company Ltd
6.	Britam General Insurance Ltd
7.	Cannon Assurance Company Ltd
8.	CIC General Insurance Company Ltd
9.	Corporate Insurance Company Ltd
10.	Directline Assurance Company Ltd
11.	Fidelity Shield Insurance Company Ltd
12.	First Assurance Company Ltd
13.	GA Insurance Company Ltd
14.	Geminia Insurance Company Ltd
15.	Heritage Insurance Company Ltd
16.	ICEA Lion General Insurance Ltd
17.	Intra-Africa Assurance Ltd
18.	Invesco Assurance Company Ltd
19.	Jubilee Insurance Company Ltd
20.	Kenindia Assurance Company Ltd
21.	Kenya Orient Insurance Ltd
22.	Madison Insurance Company Ltd
23.	Mayfair Insurance Company Ltd
24.	Occidental Insurance Company Ltd
25.	Pacis Insurance Company Ltd
26.	Pioneer Insurance Company Ltd
27.	Resolution Insurance Company Ltd
28.	Saham Insurance Company Ltd
29.	Sanlam Insurance Company Ltd
30.	Takaful Insurance of Africa Ltd
31.	Tausi Assurance Company Ltd
32.	The Kenya Alliance Insurance Ltd
33.	The Monarch Insurance Ltd
34.	Trident Insurance Company Ltd
35.	UAP Insurance Company Ltd

Source: IRA (2017)

APPENDIX SIX: MOTOR INSURANCE BROKERS IN KENYA

1. AA Insurance Brokers Limited
2. Acentria Insurance Brokers Limited
3. Acropolis Insurance Brokers Limited
4. Acuity Insurance Brokers Limited
5. African Continent Insurance Brokers Limited
6. Afriq Insurance Brokers Limited
7. Afrishield Insurance Brokers Limited
8. Bluecover Insurance Brokers Limited
9. Boma Insurance Brokers Limited
10. Bottomry Insurance Brokers Limited
11. Broadcover Insurance Brokers Limited
12. BTB Insurance Brokers Limited
13. Busam Insurance Brokers Limited
14. Canopy Insurance Brokers Limited
15. Centaur Insurance Brokers Limited
16. D & G Insurance Brokers Limited
17. Disney Insurance Brokers Limited
18. Eagle Africa Insurance Brokers Limited
19. Karen Direct Insurance Brokers Limited
20. Legacy Insurance Brokers Limited

Source: IRA (2017)

APPENDIX SEVEN: MOTOR VALUERS AND ASSESSORS IN KENYA

1. Automobile Professional Assessors Kenya Limited
2. Regent Automobile Valuers & Assessors
3. Trinity Automobile Valuers & Assessors
4. Tropical Motor Assessors
5. Universal Assessors & Valuers Limited
6. Uptown Motor Assessors Limited
7. Valett Loss Assessors
8. Paramount Assessors Limited
9. Piranha Automobile Valuers & Assessors Ltd
10. Precise Motor Assessors & Valuers
11. Prima Motor Assessors
12. Meticulous Automotive Engineering Assessors
13. Metropolitan Motor Assessors
14. Kenya Loss Assessors & Surveyors Limited
15. Kenya Pride Automobile Valuers & Assessors
16. Efficient Motor Assessors & Valuers
17. Elite Automobile Valuers & Assessors Ltd
18. Capital Alliance Valuers And Assessors
19. Discovery Auto Assessors
20. Efficient Motor Assessors & Valuers

Source: IRA (2017)

APPENDIX EIGHT: BUDGET PLAN

BUDGET PLAN

			KShs.KShs.
Printing a questionnaire to be used for Photocopying the rest	(1×4×5)	20	
Photocopying the rest of the questionnaires	(383×4×3)	4596	4616
Interview Guides	(37 ×1 ×5)		185
Transport (To and Fro)			6500
Printing and Binding Expense (4copies)			1950
TOTAL			**13251**

KEY

Printing expense per page in school is 5 Kenyan Shillings (KShs)

