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**THE INFLUENCE OF FRAUD RISK MANAGEMENT ON FRAUD OCCURRENCE  
AND THE MODERATING EFFECT OF FIRM SIZE IN KENYAN LISTED  
COMPANIES**



**A Research Thesis Submitted to Strathmore Business School in Partial Fulfillment for the  
Degree of Master of Commerce of Strathmore University.**

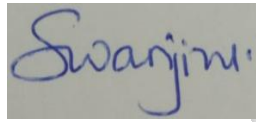
**November 2020**

## 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 research thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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Approval

This research thesis has been reviewed and approved for examination by;

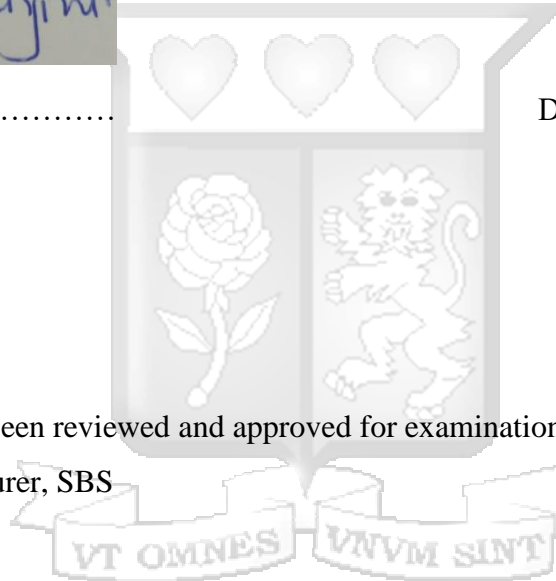
Dr. James Ndegwa, Lecturer, SBS



Signature.....

4<sup>th</sup> November, 2020

Date.....



## DEDICATION

I dedicate this research project to my unwavering parents and siblings for their continued support and financial commitment during my Master's program and research thesis. Thank you so much, I would not have accomplished all this without you by my side cheering me on.

I also dedicate this accomplishment to my loving husband and sweet child. You have been a great source of inspiration and strength. I deeply appreciate your financial and moral support as well as a peaceful environment to pursue my studies. I am forever grateful for your guidance and dedication to my success.



## ACKNOWLEDGEMENT

I thank the Almighty God for giving me the gift of life, knowledge, strength and patience to deliver this work. I also thank my supervisor Dr. James Ndegwa for closely helping me to produce this work through guidance and constructive criticism. I also acknowledge all my friends and classmates who in one way or another contributed to this research work.



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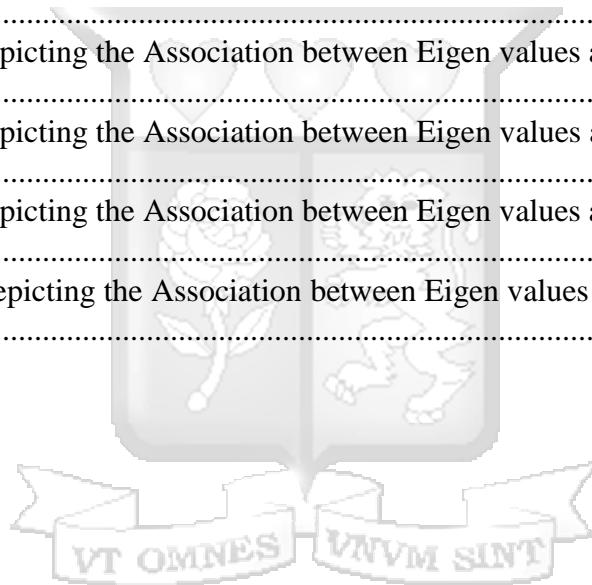
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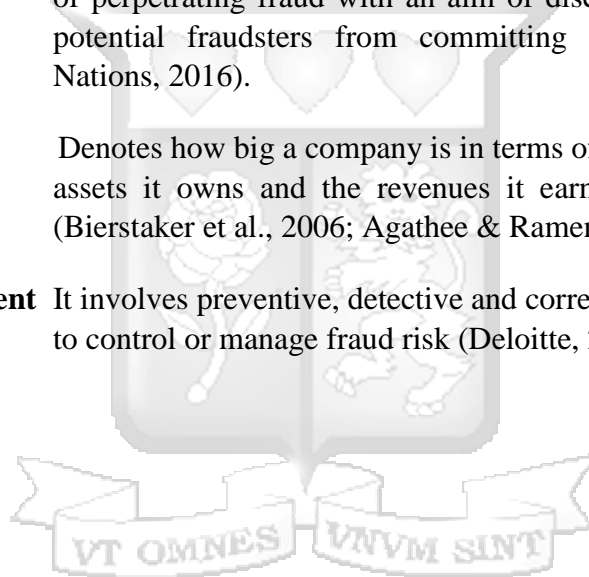


## ABBREVIATIONS AND ACRONYMS

|         |   |
|---------|---|
| ACFE    | Association of Certified Fraud Examiners                  |
| CBK     | Central Bank Kenya  |
| CEO     | Chief Executive Officer                                   |
| CMA     | Capital Market Authority                                  |
| CPA     | Certified Public Accountant                               |
| DPP     | Director of Public Prosecution                            |
| IT      | Information Technology                                    |
| M       | Mean score  |
| NACOSTI | National Commission for Science Technology and Innovation |
| NBK     | National Bank of Kenya                                    |
| NSE     | Nairobi Securities Exchange                               |
| OLS     | Ordinary Least Square                                     |
| PwC     | PricewaterhouseCoopers                                    |
| SBS     | Strathmore Business School                                |
| SD      | Standard Deviation  |
| SMEs    | Small and Medium size Enterprises                         |
| SPSS    | Statistical Package for the Social Sciences               |
| USA     | United States of America                                  |
| VIF     | Variance Inflation Factor                                 |

## DEFINITION OF KEY TERMS

- Fraud Occurrence** It refers to the deliberate misrepresentation of the truth with an aim of deceiving a particular entity or person for unfair wrongful gain at their own expense (Kingsley, 2015). Fraud occurrence is classified into three primary dimensions, namely, asset misappropriation, corruption and financial statement fraud (Kingsley, 2015).
- Preventive Controls** Refers to anti-fraud techniques put in place to discourage fraud from happening in the first place (Othman et al., 2015).
- Detective Controls** Refers to the anti-fraud techniques that reveals an ongoing fraud or a fraud incident that has already happened (Othman et al., 2015).
- Corrective Controls** Entails policies set to discipline fraudsters who were found culpable of perpetrating fraud with an aim of discouraging them and other potential fraudsters from committing fraud in future (United Nations, 2016).
- Firm Size** Denotes how big a company is in terms of the employees it has, the assets it owns and the revenues it earns every accounting year (Bierstaker et al., 2006; Agathee & Ramen, 2017).
- Fraud Risk Management** It involves preventive, detective and corrective controls put in place to control or manage fraud risk (Deloitte, 2014).



## ABSTRACT

In Kenya, the fraud menace has led to the collapse of big corporations. One of the key factors leading to fraud to thrive is lack of sufficient or weak anti-fraud control systems. Based on numerous reviewed fraud studies there existed knowledge gap to establish the influence of fraud risk management practices on the level of fraud occurrence on listed firms in Kenya and if firm sizes moderates the relationship. Thus, this study sought to establish the moderating effect of firm size on the relationship between fraud risk management and fraud occurrence in Kenyan listed companies. This was guided by four specific objectives. The first objective was to assess the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya. The second objective was to establish the effect of detective controls on the level of fraud occurrence on listed companies in Kenya. The third objective was to evaluate the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya. Finally, the fourth objective was to determine the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya. The study adopted a causal research design. Structured questionnaires were employed to collect data on a sample of 275 senior managers working in the Kenyan listed companies. The descriptive results established that all the preventive, detective and corrective controls were perceived to be effective in curbing fraud occurrence on listed companies in Kenya. Concerning fraud occurrence, the descriptive findings ascertained that the severity level of fraud cases were moderately low on listed companies in Kenya. The Multiple linear regression results revealed that only preventive and corrective controls had a profound negative effect on the degree of fraud occurrence on listed companies in Kenya. Conversely, detective controls had no significant effect on the degree of fraud occurrence on listed companies in Kenya. The study also observed that firm size had no profound effect on the relationship between the three assessed fraud risk management controls and the level of fraud occurrence on listed companies in Kenya. The major implication of the study is that the implementation of the most effective anti-fraud techniques requires the goodwill of the top management. If the top management pays no attention on seeing to it that the most effective anti-fraud techniques are properly and frequently employed. The fraud risk management controls would amount to nothing even if sufficient financial and human resources are devoted in procuring them. Additionally, corrective controls must be seriously looked into as an effective strategy of curbing fraud since they indeed are instrumental in curbing fraud.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Fraud has turned out to be a serious threat to the sustainability of organizations globally (ACFE, 2016). This is because fraud negatively affects the profitability, economic growth and social welfare of the firms (Simbolon, Ahmed & Elviani, 2018). For instance the 2007 to 2009 global financial crisis was caused by a wide range of fraud activities in the mortgage industry through conspiracy between mortgage originators, the securities issuers and underwriters (Fligstein & Roehrkasse, 2016). The conspirators were identified, prosecuted and ended up paying multibillion-dollar penalties (Fligstein & Roehrkasse, 2016). Recently, Volkswagen was involved in a fraud scandal that was characterized by fitting devices in diesel engines that cheated the level of carbon dioxide emitted by the vehicle based on 800,000 car products it sold (Hotten, 2015). This was done as strategy of boosting its sales (Hotten, 2015). Fraud refers to the deliberate misrepresentation of the truth with an aim of deceiving a particular entity or person for unfair wrongful gain at their own expense (Kingsley, 2015). According to ACFE (2018) based on 2690 fraud cases that have been experienced by numerous organizations in 125 countries, a total sum of \$7 billion has been lost.

Besides that, asset misappropriation schemes were the most common fraud cases perpetuated globally accounting for 89% of the cases though the least costly (\$114,00 median loss per fraud case) (ACFE, 2018). On the other hand, financial statement fraud schemes were the least common (10% of cases) but very costly (\$800,000 median loss per fraud case) when compared to other forms of fraud (ACFE, 2018). Interestingly, over the past 10 years (2008-2018) the referrals of fraud cases to prosecution went down by 16% due to fear of bad publicity (ACFE, 2018). On the other hand, based on survey conducted by PwC (2020) it was noted that the most common fraud scheme perpetrated were bribery & corruption, procurement fraud, asset misappropriation and customer fraud. Additionally, in sharp contrast to the findings established by (ACFE, 2018), the research outcomes of PwC (2020) observed that procurement fraud was the most disruptive then followed by bribery & corruption and financial statement fraud schemes respectively. The survey

further indicated that 36% of Kenyans experienced a fraud loss of Kshs. 10 million while only 2% experienced a loss of more than Kshs. 500 million.

Though most of the Kenyans are aware about fraud risks and are putting in place mechanisms in their organizations to combat bribery and corruption fraud (PwC, 2020). In Kenya, the private sector with specific reference to firms listed at NSE has experienced significant fraud issues. For instance, CMA took a corrective action against the former management of CBK who were running the operations of the bank as at 31<sup>st</sup> December 2015 for embezzling the bank's finances and being involved in financial statement fraud (CMA, 2018). Moreover, the senior management of Uchumi Supermarket Ltd and Mumias Sugar Ltd were involved in a scandal of asset misappropriation and smoothing the accounting figures of the firms in 2014 and 2015 respectively (Cytonn Investment, 2018). In addition, the directors of CMC Motors Ltd were allegedly involved in a scheme of fraudulently boost the firm's profits by accounting for undelivered vehicle sales as revenues and intentionally failing to capture interest payments for the vehicles sold on credit (Herbling, 2014).

Weak internal control systems have been pointed to be responsible for nearly half of the fraud cases globally (ACFE, 2018). This has specifically to do with weak preventive, detective and corrective controls of the firm since employees perpetuate fraud with a lot of ease and escape without being noticed thus motivating their colleagues to do the same (PwC, 2014).

This study contextualized fraud occurrence as asset misappropriation, corruption and financial statement fraud based on how previous studies such as Kamaliah et al. (2018), ACFE (2018) and PwC (2018) did it. Moreover, corruption was assessed as a micro issue linked to fraud occurrence. It was based on the items assessing corruption fraud based on the ACFE (2018) guidelines. Thus, corruption fraud was assessed in terms of purchasing schemes, securing payments involving inflated invoices, conflict of interest involving sale of goods to a friendly party at a cheaper price than the actual amount, bribery and making false or illegal gratuity payments.

### **1.1.1 Preventive Controls and the Level of Fraud Occurrence**

Preventive controls are anti-fraud techniques put in place to discourage fraud from happening in the first place (Othman, et al. 2015). There are various fraud preventive controls identified by

literature namely, code of conduct, antifraud training programs, reference checks on employees, fraud reporting policies, bank reconciliation, staff rotation policy, enhanced audit committees and proper due diligence on customers among others (Bierstaker et al., 2006; Othman et al., 2015; Otieno, 2018; Hakami & Rahmat, 2019). Just to understand a few of the controls, code of conduct as a preventive control, communicates to employees about key standards of acceptable behavior and regulations discouraging ethical conduct (Bierstaker et al., 2006). On the other hand, anti-fraud training is a programme that educates employees about all aspects of fraud and how to effectively prevent and detect fraud (Mangala & Kumari, 2017). Additionally, background checks involves investigating a potential employee's past records to check if he or she has a criminal record during pre-employment stage (Holtfreter, 2008).

Most of the studies (Bierstaker et al., 2006; Rahman, 2014; Zamzami, Nusa & Timur, 2016; Othman et al., 2015; Otieno, 2018; ACFE, 2018) revealed that the most perceived effective preventive controls were code of conduct, anti-fraud training, cash reviews, continuous auditing, reference checks on employees, fraud hotlines and due diligence on customers. However, the antifraud measures were less often used to combat fraud. The probable reason could be linked to the fact that the most effective anti-fraud techniques demands a lot of investment in terms of procuring them, implementing and maintaining them (Bierstaker et al., 2006; Agathee & Ramen, Rahman, 2014). Supplementary to the fact that there have been studies conducted to establish the perceived effectiveness of the aforementioned anti-fraud measures. There have been studies (King'ori, Kiragu & Kamau, 2019; Kamaliah et al., 2018; Waigumo, 2012; ACFE, 2018; Holtfreter, 2008) that have gone an extra mile to depict the relationship between the anti-fraud measures and the level of fraud occurrence.

Generally, the aforementioned studies revealed that preventive controls have a negative significant effect on the level of fraud occurrence except for Waigumo (2012) who observed that the preventive measures used by Kenyan banks are not significantly effective in curbing bank fraud. Waigumo (2012) reasoned that this could be because the techniques are old in combating bank fraud since the fraud dynamics have changed due to rapid IT advancement. Recently, a top fraud investigator by the name of Pamela Meyer came up with the lie-spotting technique that can unravel if a person is conducting or has perpetuated unethical conduct involving fraud (ACFE, 2020). For instance, a guilty person would narrow their scope of their denial momentarily (ACFE, 2020).

For example a truthful person may say that he or she has not stolen anything while a guilty one would say that he or she did not steal 20 dollars (ACFE, 2020). Pamela provided several body language indicators showing that someone is lying and probably could have been involved or is carrying out a fraudulent activity (ACFE, 2020). They comprise of lowered voice, lip biting, hand wringing, excessive sweating, closed eyes, slumped posture or fake smile with no crinkly lines (ACFE, 2020).

The lie-spotting technique can play an important role in unraveling a fraudulent action thus preventing fraud losses or discouraging people from perpetrating fraud in future (ACFE, 2020). Presently, to the best of researcher's knowledge virtually all the companies listed in the NSE, Kenya lacks a clear policy guideline of the preventive controls that are effective enough in deterring fraud and reducing losses. This is because based on the reviewed studies (Bierstaker et al., 2006; Holtfreter, 2008; Waigumo, 2012; Othman et al., 2015; Kamaliah et al., 2018; ACFE, 2018; King'ori, Kiragu & Kamau, 2019) limited research has been conducted to establish the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya. Thus, this study sought to address the existing research gap. The study relied on the checklist of ACFE (2018) and Bierstaker et al. (2006) in regard to the preventive, detective and corrective measures to be used for the research inquiry. Since most studies (Efiong, Inyang & Joshua, 2016; Rahman, 2014; Othman et al., 2015; Otieno, 2018; Omar & Abu Bakar, 2012) had authoritatively relied on them to assess the effectiveness of the anti-fraud controls.

### **1.1.2 Detective Controls and the Level of Fraud Occurrence**

Detection controls refers to the anti-fraud techniques that reveals an ongoing fraud or a fraud incident that has already happened (Othman, et al. 2015). Fraud detective controls identified by literature are, operational audits, fraud hotlines, forensic accountants, data mining, continuous auditing, bank reconciliation, financial ratios and cash reviews among others (ACFE, 2018; Waigumo, 2012; Bierstaker et al., 2006; Mangala & Kumari, 2017). Just to mention what a few of the detective controls entail, forensic accountants are specialists who uses their own investigative procedures to discover fraud, identify the perpetrator and use the gathered evidence against the perpetrator in court (Mangala & Kumari, 2017). Data mining as a detective control is a computer program that uses historical data of fraud to create a framework that will be able to reveal a fraud risk (Bierstaker et al., 2006). While continuous auditing is a computerized program that retrieves

audit evidence, including fraud risks on a continuous basis throughout a particular accounting year (Mangala & Kumari, 2017).

There have been various studies (ACFE, 2018; Deloitte, 2018; Bierstaker et al., 2006; Rahman, 2014; Othman et al., 2015; Otieno, 2018; Efiang, Inyang & Joshua, 2016) conducted to establish the perceived effectiveness of detective controls in deterring fraud. This was done with an aim of helping different organizations to rely on the most perceived effective measures as identified by the studies to curb fraud. The findings of the aforementioned studies revealed that the most perceived effective fraud detective controls were forensic accountants, whistle blowing, continuous auditing, fraud hotlines, data mining, financial ratios, bank reconciliation and cash reviews. On the other hand, there have been various studies (Kamau, 2015; ACFE, 2018; Holtfreter, 2008; Lee, 2017; Waigumo, 2012) conducted to establish the effect of detective controls on the level of fraud occurrence. Kamau (2015) observed that forensic accountants as detective measures are effective in deterring fraud in the Kenyan insurance sector. ACFE (2018) revealed that surprise audits and proactive data monitoring are key detective measures that are effective in abating fraud cases globally.

While Holtfreter (2008) observed that anonymous hotlines, internal and external audits as detective controls in reducing fraud losses globally. Besides that, Lee (2017) observed that the implementation of Dodd-Frank whistleblower program in 2011 consequently led to the decrease of the level of fraud risk in USA. Conversely, Waigumo (2012) revealed that fraud detection measures comprising of financial ratios, manually administered techniques, tips from staff, fraud vulnerability reviews and document examinations had no significant impact on the reduction of fraud occurrences in commercial banks operating in Kenya.

Currently based on the studies (Kamau, 2015; ACFE, 2018; Othman et al., 2015; Otieno, 2018; Efiang, Inyang & Joshua, 2016; Holtfreter, 2008; Lee, 2017; Waigumo, 2012) reviewed, there was limited research conducted to establish the effect of detective controls on the level of fraud occurrence in Kenyan listed companies. Thus, this study sought to bridge the knowledge gap by seeking to assess the effect of detective controls on the level of fraud occurrence on listed companies in Kenya.

### **1.1.3 Corrective Controls and the Level of Fraud Occurrence**

Corrective controls entails policies set to discipline fraudsters who were found culpable of perpetrating fraud with an aim of discouraging them and other potential fraudsters from committing fraud in future (United Nations, 2016). The fraud corrective controls that have been identified by literature are, referral of fraud cases to law enforcement institutions, prosecution and imprisonment, prosecution and payment of hefty fines, suspension from work duty and job termination (ACFE, 2018; Deloitte, 2018; Kultanen, 2017; United Nations, 2016). In regard to assessing the perceived effectiveness of corrective actions in curbing fraud, ACFE (2018) revealed that globally, organizations use internal discipline mechanisms to suspend or fire fraudsters as a strategy of curbing fraud. While Deloitte (2018) based on the survey it conducted in India, revealed that the development and implementation of severe penalties for unethical behaviours would discourage and make the potential fraudsters to fear committing any fraudulent act in the firm. Currently, there is limited research conducted to establish the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya. Thus, this study will address the knowledge gap.

Firm size in terms of the assets and revenue turnover that a particular organization possesses plays an important role in determining the anti-fraud measures that the firms employ (Bierstaker et al., 2006). Bierstaker et al. (2006) posited that companies with high revenues would have adequate financial resources to be invested in the usage of the effective anti-fraud measures and IT anti-fraud technology. On the other hand, Laufer (2011) contended that small companies use fewer anti-fraud measures compared to large companies since they lack sufficient financial resources to be invested in the anti-fraud measures. However, smaller firms are the ones who may be in dire need of the modern anti-fraud measures because fraud is more costly for them when compared to the large ones (Wells, 2003; Thomas & Gibson, 2003). Studies conducted by Bierstaker et al., (2006), ACFE (2012), Agathee and Ramen (2017) and Holtfreter (2008) actually revealed that the greater the firm size then the more the firms will capitalize on the most effective fraud prevention and detection techniques.

Interestingly, there have been (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) studies which have proved otherwise. For instance, Symsudin, Utomo & Praswati (2017) established that firm size significantly boosts

the level of financial statement fraud schemes in foreign-owned, domestic and public-owned firms. This could mean that a firm could have sufficient resources to procure effective anti-fraud techniques but refuse to use the resources to do so.

Since probably, the ones who are involved with fraud could be senior managers who are aware that if those effective controls are procured then they might end unraveling them as fraudsters. On the other hand, Nelson (2012) observed that firm size had a positive though insignificant impact on fraud of publicly traded firms. The findings could have meant that firm size does not play a considerable influence on fraud occurrence. On the other hand, Anichebe, Aggbomah and Agbagbara (2019) noted that firm size significantly increases the likelihood of financial statement fraud on quoted agricultural firms in the Nigeria Stock Exchange. Besides that, Matoussi and Gharbi (2011) observed that as firm size increases so will be its level of transactions together with agency costs due to lack of communication and coordination thus such complexities would lead to a high likelihood of fraud occurrence.

Owing to the present inconsistencies noted from the reviewed studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017; Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Aggbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) on the relationship between firm size and fraud occurrence. Since some studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017) observed that as firm size increases then the level of fraud goes down due to the employment of the most effective techniques. While some (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Aggbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) revealed that as firm size increases then the likelihood to commit fraud also increases. It would be interesting to note how firm size impacts on the level of fraud occurrence and the usage of the most effective anti-fraud techniques in the context of the listed firms in Kenya. Therefore, this study sought to address the existing knowledge gap by seeking to establish the moderating effect of firm size on the relationship between fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

#### **1.1.4 Regulations Enacted to Combat Fraud in Kenya**

Kenya has tried to combat the fraud menace through the enactment and implementation of laws discouraging unethical conducts. These laws comprised of the Proceeds of Crime and Anti-Money Laundry Amendment Act (2009), Bribery Act (2016) and the Ethics and Anti-Corruption

Commission Act (2011). The Bribery Act (2016) stipulates the penalties and fines to be paid by people found guilty in engaging in corruption fraud (Kenya Gazette Supplement, 2016). The Ethics and Anti-Corruption Commission Act (2011) was established to empower the Kenyan government to investigate and give recommendations to the office of the DPP to file charges against any person found culpable of economic crimes (Kenya Law Report, 2016). Moreover, the Proceeds of Crime and Anti-Money Laundering Amendment Act (2009) provides regulations and policies that empowers the government to trace, seize, freeze and recover money that has been obtained through fraud and criminal acts (Kenya Law Report, 2012). However, the Acts does not provide guidelines stipulating the fraud risk management controls that can be employed by companies to successfully minimize fraud occurrence.

These enactments comprising of the Proceeds of Crime and Anti-Money Laundry Amendment Act (2009), Bribery Act (2016) and the Ethics and Anti-Corruption Commission Act (2011) only focuses on corrective actions that can be employed by the firms listed at the NSE, Kenya to discourage and limit fraudulent activities. Though to the best of the researcher's knowledge there are no enactments providing guidelines for the firms listed at the NSE to use the most effective preventive and detective controls to manage fraud occurrence. Besides that, most studies (ACFE, 2018; Kamaliah et al., 2018; Lee, 2017; King'ori, Kiragu & Kamau, 2019; Waigumo, 2012; Kamau, 2015; Othman et al., 2015; Holtfreter, 2008) identified the most effective preventive and detective controls in curbing fraud for policy formulation applicable to various organizations in different sectors except for those operating in the NSE. Thus, the existing gap motivated this study to establish the most effective fraud preventive, detective and even corrective controls that the government can use in developing enactments that would guide NSE firms in using the relevant anti-fraud controls that can curb or manage the level of fraud occurrence.

### **1.1.5 The Nairobi Securities Exchange**

The Nairobi Securities Exchange (NSE) was instituted in 1954 with the main goal of providing a trading platform for listed companies seeking to be part of Kenya's economic growth (NSE, 2020). The body is licensed and governed by the Capital Markets Authority (CMA) (Otieno, 2016). In 2014, the NSE received a go ahead from CMA to function as a demutualized entity thus getting self-listed (NSE, 2020). The NSE plays an important role in Kenya's economic growth by assisting

the listed firms to access cost-effective capital and encourages savings and investment (NSE, 2020). Presently, there are 64 companies listed at the NSE under 13 sectors, namely; the Insurance, Agricultural, Investment services, Banking, Energy & Petroleum, Automobiles & Accessories, Investment, Technology, Exchange Traded Fund, Commercial Services, Manufacturing & Allied, Construction & Allied and Real Estate Investment Trust sector (NSE, 2020).