A questionnaire is a 4 paged document

Photocopying per page is 3 KShs

The document will be approximately 90 pages

Interview guide will be 1 paged

APPENDIX NINE: WORK PLAN

RESEARCHER'S THESIS WORK PLAN	
15th January 2018	Presentation of my Research Proposal and Defense
17th January to 16th February 2018	Taking questionnaires to the respondents and to conducting interviews
20th February to 7th March 2018	Retrieving questionnaires and conducting interviews that were remaining
9th March to 12th March 2018	Putting and coding data in the computer for descriptive and inferential analysis
14th March to 24th March 2018	Preparations of findings, presentations and interpretation of results
26th March to 28th April 2018	Review of the whole document involving refining and adding new emerging details that affects the Literature Review and the Research Methodology
29th April 2018	Submission of the Whole work to the supervisor for review
5th May 2018 to 11th May 2018	Preparation for seminar defense

Source: Author (2018)

APPENDIX ELEVEN: CASES OF INSURANCE FRAUD IN KENYAN INSURANCE SECTOR

Classifications	Nature of fraud	2013	2014	2015
Motor	Injury claims/Forged Certificates/Damage & Theft claims	21	27	42
Medical	Fraudulent Claims	3	7	18
Agents	Theft by agents/Commission fraud	6	25	25
Company Employees	Theft by employees	10	10	7
Workmen's	Fraudulent WCA Claims	6	6	0
Life Covers	Fraudulent Life Claims	1	4	5
Funeral Expenses	Fraudulent Funeral Claims	2	4	1
Others	Personal Accident/Policyholder/Advocates etc.	6	5	8
TOTAL FRAUD CASES		**55**	**104**	**106**

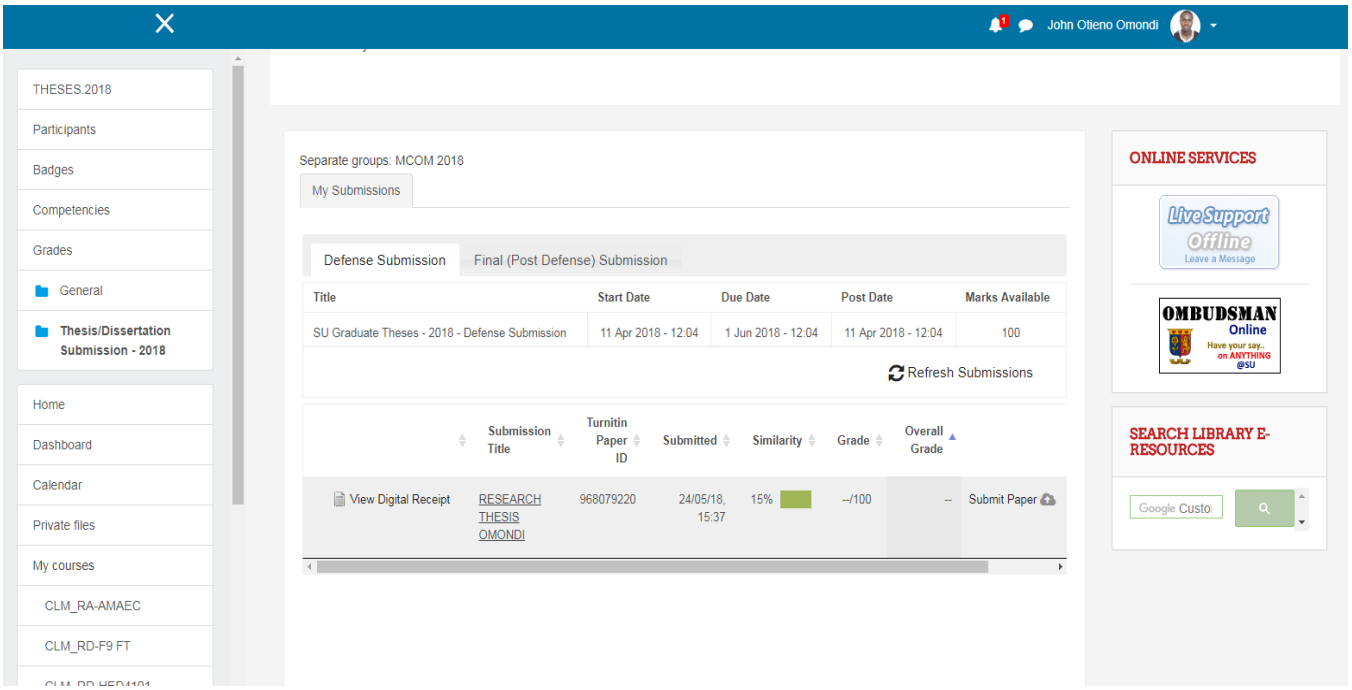
Source: Odhiambo (2016)