A number of companies listed at the NSE such as Mumias Sugar, Uchumi Supermarket, National Bank, CMC motors, Kenya Airways, Imperial Bank, Kenya RE, Chase Bank, East African Portland Cement and Eveready Ltd have been subject to huge fraud scandals (Odhiambo, 2014; Otieno, 2016; Cherono & Kakah, 2017; Mpiana, 2017; Ongoro, 2018; Onyango, 2019). Due to corporate fraud scandals experienced in Mumias Sugar Ltd, Uchumi Supermarket, Kenya Airways, National Bank and Eveready Ltd, the firms have recorded a downward trend in their share prices and their profits between 2010 and 2015 (Mpiana, 2017; Ongoro, 2018). Concerning CMC's corporate fraud scandal case, it was revealed that the former chairperson of the firm's board was also the CEO of Andy Freight Forwarders Services, which was the sole service provider of CMC and had overcharged the firm between 300 million and 500 million Kenyan shillings (Otieno, 2016). This subsequently led to the dismissal of the CMC chairperson from the board during the period of September 2011 because of presumed conflict of interest (Otieno, 2016).

Besides that, Otieno (2016) established that East Africa Breweries and Kenya Airways Ltd recorded the greatest level of fraudulent reporting disclosures between the periods of 2011 and 2015. With reference to Uchumi Supermarket's case, its employees connived with fraudulent suppliers to swindle the firm huge amounts of money that subsequently paralyzed and collapsed the supermarket (Business Daily, 2019). In 2014, six employees of East African Portland Cement were found to have been involved in manipulation of sales records that led to the fraudulent shipment of huge consignments of cement from the warehouse in Athi River (Odhiambo, 2014). Recently, a former director of Kenya Re was penalized with a fine of 15.2 million Kenyan shillings after the court established that he indeed embezzled 7.6 Kenyan shillings from the firm's account (Onyango, 2019). On June 2017, the former ex-chairperson of Chase Bank, Mohammed Zafrullah Khan was charged in court for allegedly defrauding the bank close to 1.7 billion Kenyan shillings and money laundering (Cherono & Kakah, 2017).

Since 2015, at least six listed firms have been delisted due to extreme poor financial performance attributed to the huge corporate scandals that they experienced (Mugambi, 2015). The high level of fraud cases in Kenyan listed firms has been linked to weak anti-fraud control systems and corporate governance (Ongoro, 2018). A knowledge gap existed in the context of Kenyan listed firms based on the studies (ACFE, 2018; Kamaliah et al., 2018; Lee, 2017; Kamau, 2015; Holtfreter, 2008; Bierstaker et al. 2006; Deloitte, 2018; United Nations, 2016) reviewed on the most effective fraud risk management controls that can deter fraud and if firm size plays an important role in procuring and using them to deter fraud. The study sought to bridge this gap in order for the Kenyan listed firms to identify the most effective anti-fraud controls that they can use to manage fraud and prevent further fraud losses experienced in the sector.

Consequently, this study was motivated to establish the fraud risk management controls that were perceived to be effective in managing fraud and if they significantly mitigates the level of fraud occurrence on listed companies in Kenya. It also sought to understand if firm size in terms of revenue, asset and employee size plays an important role in the deployment of the most effective fraud risk management controls and the reduction/alleviation of fraud occurrence on listed companies in Kenya.

## **1.2 Problem Statement**

Fraud has been considered one of the key factors that have created dire challenges for all types of business organizations (ACFE, 2018). In Kenya, the fraud menace has led to the collapse of big corporations such as Imperial Bank, Uchumi supermarket, National Bank, Kenya Airways and Mumias Sugar (Mpiana, 2017). For instance, according to Cytton Investment, the Kenya Airways ltd lost 17.95 billion shillings through fraud leading to significant deterioration of its share price at the NSE (Mungai, 2016). Moreover, the Imperial bank lost 13.62% of its wealth accounting to 36 billion Kenyan shillings through fraud schemes that involved its former managing director. Besides that, investors lost 27 billion shillings in Mumias Sugar ltd and 5.1 billion shillings at Uchumi Supermarket through fraud. One of the key factors leading to fraud to thrive is lack of sufficient or weak anti-fraud control systems (ACFE, 2018; Deloitte, 2018). This is besides other factors such as perceived pressure, rationalization and capacity to commit fraud (Cressy, 1953; Wolfe & Hermanson, 2004).

Girgenti and Hedley (2011) contended that fraud could only be effectively managed by preventive, detective and corrective measures. Currently, nearly all the Kenyan listed firms lacks a clear policy guideline of the fraud risk management that are effective in deterring fraud. Moreover, based on the reviewed studies (ACFE, 2018; Bierstaker et al., 2006; Othman et al., 2015; Kamaliah et al., 2018; Waigumo, 2012; Holtfreter, 2008). There was limited research conducted to assess the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya. Consequently, this study sought to address the existing research gap. Moreover, based on the studies (Kamau, 2015; ACFE, 2018; Othman et al., 2015; Otieno, 2018; Efiang, Inyang & Joshua, 2016; Holtfreter, 2008; Lee, 2017; Waigumo, 2012) reviewed, there was limited research conducted to assess the effect of detective controls on the level of fraud occurrence on listed companies in Kenya.

This study sought to address the existing knowledge gap so that the Kenyan listed firms could be enlightened about the most perceived effective detective controls that can significantly curb fraud applicable to them. Corrective actions such as dismissal of senior managers like the CMC case (Otieno, 2016), prosecution and payment of hefty fines like in the case of Kenya Re (Onyango, 2019) have been used as a way to deter future fraud actions. But there has been no scholarly work based on the studies reviewed (ACFE, 2018; Deloitte, 2018; Kultanen, 2017; United Nations, 2016; Kimeli, 2018; Waitimu, 2014) conducted to prove that indeed the implementation of corrective controls leads to the deterrence of future fraudulent actions. It is interesting why minimal attention has been paid to this type of anti-fraud technique when compared to detective and preventive controls. Probably owing to the fact that the topic of the influence of anti-fraud controls on fraud occurrence is still new in fraud research that needs to be exhausted. Thus, this study sought to bridge the knowledge gap by seeking to assess the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya.

Additionally, it has been pointed out by literature (Bierstaker et al. 2006; Laufer, 2011; ACFE, 2012) that firms that devote their financial resources to procure and implement the most effective anti-fraud techniques which are costly ends up mitigating fraud and experiencing less fraud losses. Though there have been some inconsistencies noted from the reviewed studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017; Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) on the

relationship between firm size and fraud occurrence. Since some studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathe & Ramen, 2017) observed that as firm size increases then the level of fraud goes down due to the employment of the most effective techniques. While some (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) revealed that as firm size increases then the likelihood to commit fraud also increases. It would be interesting to note how firm size impacts on the level of fraud occurrence and the usage of the most effective anti-fraud techniques in the context of the listed firms in Kenya. Therefore, this study sought to address the existing knowledge gap by seeking to establish the moderating effect of firm size on the relationship between fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

### **1.3 Objectives of the Study**

The main purpose of the study and the specific objectives to be addressed are presented in the subsections below.

#### **1.3.1 General Objective**

The major purpose of the study was to establish the influence of fraud risk management on fraud occurrence and the moderating effect of firm size in Kenyan listed companies.

#### **1.3.2 Specific Objectives**

The specific objectives formulated to help the study achieve its general purpose are;

- (i). To assess the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya.
- (ii). To establish the effect of detective controls on the level of fraud occurrence on listed companies in Kenya.
- (iii). To evaluate the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya.
- (iv). To determine the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya.

## **1.4 Research Questions**

The research investigation intended to answer the ensuing research questions;

- (i). What is the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya?
- (ii). What is the effect of detective controls on the level of fraud occurrence on listed companies in Kenya?
- (iii). What is the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya?
- (iv). What is the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya?

## **1.5 Scope of the Study**

The study focused on establishing the influence of preventive, detective and corrective measures on the level of fraud occurrence in Kenyan listed firms and the moderating effect of firm size. The scope of study was limited to the firms listed in NSE, Kenya. The forms of fraud to be assessed were limited to the three main types of fraud identified by ACFE (2018) namely, asset misappropriation, corruption and financial statement fraud. Firm size was assessed in terms of the revenue turnover, asset and employee size of the listed Kenyan companies. The research instruments for the data collection exercise was limited to structured questionnaires.

## **1.6 Significance of the Study**

The findings of this study and its recommendations will be helpful to the policymakers, practitioners and scholars as elaborated in the ensuing subsections.

### **1.6.1 The Policymakers**

Since the development of various laws by the government such as the Proceeds of Crime and Anti-Money Laundry Amendment Act (2009), Bribery Act (2016) and the Ethics and Anti-Corruption Commission Act (2011) to combat fraud. The government can develop policy frameworks for the Kenyan listed firms that incorporates the most perceived effective preventive, detective and corrective controls which the firms can authoritatively employ them to mitigate fraud. The policy framework to be developed will cover all sectors in Kenya since NSE contains organizations

operating in various different industries. Thus the most effective fraud preventive, detective and corrective techniques applicable in the manufacturing sector can be likewise employed in the financial services sector to eradicate or manage fraud risk.

### **1.6.2 Practitioners**

The findings of this study will assist the practitioners of the firms listed in the NSE in Kenya to identify the most perceived effective preventive, detective and corrective controls that truly mitigates fraud. These controls will then be implemented by the practitioners to address the fraud problem experienced by corporations in Kenya. Moreover, the moderating influence of firm size will reveal to the practitioners the importance of devoting the firm's financial resources in procuring and implementing the most effective anti-fraud techniques which are costly. It will make them to make a decision to sacrifice and capitalize funds in the usage of the measures that will precisely address the fraud problem thus preventing serious fraud losses that could lead to the collapse of the firms.

### **1.6.3 Scholars**

The future scholars can use this study to build their literature and assess the knowledge gaps to be addressed that can be explored by steering studies in other countries and areas of research. The study provided contextual scholarly knowledge on the most effective preventive, detective and corrective anti-fraud controls at the NSE sector and their influential role in curbing fraud at the firms operating in the NSE, Kenya. This is because most of the fraud research studies were anchored on other sectors such as the public, NGO, insurance, education and banking sectors. The study provided a methodological contribution of the usage of factor analysis to justify the compression of statements into composite variables to be used for regression analysis. The methodological contribution can be used by future researcher using structured questionnaire items to justify the reduction of the items into few variables to be used for correlation or regression analysis.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presented the fraud theories that were directly and indirectly linked to the objectives of this study. It also presented a review of studies linked to the objectives of this research investigation illustrating the research findings the studies came up with, based on the methodologies they employed and the reasons explaining the research outcomes they managed to come up with. It also presented the research gaps that needed to be addressed. It also presented the conceptual framework illustrating the relationship between the variables that the study was going to assess. Finally, it presented how the variables were going to be operationalized.

#### **2.2 Theoretical Review**

The following subsections presented the fraud theories that were related to this study. The first subsection presented a discussion about the fraud management lifecycle theory, which hypothesized eight phases of interconnected activities aimed at managing fraud. Finally, the second subsection presented the fraud triangle theory, which posits that people commit fraud due to three primary reasons, namely, pressure, opportunity and rationalization. Based on the same section it presented the theories conceived from the fraud triangle theory. They comprised of the fraud diamond theory a modification of the fraud triangle theory that incorporates an extra factor (capability) which also plays an essential role in fraud occurrence. Followed by the fraud pentagon theory, which is a further modification of fraud triangle and fraud diamond models that adds an extra factor (personal ethics) which plays an important role in increasing or reducing the fraud risk in an organization.

##### **2.2.1 The Fraud Management Lifecycle Theory**

Wilhelm (2004) originated the fraud management lifecycle theory based on the fraud article he wrote in 2004 titled “*The Fraud Management Lifecycle Theory: A Holistic Approach to Fraud Management*”. The theory consists of eight phases with interconnected activities oriented towards controlling fraud (Ocansey, 2017). The eight phases of the cycle comprises of deterrence,

prevention, detection, mitigation, analysis, policy, investigation and prosecution (Ocansey, 2017). The stages are autonomous actions but can be carried out simultaneously (Ocansey, 2017). According to Wilhelm (2004) the first phase, deterrence, involves blocking a potential fraud activity from occurring. Besides that, the second phase which is prevention entails checking or stopping a fraudster from conducting a fraudulent action. The third stage, detection, involves revealing a hidden fraud occurrence, while mitigation which is the fourth stage, entails actions implemented to reduce the level of fraud after it has been detected. Analysis which is the fifth stage, encompasses the assessment of the performance of each stage in the fraud management lifecycle so that informed decisions can be made of effectively managing fraud. Besides that the sixth stage, policy, involves the creation and communication of fraud policies that will assist in curbing fraudulent activities.

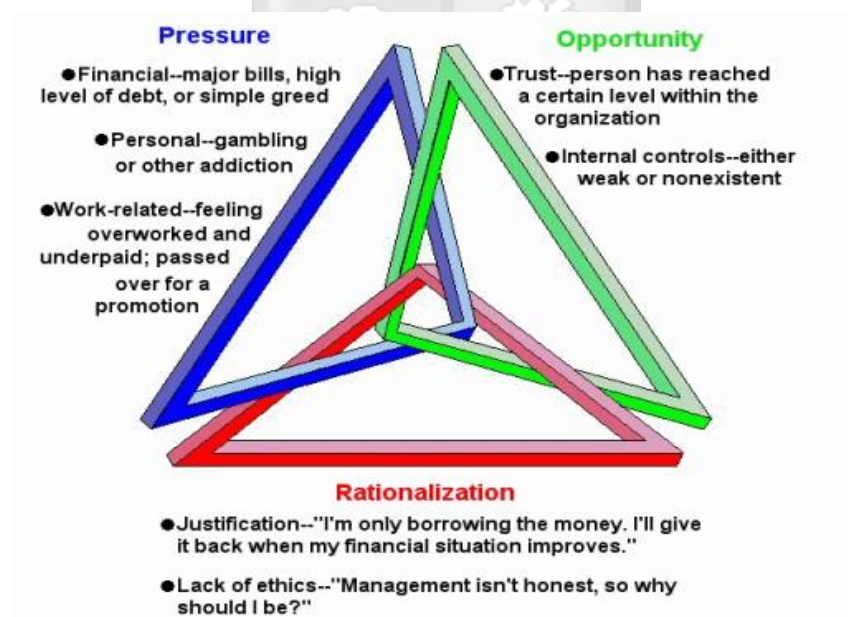
The seventh stage, investigation encompasses researching and retrieving sufficient proof and information to recover assets lost due to fraud, unravel the fraudsters and to provide information for successful prosecution and conviction of the fraudster. The final stage, prosecution involves the successful catching and punishing of the fraudster in order to discourage future fraudulent activities. Rahman (2014) who conducted a research study in Malaysian Islamic banks to establish the perceived effectiveness of fraud prevention and detection measures recommended that all the components of fraud management lifecycle theory must be concurrently employed in order to effectively manage fraud in the banking sector. On the other hand, Chepkoech and Rotich (2017) argued that when an organization is able to reach the last stage of the cycle, then it denotes a culmination of a failed and a successful fraud risk management. The fraud risk management is deemed to have failed since fraud was carried out successfully and fraud losses were incurred. On the other hand, successes would have been achieved since fraud was discovered, the perpetrator identified and the perpetrator arrested and prosecuted.

The theoretical model was relevant to this study in regards to the four phases of fraud management lifecycle comprising of deterrence, preventive, detective and corrective stages. In line with the first objective of the study, the research investigation sought to establish if preventive controls representing the first and second phases (fraud deterrence and prevention) of fraud management lifecycle are effective in controlling fraud occurrence on listed companies in Kenya. In line with the second objective of the study, the research investigation sought to establish if detective controls

representing the third phase (fraud detection) of fraud management lifecycle were effective in controlling fraud occurrence on listed companies in Kenya. In line with the third objective of the study, the research investigation sought to establish if corrective controls representing the eighth phase (fraud prosecution) of fraud management lifecycle were effective in controlling fraud occurrence on listed companies in Kenya.

## 2.2.2 The Fraud Triangle Theory and the build-up Theories

Cressey (1953) who hypothesized the main reasons why people commit fraud originated the fraud triangle theory. Dr. Donald Cressey who was an American Criminologist originated the theory by conducting a study in 1950 on 250 criminals to establish the main reasons as to why people perpetuate financial crime (Cressey, 1953). The fraud triangle theory contends that the primary drivers of fraud are pressure, opportunity and rationalization. Figure 2.1 below presents the fraud triangle model and its three primary building blocks.



**Figure 2. 1: The Fraud Triangle Model**

**Source: Meitrina, Suwena and Indrayani (2019)**

Pressure is the motivation that drives a person to perpetuate fraud, which can be inability to pay debt, gambling addiction, greed or pressure to meet family obligations (Meitrina, Suwena, & Indrayani, 2019). Opportunity is an existing loophole that a person is able to identify and use to his or her own advantage to perpetuate fraud without the possibility of being discovered

(Simbolon, Ahmad, & Elviani, 2018). Opportunity related fraud is usually instigated by lack of effective and sufficient controls to detect and deter fraud and failure punish the identified fraudsters (Meitrina, Suwena, & Indrayani, 2019). Rationalization entails a process whereby a person legitimizes fraud based on his or own code of morals before perpetuating it (Sujana, Yasa, & Wahyuni, 2019). For instance, a person might decide to commit fraud because in his or her mind “most people do it”, “it’s a way of compensating myself since the company exploits me” or “the company will not feel a pinch of the money lost”.

Thus, at least one aspect of the fraud triangle must be present for fraud to be perpetuated successfully. This means that a motive must exist for a person to commit fraud and that the potential fraudulent action has to be justified and most importantly an opportunity to perpetuate fraud must be available for a person to commit fraud (Sprague, 2018). Besides that, when one aspect is missing from the fraud triangle then one would be unable to perpetuate fraud successfully. For example, if a person lacks a motive to perpetuate fraud then he or she would have no reason to be engaged in that unethical conduct even if there are weak internal controls that will avail the opportunity for a successful fraudulent action to be committed. On the other hand, if a person is pressurized to commit fraud and he or she has legitimized the unethical conduct in his or her mind, the fraudster would still be unable to perpetuate fraud if the opportunity to commit fraud is absent. Finally, a person would be unable to commit fraud even if he or she is pressurized and there exists an opportunity to commit fraud because his or her personal moral code of conduct discourages him or her from perpetuating it.

There have been studies (Hakami & Rahmat, 2019; Bierstaker et al., 2006; Deloitte, 2018; Fadayo, 2018) that have tested the three aspects of fraud triangle. Deloitte (2018) who conducted a corporate fraud survey in India revealed that fraud was significantly caused absence of an effective internal control system (linked to opportunity related fraud) and fading ethical values (linked to rationalization related fraud). On the other hand, Hakami and Rahmat (2019) who conducted a study to establish the perceived effectiveness of fraud prevention strategies in Saudi Arabia established that positive employee recognition and employee assistance program decreases pressure related fraud. Moreover, Hakami and Rahmat (2019) also revealed that whistle blowing, code of conduct and ethics training curbs rationalization related fraud while operational audits,

fraud hotlines, surprise audits and external audit of financial statements reduces opportunity related fraud.

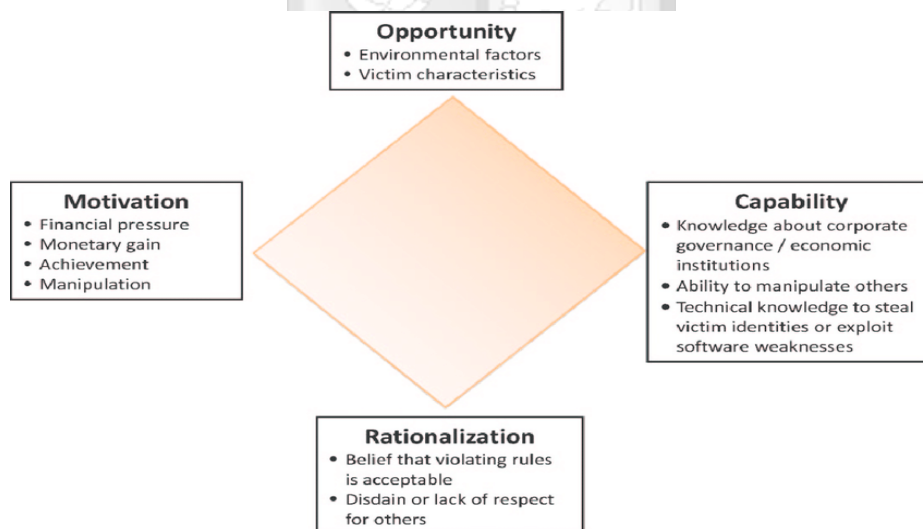
Bierstaker et al. (2006) who conducted a study in the American private revealed that the most perceived effective anti-fraud measures that comprised of forensic accountants, data mining, continuous auditing, digital analysis and discovery sampling were least used. Thus, this could explain the reason why there was a high level of fraud occurrence in the American private sector since the lack of usage of the most effective perceive anti-fraud measures provided the opportunity for fraud to be perpetuated. Besides that, Fadayo (2018) who conducted a study in Nigerian banks revealed that factors which contributes to E-banking fraud were insufficient fraud detection measures, weak password protection, lack of forensic accountants, lack of a fraud risk framework within the banks and weak litigation support in prosecution process.

This theory was directly linked to the three specific objectives of this study which sought to assess the effect of preventive, detective and corrective controls on the level of fraud occurrence in Kenyan listed firms. If the study established that the preventive controls had a negative influence on the level of fraud occurrence then it would mean that the preventive techniques are effective in mitigating pressure and rationalization that consequently leads to fraud. In this case the preventive controls which were directly linked to curbing pressure and rationalization that leads to fraud, which were going to be assessed comprised of enhanced audit committees, fraud reporting policy, corporate code of conduct, segregation of duties, background checks, anti-fraud training programs among others.

On the other hand, if the study established that the detective measures had a negative influence on the level of fraud occurrence then it would mean that the detective techniques are effectual enough to deny the fraudsters the opportunity to perpetuate fraud. In this case the detective controls linked to this study that were going to be assessed comprised of fraud hotlines, forensic accountants, cash reviews, bank reconciliation, financial ratios, continuous auditing, data mining among others. Finally, if the study established that the corrective controls had a negative influence on the level of fraud occurrence then it would mean that the corrective techniques are effective in deterring rationalization that consequently leads to fraud. In this case the corrective controls linked to discouraging the rationalization of fraud, that were going to be assessed comprised of

prosecution and imprisonment, job termination, prosecution and payment of hefty fines among others.

Besides that, the fraud diamond theory was conceived from the fraud triangle theory. Wolfe and Hermanson originated the fraud diamond theory in 2004 that included an additional factor (capability) which can lead to an individual to perpetuate fraud (Abdullahi, Mansor & Nuhu, 2015). Wolfe and Hermanson (2004) contented that though pressure might co-exist with opportunity for a person to perpetuate fraud after internal rationalization. It will still be improbable for fraud to be committed unless the 4<sup>th</sup> element, capability is present (Wolfe & Hermanson, 2004). Furthermore, Sorunke (2016) argued that fraud can hardly be actualized without the precise individuals with the right ability and skills to commit fraud. Consequently, people who hold positions in firms are the ones who are more likely to commit fraud (Sujana, Yasa, & Wahyuni, 2018) since they understand the systems of the firms, and they have the skills and power to actually steal funds or manipulate earnings. Figure 2.2 below presents the fraud diamond model with the capability factor.



**Source: Wolfe and Hermanson (2004)**

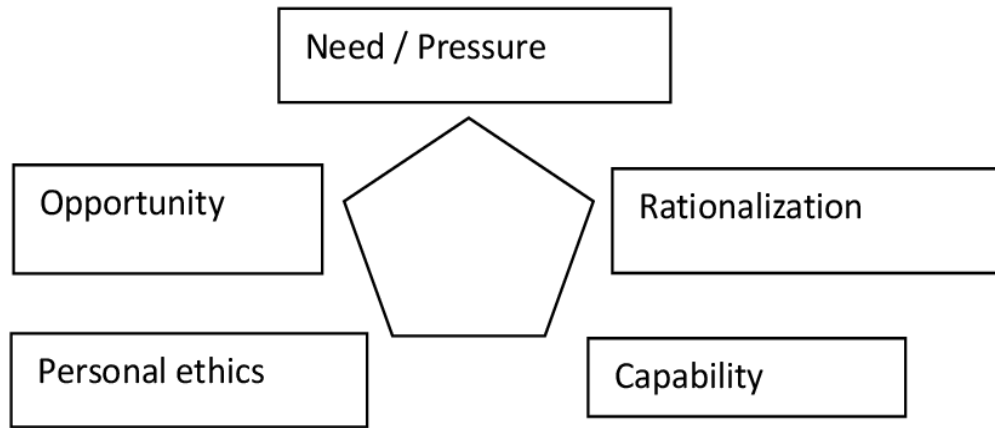
**Figure 2. 2: The Fraud Diamond Model**

Wolfe and Hermanson (2004) argued that an individual must possess capability in terms of professional knowledge and skills in order to recognize opportunities that exists in the firm such as weak controls and loopholes in regulations that will provide a doorway to carry out a fraud

action. Moreover, an individual's professional position in the firm might provide the ability for him or her to take advantage of an opportunity that might not be available to other people to commit fraud (Abdullahi, Mansor & Nuhu, 2015). Additionally, when individuals execute certain tasks recurrently such as bank reconciliation or setting up new vendor accounts, then their ability to perpetuate fraud enhances as their knowledge of the firm's processes and internal controls increases over time (Abdullahi, Mansor & Nuhu, 2015).