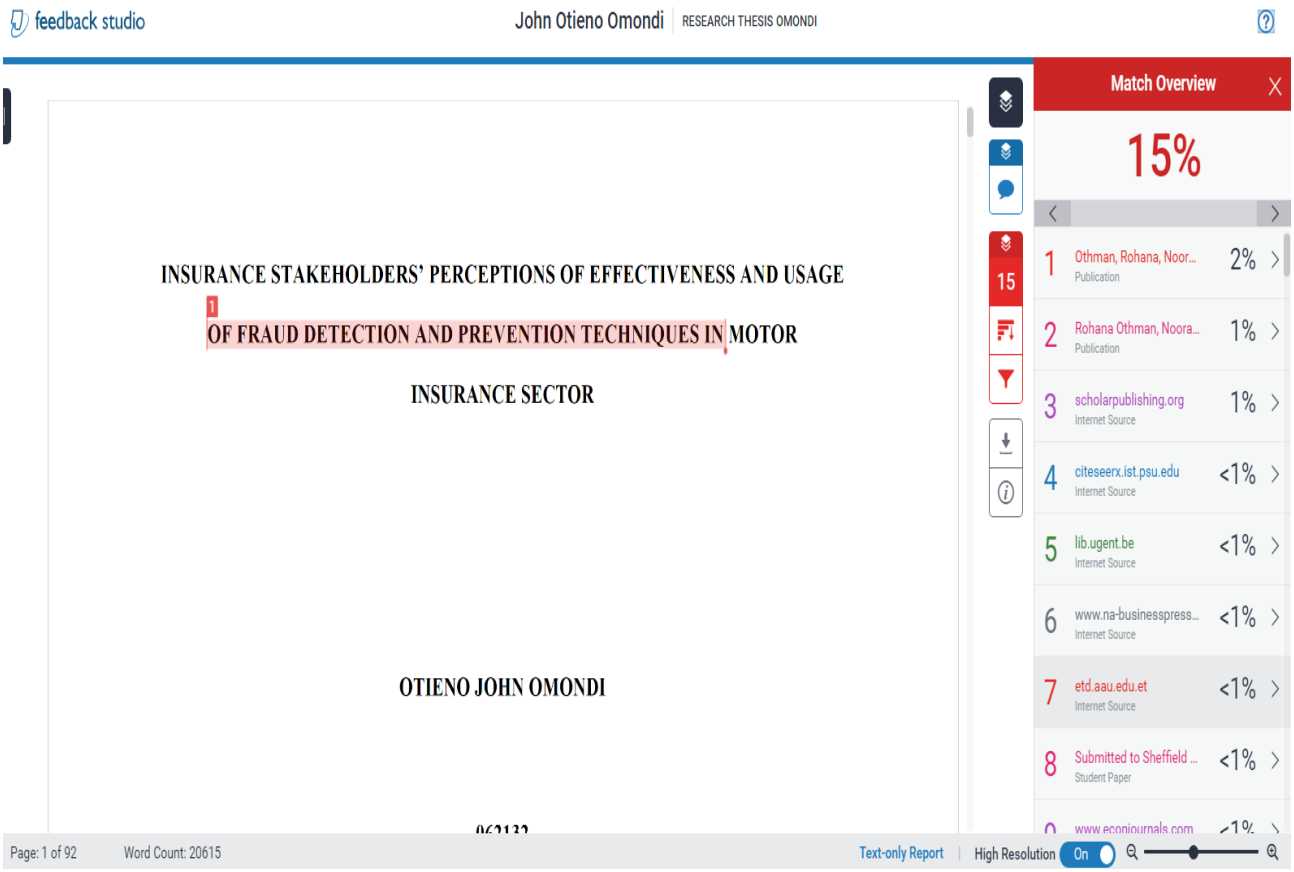
APPENDIX TWELVE: AMOUNT OF MONEY LOST THROUGH INSURANCE FRAUD IN KENYAN MOTOR INSURANCE SECTOR