Most studies (Waigumo, 2012; Agathee & Ramen, 2017; Hakami & Rahmat, 2019; Othman et al., 2015; ACFE, 2018; Rahman, 2014; Kamaliah et al., 2018) that sought to establish the perceived effectiveness of fraud risk management and their influence on fraud have not managed to test the fraud diamond theoretical model probably because the variables tested were not directly relevant to the model. However, studies such as (Manurung & Hardika, 2015) have assessed the influence of capability on fraud. The study sought to establish the influence of the factors identified in the fraud diamond model on financial statement fraud. They study established that capability proxied by change of directors has a positive and significant influence on financial statement fraud. Though the theoretical model was not directly relevant to this study it assumed that the fraud occurrences on listed companies in Kenya are perpetuated by top management and accounting professions who are in positions that enables them to commit fraud easily based on the existing loopholes.

Olukayode (2016) developed the fraud pentagon theoretical model, which is an advanced version of the fraud triangle and fraud diamond theoretical models. The theoretical model comprises of five components; pressure, opportunity, rationalization, capacity/capability and personal ethics (Ortiz, 2018). The aspect that makes the model unique is the additional element to the preceding fraud theories which is personal ethics. Olukayode (2016) argued that pressure, opportunity, rationalization and capacity are not enough factors that can make a person to comprehend the motivation of a fraudster. The fraud professionals and scholars observes personal ethics as a cursor that guides individual actions (Ortiz, 2018). This means that people with low personal ethics are highly probable to perpetuate fraud when compared to people who have a high personal ethical values. Moreover, the greater the level of personal ethics in an organization then consequently, the chances of fraud will decline. Figure 2.3 in the next page presents the fraud pentagon model.



**Figure 2. 3: The Fraud Pentagon Model**

**Source: Olukayode (2016)**

Corporations could employ the fraud pentagon model to assess the risk of fraud occurrence based on its employee’s personal ethical values (Olukayode, 2016). The fraud pentagon model is identical to the fraud scale model proposed by Albrecht, Howe and Romney (1984) since it is centered on an individual’s ethical values and their tendency to commit fraudulent actions. Though Olukayode (2016) linked the theoretical model as an extension of the earlier fraud models (the fraud triangle and the fraud diamond models). The theory was not directly related to this study since this study was more interested on the aspect of opportunity with respect to weak controls and how it can lead to cases of high level of fraud risk.

### **2.3 Empirical Review**

The following subsections presented a review of studies conducted and the research findings they came up with in line with each specific objective of the study. It portrayed the research methodologies they employed, the recommendations they formulated and the reasons explaining the consistencies and inconsistencies in the research findings that they came up with.

#### **2.3.1 Preventive Controls and the Level of Fraud Occurrence**

There have been a lot of perception studies (Othman et al., 2015; Bierstaker et al., 2006; Otieno, 2018; Mangala & Kumari, 2017; Hakami & Rahmat, 2019; Zamzami, Nusa & Timur, 2016; Omar & Abu Bakar, 2012; Efiog, Inyang & Joshua, 2016; Micheni, 2016; Agathe & Ramen, 2017; Rahman & Anwar, 2014) conducted to establish the perceived effectiveness of preventive controls.

Othman et al. (2015) revealed preventive controls comprising of enhanced audit committees, staff rotation and fraud reporting policy were the most perceived effective fraud detection and prevention techniques in the Malaysian public sector. Otieno (2018) observed that proper due diligence on customers, reference check on employees were the most perceived effective preventive controls in Kenyan motor insurance sector. Hakami and Rahmat (2019) conducted a study to establish the perceived effectiveness of fraud prevention controls based on the perceptions of employees drawn from banks operating in Saudi Arabia. Though unlike Othman et al. (2015) and Otieno (2018) the study classified fraud prevention controls using Cressy's fraud triangle that consists of pressure, opportunity and rationalization.

Hakami and Rahmat (2019) observed that all fraud prevention controls were perceived to be highly effective though the anti-fraud techniques under the opportunity category turned out to be the most perceived effective. In regard to preventive controls that are effective in deterring pressure related fraud, the study established that positive employee recognition, continual education and employee assistance program were perceived to be very effective. Additionally, in regard to preventive controls that are effective in curbing rationalization related fraud, the study revealed that whistleblowing, corporate code of conduct, ethics training and ethics officer were perceived to be very effective. Finally, in regard to preventive controls that are effective in curbing opportunity related fraud, the study observed that continuous spot check, operational audits, external audit of financial statement, surprise audits and fraud hotlines were perceived to be very effective.

The findings of Hakami and Rahmat (2019) concurred with the observations made by Bierstaker et al. (2006) in the American private sector and Zamzami, Nusa and Timur (2016) who had conducted a similar study in universities operating in Indonesia that code of conduct is perceived to be very effective in deterring fraud. A code of conduct is one of the most essential measures of communicating to the employees about key standards of acceptable behaviour and regulations that discourages fraud and other misconducts (United Nations, 2016). Thus, a code of conduct portrays to the employees that fraud is a bad act and won't be tolerated by anyone perpetuating it. Consequently, the employees won't justify the fraud act in their mind before perpetuating it and they would be discouraged from committing the act in the first place. Moreover, the code of conduct specifies activities that are unethical or fraudulent which a common employee can understand (International Risk Management Institute, 2020). For instance, based on the information gained

from the code of conduct, a procurement agent can be able to easily spot and know which suppliers are providing kickbacks (International Risk Management Institute, 2020).

Since the procurement agent knows that the action is unethical, then he or she will proceed to the responsible authorities based on the procedure provided in the code of conduct, to report the incident in order to prevent the fraud occurrence (International Risk Management Institute, 2020). Furthermore, when the code of conduct shows the consequence of engaging in fraud like for instance, prosecution or job termination, then the employees would not dare perpetuate fraud (International Risk Management Institute, 2020). Though the findings of Hakami and Rahmat (2019) conflicted with the research outcomes of Omar and Abu Bakar (2012) which established that code of conduct was perceived to be ineffective in Malaysian government-linked firms. This could probably be due to the fact that code of ethics amounts to nothing if it is applied through frequently communicating it to the employees of the organization so that they can always understand their obligations to curb fraud incidences (Albrecht et al., 2009; Hassink et al., 2007). Moreover, Othman et al. (2015), Agathee and Ramen (2017) and Rahman and Anwar (2014) revealed that staff rotation policy was perceived to be effective since according to ACFE (2016) it helps in preventing fraudulent cash disbursements.

Conversely, the findings of Bierstaker et al. (2006) conflicted with the research outcomes of Othman et al. (2015), Agathee and Ramen (2017) and Rahman and Anwar (2014) because it revealed that staff rotation policy was perceived not to be effective in curbing or detecting fraud in the American private sector. Nanmdi (1991) reasoned this could be due to the fact that the management implements a weak staff rotation policy either deliberately or unintentional which subsequently leads to fraud thriving unnoticed. Besides that, ACFE (2018) conducted a global fraud survey that revealed that the most perceived effective fraud prevention controls were management review, antifraud policy, fraud training for employees, code of conduct, internal audit department, fraud risk assessments and independent audit committees. An internal audit department plays an important role in deterring fraud by assessing the effectiveness and efficiency of the effectiveness and efficiency on the internal control systems (Global Ports, 2018). Moreover, an independent audit committee identifies and controls fraud risk areas by constantly reviewing and refining the fraud policy procedures (Global Ports, 2018).

On the other hand, Ekaterina (2013) conducted a study to establish the perceptions of the managers and accountants on the effectiveness of fraud prevention and detection measures in Russian small-scale enterprises. The study established that segregation of duties, restricted access to records, vendor's legitimacy verification, authorization of transactions and background and reference checks were the most perceived effective measures of preventing asset misappropriation fraud. Limiting access of the employees to the firm's stock prevents or discourages those with bad intention from stealing (Rea & Associates, 2008). Restricting access can involve the use of strong computer passwords, locked doors, security personnel, use of electronic cards and surveillance cameras (Rea & Associates, 2008). Besides that, conducting background and reference checks involving if a particular person interested to work with the company has past criminal convictions, is being sued or has ongoing civil cases linked to fraud helps in locking out individuals who would defraud the company in the future (Lomer, 2013). Moreover verifying the true identity of people or firms claiming to be vendors of a particular organization helps identifying and blocking fake or vendors related to some employees of the organization with ill intention of defrauding the firm.

Micheni (2016) observed that internal control system as a preventive control was insignificant in preventing fraud since the *p*-values depicting the relationship between internal control system components that comprised of control environment, control activities, risk assessment and fraud detection and prevention were greater than the benchmark value of 0.05. The findings of the study conflicted with the research outcomes of Zamzami, Nusa and Timur (2016) and Rahman and Anwar (2014) who had observed that internal control system was perceived to be a very effective measure in preventing and deterring fraud in universities operating in Indonesia and in Malaysian Islamic banks respectively. Though the findings of Micheni (2016) agreed with the observations made by Wang'ombe (2017) that internal control systems are not adequately effective in deterring fraud occurrence in Kenyan county governments based on a case study conducted in Kiambu county government. Muslimat and Hamid (2012) contended that internal control systems could turn to be a poor mechanism of detecting and deterring fraud if the internal audit staff lacks sufficient knowledge of fraud risk management policies, strategies and techniques.

Additionally, Wang'ombe (2017) reasoned that an internal control system characterized by lack of efficient information flow and poor usage of communication channels by the employees constrains the deterrence or detection of fraud occurrence. On the other hand, based on the study conducted

in the insurance sector in Ghana by Akomea-Frimpong, Andoh and Ofusu-Hene (2016) revealed that the most perceived effective fraud prevention measures were rigorous scrutiny of insurance policies and claims, the application of effective internal fraud policy and adequate fraud training programs. Thus internal fraud control policy is an effective measure of preventing and detecting fraud in both the private sector and in not-for profit organizations. Wang'ombe (2017) postulated that a fraud policy is an essential feature of any effective anti-fraud programme. Since it helps the staff and the third parties to know how the firm is addressing fraud and it motivates the employees at all levels to take part in safeguarding the firm's resources and reputation (Wang'ombe, 2017).

Besides that, number of studies (Lee, 2017; ACFE, 2018; King'ori, Kiragu, & Kamau, 2019, Kamaliah et al., 2018; Waigumo, 2012; Igweonyia, 2016; Kamau, 2015; Holtfreter, 2008) actually went a step further to establish how the preventive controls influenced the reduction of fraud occurrence. King'ori, Kiragu and Kamau, (2019) conducted a study to establish the effect of fraud preventive measures on fraud occurrence in large and medium-sized commercial banks in Kenya. The study employed structured questionnaires on a sample of 57 managers drawn from large commercial banks and 12 managers operating in medium-sized banks. The study employed Ordinary Logistic regression model to test the association between the variables. The findings revealed that fraud preventive measures consisting of referencing of documents of value, staff training on hiring, segregation of duties, verification of signatures, job rotation, integrity check on hiring and control over dormant accounts significantly reduces fraud occurrences.

The findings of King'ori, Kiragu and Kamau (2019) were inconsistent with the research outcomes of Waigumo (2012) who had conducted a similar study in commercial banks operating in Kenya. Since Waigumo (2012) observed that fraud preventive measures had an insignificant impact on fraud occurrence in commercial banks in Kenya. This is considering the fact that both studies employed a survey methodology in collecting data through questionnaires. The major difference was that Waigumo (2012) employed Pearson correlation and Multiple Linear regression analysis to test the association between the variables. The findings of Waigumo (2012) meant that fraud preventive measures consisting of bank reconciliations, reference checks on employees, staff rotation policy and fraud reporting policy were not effective in curbing fraud occurrences. The findings were inconsistent with the findings of Rahman and Anwar (2014) who established that

the aforementioned techniques were perceived to be effective in detecting and deterring fraud in Malaysian Islamic banks.

Waigumo (2012) argued that the preventive measures could be ineffective in reducing fraud occurrences in commercial banks in Kenya since the anti-fraud techniques are old to curb bank fraud that changes as a consequence of technological advancement. On the other hand Kamaliah et al. (2018) conducted a study in Malaysia to establish the effectiveness of monitoring mechanism and mitigation of fraud incidents in the public sector. The study was unique from King'ori, Kiragu and Kamau (2019) and Waigumo (2012) since it measured fraud in terms of asset misappropriation, theft, bribery, financial statement fraud and payroll fraud. This is considering the fact that King'ori, Kiragu and Kamau (2019) measured fraud in terms of the number of bank frauds that have occurred and the amount of fraud loss experienced. While Waigumo (2012) assessed fraud in terms of the level of occurrence of money transfer fraud, cheque kitting and credit and debit fraud. Moreover, the preventive measures that Kamaliah et al. (2018) assessed were organizational integrity plan and internal control system. Though the methodological approach that Kamaliah et al. (2018) employed was the same as that applied by King'ori, Kiragu and Kamau (2019) and Waigumo (2012). This is because Kamaliah et al. (2018) employed structured questionnaires to retrieve data and used Pearson correlation analysis and Multiple Linear regression analysis to assess the relationship between the variables.

The study also employed Pearson correlation analysis to assess for multicollinearity between the independent variables but none existed since the correlation coefficient was below zero. Kamaliah et al. (2018) revealed that organizational integrity plan and internal control systems have a negative significant influence on fraud incidents in Malaysian public sector. The findings of Kamaliah et al. (2018) were consistent with the argument made by Peltier-Rivest and Lanoue (2011) that proper implementation of an internal control system curbs the risk of conspiracy among employees thus hindering fraudulent actions from taking place.

ACFE (2018) who conducted a global survey on occupational fraud and abuse revealed that code of conduct and fraud training of employees as fraud preventive measures are responsible for 56% and 41% reduction of fraud cases globally, respectively. Additionally, ACFE (2018) established

that fraud detection measures comprising of surprise audits, proactive data monitoring/ analysis and internal audit department were able to abate more than 40% of fraud cases globally.

Besides that, Holtfreter (2008) conducted a research investigation to establish the determinants of fraud losses in nonprofit organizations in a global context. Holtfreter (2008) used survey data initially retrieved by ACFE between 1997-98 and 2001-02. Unlike previous studies (King'ori, Kiragu & Kamau, 2019; Waigumo, 2012; Kamaliah et al., 2018), Holtfreter (2008) employed OLS regression model to ascertain the relationship between preventive and detective measures and fraud losses. Holtfreter (2008) observed that internal control system as a fraud preventive measure significantly reduces fraud losses. On the other hand, Holtfreter (2008) revealed that background checks had no significant influence on fraud losses. This is because according to Albrecht (2003) numerous potential fraudsters usually do not have a criminal record during pre-employment stage when background checks are being conducted. Thus, it is not an effective measure of detecting potential fraudsters and preventing fraud from occurring in the future (Albrecht, 2003).

Currently, based on the studies (ACFE, 2018; Bierstaker et al., 2006; Othman et al., 2015; Kamaliah et al., 2018; Waigumo, 2012; King'ori, Kiragu & Kamau, 2019; Holtfreter, 2008) reviewed there was limited research conducted to establish the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya. Thus, this study sought to address the existing research gap.

### **2.3.2 Detective Controls and the Level of Fraud Occurrence**

There have been a lot of perception studies (Othman et al., 2015; Bierstaker et al., 2006; Otieno, 2018; Mangala & Kumari, 2017; Hakami & Rahmat, 2019; Zamzami, Nusa & Timur, 2016; Omar & Abu Bakar, 2012; Efiog, Inyang & Joshua, 2016; Micheni, 2016; Agathee & Ramen, 2017; Rahman & Anwar, 2014) conducted to establish the perceived effectiveness of detective controls. Othman et al. (2015) revealed that operational audits, fraud hotlines and forensic accountants, were the most perceived effective detective controls in the Malaysian public sector. The findings of Othman et al. (2015) concurred with the research outcomes of Bierstaker et al. (2006) who also observed that forensic accountants are perceived to be very effective in detecting and preventing fraud occurrence in the American private sector. Haron et al., (2014) contended that forensic accountants have the advantage of investigating beyond the accounting figures over the traditional auditors or the accountants.

Apart from forensic accountants, Bierstaker et al. (2006) also observed that virus protection, data mining, firewalls, continuous auditing, filtering software and bank reconciliation were perceived to be effective in detecting though they were the least used in combating fraud occurrence. Bierstaker et al. (2006) posited that the lack of the employment of the perceived effective anti-fraud techniques in the American private sector could be due to lack of firm resources. Otieno (2018) observed that forensic fraud investigators, continuous auditing, reference check on employees, data mining, fraud hotlines, Integrated Motor Insurance Database System and claims assessment were perceived to be most most effective fraud detective controls. The findings of Otieno (2018) concurred with the research outcomes of Othman et al. (2015) and Bierstaker et al. (2006) that fraud hotlines, forensic accountants and continuous auditing are perceived to be effective in detecting fraud occurrence. This meant that forensic accountants, fraud hotlines and continuous auditing plays a vital role in deterring fraud in both the private and public sectors.

Continuous auditing was perceived to be effective in deterring fraud since it utilizes information technology to retrieve audit evidence on a continuous basis that helps to seal any fraud risk areas or detect any arising fraud incidence (Mangala & Kumari, 2017). Furthermore, establishing a fraud hotline system that guarantees anonymity to people who volunteer to report a certain fraud case will encourage many people to report fraud incidents being experienced in the organization without fear of reprisal (Mangala & Kumari, 2017). Thus, it can help in unraveling fraud cases that could have gone unnoticed (Mangala & Kumari, 2017). Conversely, a study conducted by Efiang, Inyang and Joshua (2016) revealed that fraud hotlines are ineffective in detecting fraud in Nigerian public sector which conflicted with the findings observed by Otieno (2018) and Othman et al. (2015). This could be due to failure by the responsible parties in Nigeria to take action in terms of investigating and punishing those who have been reported through the fraud hotline or that the fraud hotlines does not provide anonymity to whistleblowers in order for safety to be guaranteed.

Besides that, Zamzami, Nusa and Timur (2016) revealed that virus protection, organizational use of forensic accountants, firewalls and filtering software were perceived to be ineffective in detecting and deterring fraud in the tertiary institutions in Indonesia. The findings conflicted with the research outcomes of Bierstaker et al. (2006) and Othman et al. (2015) who had revealed that the measures were effective in detecting fraud occurrence. Zamzami, Nusa and Timur (2016)

reasoned that the the aforementioned anti-fraud controls were perceived to be ineffective since there is an inadequate usage of forensic accountants and the anti-fraud IT technology in detecting fraud occurrence in universities operating in Indonesia.

On the other hand, Mangala and Kumari (2017) revealed that the usage of anti-fraud information technology (continous auditing, data mining and firewalls), timely audits and regular inspections were perceived to be effective in detecting and deterring fraud in the Indian corporate sector. The findings concurred with the research outcomes of Bierstaker et al. (2006) who also established that the use of anti-fraud information technology is very effective in curbing fraud occurrence. Data mining as a detective control utilizes the historical data of fraud to create a certain framework that would be able to discover a fraud risk (Gupta & Gill, 2012). It depicts patterns and trends through scrutinizing the firm's reports to detect unknown or unique patterns that might indicate a likely fraud risk (Zhou & Kapoor, 2011). Data mining assists auditors to discover a fraud risk even if it is being committed by the management (Gupta & Gill, 2012).

Aside from that, Kummer, Singh, and Best (2015) observed whistle-blower policies, fraud control policies and fraud risk registers were effective in detecting fraud in the not-for-profit organizations. Besides that, ACFE (2018) observed that the most effective detective controls were surprise audits, proactive data monitoring/analysis, fraud hotlines and the internal audit review. The findings agreed with the research outcomes of Deloitte (2018), Otieno (2018) and Othman et al. (2015) that whistle blower hotlines and internal audit review are effective in detecting fraud occurrence. Whistleblowing, involving reporting an ongoing unethical conduct together with the responsible parties prevents a fraud loss from occurring and discourages future fraud perpetrators (Lexology, 2019). Surprise audits of the firms internal controls helps in the identification of weakness providing loopholes for fraud to be perpetrated that needs to be sealed (Pina, 2016). Moreover, it helps in identifying a fraud action that has been committed ongoing since the wrongdoers are caught offguard and are denied sufficient time to cover their tracks (Pina, 2016).

Moreover, Ekaterina (2013) revealed that the most perceived effective controls of detecting asset misappropriation fraud were comparing purchase order with invoice and shipping documents, data confirmation with customers/vendors and comparing expense reports and enclosed supporting documents to the work schedule. Reconciling purchase orders with the invoices helps in keeping everything accurate and correct between what the vendor charged and what the firm recieved

(Murphy, 2019). Any abnormality such as a wrong price for the quantity received linked to fraud can be quickly detected and stopped (Murphy, 2019).

A number of studies (Ogola, K'Aol, & Linge, 2016; Waigumo, 2012; Kamau, 2015; Holtfreter, 2008) actually went a step further to establish how the detective influenced the reduction of fraud occurrence. Ogola, K'Aol and Linge (2016) revealed that the fraud response strategies comprising of internal fraud investigation team, inclusion of top leadership in fraud response team, installation of fraud-guard systems and fraud incidences reporting procedures significantly reduces the amount of fraud losses experienced by commercial banks of Kenya. On the other hand, Kamau (2015) revealed that investigative and litigation support services provided by forensic accountants significantly decreases the level of fraud occurrence in insurance firms. Besides that, Holtfreter (2008) observed that fraud detective controls comprising of internal audits, anonymous hotlines and external audits had a negative significant influence on the amount of money lost through fraud losses. This similarly meant that the aforementioned detective measures leads to the decrease of fraud losses.

Conversely, Waigumo (2012) revealed that fraud detection controls comprising of financial ratios, manually administered techniques, tips from staff, fraud vulnerability reviews and document examinations had no significant impact on the reduction of fraud occurrences in commercial banks operating in Kenya. The reason for the findings is that commercial banks still relies on old fraud detection measures to combat sophisticated bank fraud such as money transfer fraud, cheque kitting and credit and debit fraud that calls for advanced anti-fraud IT technology. ACFE (2018) revealed that surprise audits and proactive data monitoring are key detective measures that are effective in abating fraud cases globally. Besides that, Lee (2017) conducted a study to establish the influence of Dodd-Frank whistleblower program (which provides enhanced protection and financial returns to whistleblowers) on accounting fraud. Unlike other studies (ACFE, 2018; Waigumo, 2012; Ogola, K'Aol & Linge, 2016) which were anchored on a survey methodology, Lee (2017) relied on secondary data to address its research purpose. Lee (2017) retrieved the secondary data from USA public equity holdings of state pension funds disclosed in Thomson Reuters 13Fi between 2001 and 2010. Lee (2017) unlike other studies (ACFE, 2018; Waigumo, 2012; Ogola, K'Aol & Linge, 2016; Holtfreter, 2008) measured fraud in terms of overstated inventory, inflated sales and high accruals. Lee (2017) observed that the implementation of Dodd-

Frank whistleblower program in 2011 consequently led to the decrease of the level of fraud risk in USA.

Presently, based on the studies (Ogola, K'Aol, & Linge, 2016; Waigumo, 2012; Lee, 2017; Kamau, 2015; Holtfreter, 2008; ACFE, 2018) reviewed there had been limited research conducted to assess the effect of detective controls on the level of fraud occurrence on listed companies in Kenya. Thus, this research investigation sought to address the knowledge gap.

### **2.3.3 Corrective Controls and the Level of Fraud Occurrence**

With reference to the perceived effectiveness of corrective corrective on fraud occurrence, there have been limited studies (ACFE, 2018; Deloitte, 2018; Kultanen, 2017; United Nations, 2016; Kimeli, 2018; Waitimu, 2014) conducted to rate their perceived effectiveness. ACFE (2018) in its global survey revealed that firms fear to refer fraud cases to law enforcement institutions because they fear bad publicity, or it could be too costly. On the other hand, the study revealed that the firms prefers internal discipline such as suspending or firing a fraudster as a mechanism of discouraging future fraudulent acts. On the other hand, Deloitte (2018), based on the survey it conducted in India, revealed that the development and implementation of severe penalties for unethical behaviours would discourage and make the potential fraudsters to fear committing any fraudulent act in the firm. Kultanen (2017) who conducted a study in the Ugandan university institution revealed that even though penalties have been prescribed to deter fraud occurrence or to discipline the fraudsters identified, the implementation of punishments are rare since bribes are offered to avoid them. Thus, this could mean that internal discipline is not always an effective measure of correcting fraudsters or mitigating fraud occurrence.

According to the United Nations (2016), the management must have that strong will and determination to follow up on the fraud investigation process and ensure that the appropriate action is taken to discipline the fraudsters either internally through suspension or termination or externally through prosecution. On the other hand, Kimeli (2018) conducted a study to establish the strategies conceived and applied by the fraud investigation unit in the Kenyan Capital Markets Industry to combat fraud, one of them being police arrest and prosecution. The study employed a descriptive survey research design to retrieve data from a sample of 289 employees through the use of indepth

interviews and questionnaires. The study, interestingly, revealed that the respondents strongly disagreed that the arrest of fraudsters did not have any considerable effect on the mitigation of fraud risk in Capital Markets Authority in Kenya. The problem being that even though the suspected fraudsters are usually arraigned in courts, it must be proved beyond reasonable doubt that they committed the crime (Moran, 2014). Thus fraudsters takes this advantage to carefully cover their tracks leaving loopholes in the prosecution case that leads to the fraudsters being freed (Moran, 2014).