Classification	Nature of Fraud	2015		2015Total		2014Total		2014/2015Change (%)	
		Frequency	Severity (KES'000')	Frequency	Severity KES'000'	Frequency	Severity KES'000'	Frequency	Severity
Motor	Fraudulent Motor Injury claims	18	12,750	42	56,325	27	44,394	55.6%	26.9%
	Forged insurance certificates	4	120						
	Fraudulent motor damage/theft insurance claims	20	43,455						
Medical	Fraudulent claims	18	1,740	18	1,740	7	934	157.1%	86.4%
Agents & Brokers	Theft by insurance agents	20	18,367	25	19,704	26	3,194	-3.8%	517.0%
	Commission fraud by agents	0	-						
	Operating Insurance Broker and Agency business without registration	4	6						
	Complaint against agents/broker	1	1,331						
Insurance Companies	Theft by employees	7	20,367	7	20,367	10	24,266	-30.0%	-16.1%
	Complaint against insurance	0	-						
Workmen's Compensations	Fraudulent claims	5	27,500	5	27,500	2	6,900	150.0%	298.6%
Advocates/Auctioneers	Complaint against ISP: Advocate/	1	20	1	20	-	-	0.0%	0.0%
Funeral last Expenses	Fraudulent funeral claim	0	-	-	-	4	16,460	-100%	-86.6%
Life Insurance	Fraudulent Life Claim	3	2,200	3	2,200	4		-25.0%	
Others	Fraudulent Personal Accident Claim	0	-	5	239,045	7	6,614	-28.6%	3514.4%
	Fraudulent Policy Holder Claims	2	239,045						
	Others	3	-						
Total		**106**	**366,902**	**106**	**366,902**	**87**	**102,761**	**21.8%**	**257.0%**

Source: IRA (2016)

APPENDIX THIRTEEN: TURN IT IN PLAGIARISM CHECKER REPORT





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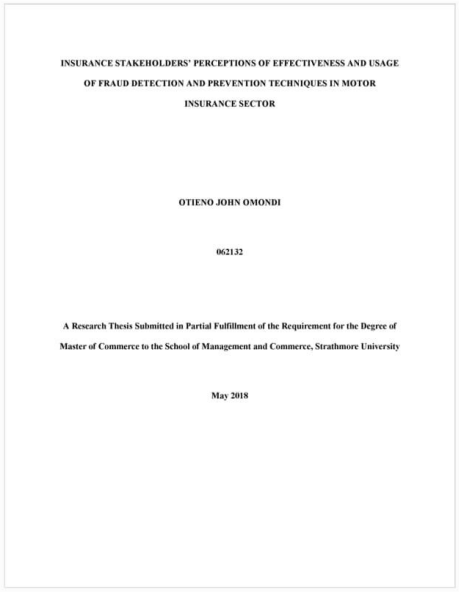

INSURANCE STAKEHOLDERS' PERCEPTIONS OF EFFECTIVENESS AND USAGE OF FRAUD DETECTION AND PREVENTION TECHNIQUES IN MOTOR INSURANCE SECTOR

OTIENO JOHN OMONDI

062132

A Research Thesis Submitted in Partial Fulfillment of the Requirement for the Degree of Master of Commerce to the School of Management and Commerce, Strathmore University

May 2018