Only skilled fraud investigators can assist the prosecution team to successfully prove that the fraudster committed fraud (Moran, 2014). Aside from that, Waitimu (2014) conducted a research investigation to establish the factors that escalates the customer transaction fraud in the Kenyan financial institutions. The study employed a quantitative methodology involving questionnaires on a sample of 50 employees working as managers in various banks. The study established that the complicated nature of fraud cases frustrating the prosecution process, lack of sufficient evidence and short jail terms leads to the upsurge of customer transaction fraud in Kenya. There was limited research conducted to establish the relationship between corrective measures and fraud occurrence since most of the studies (Lee, 2017; Ogola, K'Aol, & Linge, 2016; ACFE, 2018; King'ori, Kiragu, & Kamau, 2019, Kamaliah et al., 2018; Waigumo, 2012; Igweonyia, 2016; Kamau, 2015; Holtfreter, 2008) reviewed have only focused on the relationship between preventive and detective measures and fraud occurrence.

Thus, this study sought to bridge the existing knowledge gap by assessing the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya.

#### **2.3.4 Effect of Firm Size on the Relationship between Fraud Occurrence and Fraud Risk Management**

Bierstaker et al. (2006) theorized that firms with great turnovers would have adequate financial resources to be devoted towards the employment of effective anti-fraud measures and IT anti-fraud technology. Thus, the employment of the techniques would greater in large firms than in small firms. Bierstaker et al. (2006) conducted a research investigation in the American public sector to test the hypothesis. The descriptive findings of the study revealed that accountants drawn from

firms that earn a revenue of more than \$1 billion employs the services of forensic accountants, data mining, discovery sampling, continuous auditing and digital analysis to effectively detect and curb fraud more than the small companies. Laufer (2011) argued that small organizations employ fewer anti-fraud measures compared to large firms since they lack sufficient financial resources that can be invested in the anti-fraud measures. Similarly, ACFE (2012) based on the global fraud survey conducted in 2012 observed a great difference in the employment of fraud prevention measures between the small and large firms. This is because ACFE (2012) revealed that small firms have not invested in an anonymous fraud reporting system, they lack a strong internal control system and they do not always perform fraud awareness training.

Besides that, Holtfreter (2008) revealed that besides fraud preventive and detective measures having a negative relationship with fraud losses, firm size which was measured in terms of the number of employees employed by the firm had an inverse association with fraud losses. This meant that the employment of the anti-fraud techniques that consequently curbs fraud occurs in large firm firms. The findings of Holtfreter (2008), ACFE (2012) and Bierstaker et al. (2006) were consistent with the research outcomes of Agathee and Ramen (2017) which revealed that the most effective anti-fraud measures comprising of discovery sampling and virus protection were frequently employed by the Big 4 firms in Mauritius. While the traditional anti-fraud measures comprising of cash reviews, bank reconciliation and staff rotation were frequently employed by both big and small firms.

Bierstaker et al. (2006) contended that smaller corporations are usually hesitant to capitalize in modern anti-fraud measures since they are very costly. Nonetheless, the smaller corporations are the ones who may be in dire need of the modern anti-fraud measures because fraud is more costly for the small organizations when compared to the large ones (Wells, 2003; Thomas & Gibson, 2003). In summary the studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017) reviewed have revealed that firm size in terms of financial resources that a certain organization has, is the key catalyst behind investments in highly effective preventive and detective measures. Interestingly, there have been (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) studies which have

proved otherwise. For instance, Symsudin, Utomo & Praswati (2017) established that firm size significantly boosts the level of financial statement fraud schemes in foreign-owned, domestic and public-owned firms. This could mean that a firm could have sufficient resources to procure effective anti-fraud techniques but refuse to use the resources to do so.

Since probably, the ones who are involved with fraud could be senior managers who are aware that if those effective controls are procured then they might end unraveling them as fraudsters. On the other hand, Nelson (2012) observed that firm size had a positive though insignificant impact on fraud of publicly traded firms. The findings could have meant that firm size does not play a considerable influence on fraud occurrence. On the other hand, Anichebe, Aggbomah and Agbagbara (2019) noted that firm size significantly increases the likelihood of financial statement fraud on quoted agricultural firms in the Nigeria Stock Exchange. Besides that, Matoussi and Gharbi (2011) observed that as firm size increases so will be its level of transactions together with agency costs due to lack of communication and coordination thus such complexities would lead to a high likelihood of fraud occurrence.

Owing to the present inconsistencies noted from the reviewed studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017; Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Aggbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) on the relationship between firm size and fraud occurrence. Since some studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017) observed that as firm size increases then the level of fraud goes down due to the employment of the most effective techniques. While some (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Aggbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) revealed that as firm size increases then the likelihood to commit fraud also increases. It would be interesting to note how firm size impacts on the level of fraud occurrence and the usage of the most effective anti-fraud techniques in the context of the listed firms in Kenya. Therefore, this study sought to address the existing knowledge gap by seeking to establish the moderating effect of firm size on the relationship between fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

## 2.4 Summary of Literature Review and Research Gap

This chapter presented the fraud theories, namely, fraud management lifecycle theory, fraud triangle theory and fraud diamond theory that were linked to the objectives of this study. It also presented an empirical review of the studies that had been conducted whose research purposes were similar to the objectives of this study. In regard to the studies (ACFE, 2018; Bierstaker et al., 2006; Othman et al., 2015; Kamaliah et al., 2018; Waigumo, 2012; King'ori, Kiragu & Kamau, 2019; Holtfreter, 2008) conducted to establish the effect of preventive controls on the level of fraud occurrence. There was limited research conducted to establish the effect of preventive controls on the level of fraud occurrence in Kenyan listed companies. Thus, this study sought to address the existing research gap.

Besides that, with reference to studies (Lee, 2017; Ogola, K'Aol, & Linge, 2016; ACFE, 2018; Waigumo, 2012; Kamau, 2015; Holtfreter, 2008) conducted to establish the effect of detective controls on the level of fraud occurrence in Kenyan listed companies. There was limited research conducted to establish the effect of detective controls on the level of fraud occurrence in Kenyan listed companies. Accordingly, this study sought to address the existing research gap.

Additionally, based on the studies (ACFE, 2018; Deloitte, 2018; Kultanen, 2017; United Nations, 2016) reviewed, there was limited research conducted to establish the relationship between corrective measures and fraud occurrence. Since most of the studies (Lee, 2017; Ogola, K'Aol, & Linge, 2016; ACFE, 2018; King'ori, Kiragu, & Kamau, 2019, Kamaliah et al., 2018; Waigumo, 2012; Igweonyia, 2016; Kamau, 2015; Holtfreter, 2008) reviewed have only focused on the relationship between preventive and detective measures and fraud occurrence. Thus, this study sought to bridge the existing knowledge gap by assessing the effect of corrective controls on the level of fraud occurrence in Kenyan listed companies.

Owing to the present inconsistencies noted from the reviewed studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017; Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019; Matoussi & Gharbi, 2011) on the relationship between firm size and fraud occurrence. Since some studies (Holtfreter, 2008; ACFE, 2012; Bierstaker et al., 2006; Agathee & Ramen, 2017) observed that as firm size increases then the level of fraud goes down due to the employment of the most effective techniques. While some (Symsudin, Utomo & Praswati, 2017; Nelson, 2012; Anichebe, Agbomah & Agbagbara, 2019;

Matoussi & Gharbi, 2011) revealed that as firm size increases then the likelihood to commit fraud also increases. It would be interesting to note how firm size impacts on the level of fraud occurrence and the usage of the most effective anti-fraud techniques in the context of the listed firms in Kenya. Therefore, this study sought to address the existing knowledge gap by seeking to establish the moderating effect of firm size on the relationship between fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

The summary of the empirical literature review and the gaps to be addressed is presented in Table 2.1.

**Table 2. 1: Summary of Literature Review and Research Gaps**

| <b>Name of the Study</b> | <b>Purpose of the research</b>   | <b>Findings</b>   | <b>Research Gaps</b>   | <b>Response to the Gaps</b>  |
|--------------------------|--|---|--|--|
| Otieno (2018)            | To establish the insurance stakeholder's perceptions on the effectiveness and usage of fraud detection and prevention techniques in the motor insurance sector.  | The study observed that proper due diligence on customers, reference checks on employees and continuous auditing were perceived to be very effective in curbing motor insurance fraud.  | A knowledge gap existed in assessing how the anti-fraud techniques influenced the level of fraud occurrence.   | This study established that proper due diligence as part of the preventive controls significantly reduces the level of fraud occurrence on firms listed at the NSE, Kenya. On the other hand, this study established that continuous auditing as part of the detective controls does not significantly decrease the level of fraud occurrence on firms listed at the NSE, Kenya. |
| Hakami and Rahmat (2019) | To establish the perceived effectiveness of fraud prevention strategies based on the perceptions of the employees.   | The study observed that positive employee recognition, corporate code of conduct, ethics training, ethics officer, whistle blowing, continuous spot check were perceived to be effective in deterring fraud.                  | A knowledge gap existed in assessing how the anti-fraud techniques influenced the level of fraud occurrence.   | This study revealed that the aforementioned preventive strategies significantly negate the level of fraud occurrence on firms listed at the NSE, Kenya.  |
| Ekaterina (2013)         | To establish the perceptions of the managers and accountants on the effectiveness of fraud prevention and detection measures in Russian small-scale enterprises. | The study noted that segregation of duties, restricted access to records, vendor's legitimacy verification, authorization of transactions, background and reference checks were perceived to be effective in deterring fraud. | A knowledge gap existed in assessing how the anti-fraud techniques influenced the level of fraud occurrence.   | This study ascertained that segregation of duties and reference checks on employees considerably reduces the level of fraud occurrence on the listed firms at the NSE, Kenya.  |
| Waigumo (2012)           | To establish the effects of preventive and detective controls on fraud in Kenya commercial banks.  | The study established that both preventive and detective controls had no significant impact on bank fraud.  | A knowledge gap existed in assessing how the corrective controls influenced the level of fraud occurrence. Additionally a knowledge void existed in establishing if firm | This study established that corrective controls momentarily decrease the level of fraud occurrence on the listed firms at the NSE, Kenya. Moreover, the study confirmed that firm size does not significantly moderate the relationship between the fraud risk management controls   |

|                                   |   |   |  |   |
|-----------------------------------|---|---|--|---|
|                                   |   |   | size moderates the relationship between the fraud risk management controls and fraud occurrence.   | and fraud occurrence on the listed firms at the NSE, Kenya.   |
| King'ori, Kiragu and Kamau (2019) | To establish the effect of fraud preventive measures on fraud occurrence in large and medium-sized commercial banks in Kenya. | The study revealed that preventive controls consisting of staff training, segregation of duties, job rotation and reference of documents significantly curbs bank fraud.            | A knowledge gap existed in assessing how the detective and corrective controls influenced the level of fraud occurrence. Additionally a knowledge void existed in establishing if firm size moderates the relationship between the fraud risk management practices and fraud occurrence.   | This study ascertained that detective controls do not significantly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. On the other hand, this study discovered that corrective controls profoundly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. Moreover, the study confirmed that firm size does not significantly moderate the relationship between the fraud risk management controls and fraud occurrence on the listed firms at the NSE, Kenya. |
| Kamaliah et al. (2018)            | To establish the effectiveness of monitoring mechanism and mitigation of fraud incidences in the Malaysian public sector.     | The study revealed that organizational integrity plan and internal control systems considerably decreases fraud incidents in Malaysian public sector.                               | A knowledge gap existed in assessing how the detective and corrective controls influenced the level of fraud occurrence. Additionally a knowledge void existed in establishing if firm size moderates the relationship between the fraud risk management practices and fraud occurrence.   | This study ascertained that detective controls do not significantly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. On the other hand, this study discovered that corrective controls profoundly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. Moreover, the study confirmed that firm size does not significantly moderate the relationship between the fraud risk management controls and fraud occurrence on the listed firms at the NSE, Kenya. |
| Holtfreter (2008)                 | To establish the determinants of fraud losses in Non-profit firms.  | The study observed that internal audits, anonymous hotlines and external audits as detective controls momentarily reduce fraud losses.  | A knowledge gap existed in assessing how the preventive and corrective controls influenced the level of fraud occurrence.  | This study discovered that both preventive and corrective controls profoundly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya.   |
| Kamau (2015)                      | To establish the effect of forensic accounting services on fraud prevention in insurance firms in Kenya.                      | The study noted that the investigative and litigation support services provided by forensic accountants to detect fraud significantly reduces fraud in the Kenyan insurance sector. | A knowledge gap existed in assessing how the preventive and corrective controls influenced the level of fraud occurrence. Plus the study only focused on one element of detective control. Additionally a knowledge void existed in establishing if firm size moderates the relationship between the fraud risk management practices and fraud occurrence. | This study ascertained that detective controls do not significantly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. On the other hand, this study discovered that corrective controls profoundly reduce the level of fraud occurrence on the listed firms at the NSE, Kenya. Moreover, the study confirmed that firm size does not significantly moderate the relationship between the fraud risk management controls and fraud occurrence on the listed firms at the NSE, Kenya. |
| Ogola, K'Aol and Linge (2016)     | To establish the effect of corporate governance on  | The study observed that fraud detection controls involving internal fraud   | A knowledge gap existed in assessing how the preventive and corrective   | This study discovered that both preventive and corrective controls profoundly reduce the level of fraud   |

|  |  |  |  |
|--|--|--|--|
| occurrence of fraud in commercial bank in Kenya. | investigation team and fraud guard systems significantly reduces fraud losses. | controls influenced the level of fraud occurrence. Additionally a knowledge void existed in establishing if firm size moderates the relationship between the fraud risk management practices and fraud occurrence. | occurrence on the listed firms at the NSE, Kenya. Moreover, the study confirmed that firm size does not significantly moderate the relationship between the fraud risk management controls and fraud occurrence on the listed firms at the NSE, Kenya. |
|--|--|--|--|

**Source: Researcher (2020)**

## 2.5 The Conceptual Framework

Figure 2.4 presented the relationship between the variables that this study sought to assess. It depicted how the fraud risk management comprising of preventive, detective and correctives controls (independent variables) influences the level of fraud occurrence characterized by corruption, asset misappropriation and financial statement fraud (dependent variable) and how the relationship is moderated by firm size characterized by annual revenues, total assets and employee size. Fraud preventive controls as an independent variable was operationalized in terms of how effective they are in curbing the level of fraud occurrence (corruption, asset misappropriation and financial statement fraud) on listed companies in Kenya. In line with the fraud triangle theory, the study sought to establish if preventive controls discourages pressure and rationalization, thus mitigating fraud occurrence on listed companies in Kenya.

In line with the fraud management lifecycle theory, the study sought to concur with the theoretical proposition of the model that the preventive phase (independent variable) leads to the successful management of fraud occurrence (dependent variable) on listed companies in Kenya. Fraud detective controls as an independent variable was operationalized in terms of how effective they are in curbing the level of fraud occurrence (corruption, asset misappropriation and financial statement fraud) on listed companies in Kenya. In line with the fraud triangle theory, the study sought to establish if the detective controls considerably denies fraudsters the opportunity to perpetuate fraud on listed companies in Kenya. In line with the fraud management lifecycle theory, the study sought to concur with the theoretical proposition of the model that the detective phase (independent variable) leads to the successful management of fraud occurrence (dependent variable) on listed companies in Kenya.

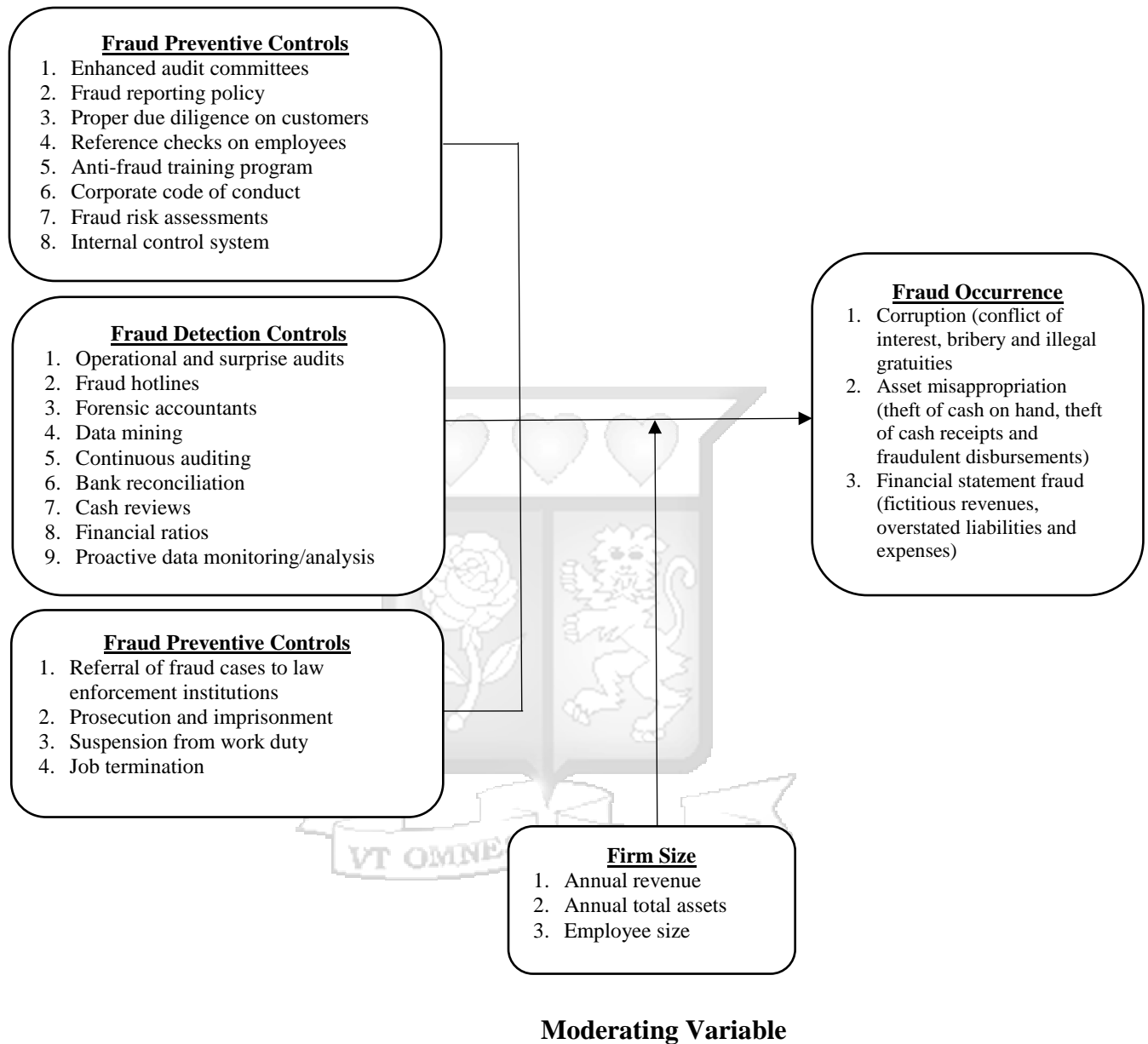
Fraud corrective controls as an independent variable was operationalized in terms of how effective they are in curbing the level of fraud occurrence (corruption, asset misappropriation and financial statement fraud) on listed companies in Kenya. In line with the fraud triangle theory, the study sought to establish if corrective controls discourages the justification of fraud by depicting that fraud is wrong and punishable thus demotivating fraud occurrence on listed companies in Kenya. In line with the fraud management lifecycle theory, the study sought to concur with the theoretical proposition of the model that the corrective/prosecution phase (independent variable) leads to the successful management of fraud occurrence (dependent variable) on listed companies in Kenya.

Firm size as a moderating variable was used to establish if sufficient finances and human capital are linked to the procurement and deployment of the most perceived effective fraud risk management controls (the 3 independent variables) thus leading to the mitigation of fraud occurrence (dependent variable). Firm size was employed as a moderating variable to establish if it strengthens, negates or changes the relationship between the independent and dependent variables. It was used to establish if a unit increase of firm size would subsequently increase preventive, detective and corrective controls which would then consequently reduce the level of fraud occurrence on listed companies in Kenya. Thus, firm size was operationalized on a categorical scale then transformed to dichotomous data for interaction with the variables in the regression model to ascertain the moderating effect.



**Independent Variables  
(Fraud Risk Management Controls)**

**Dependent Variable**



**Figure 2. 4: The Conceptual Framework depicting the Relationship between Fraud Risk Management, Fraud and the Moderating effect of Firm Size**

**Source: Researcher (2019)**

## 2.6 Operationalization of Variables

Table 2.1 below presented how the study variables were operationalized.

**Table 2. 2:Operationalization of Variables**

| <b>Independent Variable</b>                  | <b>Constructs</b>  | <b>Operational Constructs</b>  | <b>Measurement</b>                            | <b>Supporting Literature</b>  | <b>Supporting Theory</b>                                     |
|--|--|--|---|---|--|
| Preventive Controls                          | Enhanced audit committees, Fraud reporting policy, Proper due diligence on customers, Staff rotation policy, Reference checks on employees, Anti-fraud training program, Positive employee recognition, Corporate code of conduct, Code of sanction against supplies/contractors, Internal audit department, Fraud risk assessments, Internal control system, Segregation of duties. | Perceived effectiveness of Enhanced audit committees, Fraud reporting policy, Proper due diligence on customers, Staff rotation policy, Reference checks on employees, Anti-fraud training program, Positive employee recognition, Corporate code of conduct, Code of sanction against supplies/contractors, Internal audit department, Fraud risk assessments, Internal control system and Segregation of duties. | A 5-point Likert Scale of extent of agreement | Othman et al. (2015); Bierstaker et al. (2006); Otieno (2018); Hakami and Rahmat (2019); Zamzami, Nusa and Timur (2016); Omar and Abu Bakar (2012); Micheni (2016); Rahman and Anwar (2014) | Fraud Management Lifecycle Theory and Fraud Triangle Theory  |
| Detective Controls                           | Operational audits, Fraud hotlines, Forensic accountants, Data mining, Continuous auditing, Bank reconciliation, Ethics officer, Surprise audits, Cash reviews, Inventory observation, Financial ratios, Internal audit review and Proactive data monitoring/analysis.   | Perceived effectiveness of Operational audits, Fraud hotlines, Forensic accountants, Data mining, Continuous auditing, Bank reconciliation, Ethics officer, Surprise audits, Cash reviews, Inventory observation, Financial ratios, Internal audit review and Proactive data monitoring/analysis.  | A 5-point Likert Scale of extent of agreement | ACFE (2018); Holtfreter (2008); Kamau (2015); Lee (2017); Waigumo (2012); Agathee and Ramen (2017); Mangala and Kumari (2017); Efiong, Inyang and Joshua (2016); Bierstaker et al. (2006)   | Fraud Management Lifecycle Theory and Fraud Triangle Theory. |
| Corrective Controls                          | Referral of fraud cases to law enforcement institutions, Prosecution and imprisonment, Prosecution and payment of hefty fines, Suspension from work duty and Job termination.  | Perceived effectiveness of Referral of fraud cases to law enforcement institutions, Prosecution and imprisonment, Prosecution and payment of hefty fines, Suspension from work duty and Job termination.   | A 5-point Likert Scale of extent of agreement | ACFE (2018); Deloitte (2018); Kultanen (2017); United Nations (2016)  | Fraud Management Lifecycle Theory and Fraud Triangle Theory. |
| <b>Dependent Variable (Fraud Occurrence)</b> | Asset Misappropriation   | Level of frequency of occurrence of theft of cash on hand, theft of cash receipts and fraudulent disbursements.  | A 5-point Likert Scale of extent of agreement | Kamaliah et al. (2018); ACFE (2018); PwC (2018)   | Fraud Triangle Theory.                                       |
|  | Corruption   | Level of frequency of occurrence of conflict of interest, bribery and illegal gratuities.  | A 5-point Likert Scale of extent of agreement | Kamaliah et al. (2018); ACFE (2018); PwC (2018)   | Fraud Triangle Theory.                                       |

|  |   |  |   |  |                        |
|--|---|--|---|--|------------------------|
|  | Financial Statement Fraud                             | Level of frequency of occurrence of fictitious revenues, overstated liabilities and expenses and improper asset valuation  | A 5-point Likert Scale of extent of agreement | Kamaliah et al. (2018); ACFE (2018); PwC (2018)                            | Fraud Triangle Theory. |
| <b>Moderating Variable (Firm Size)</b> | Annual revenue, Annual total assets and Employee size | Level of average annual revenue (less than Kshs. 250 million to more than Kshs. 1 billion), Level of average annual total assets (less than Kshs. 250 million to more than Kshs. 1 billion) and level of employee size (less than 100 employees to more than 1000 employees) | A 5-point Categorical scale                   | Bierstaker et al. (2006); Agathee and Ramen (2017); Kamaliah et al. (2018) |                        |

Source: Researcher (2019)



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presented the methodological approaches that the study used to collect data, to determine the sample size of the respondents, sample the respondents, assess the validity and reliability of the research instrument and analyze data.

#### **3.2 Research Philosophy**

A research philosophy denotes the guiding principle that pilots the way a researcher should conceive a research problem, select a particular research design, how data should be obtained, analyzed and used to represent a certain reality (Zukauskas, Vveinhardt & Andriukaitiene, 2018). There exists three primary research philosophies used in social science research studies, they include, positivism, interpretivism and pragmatism (Al-Ababneh, 2020). Positivists contend that the truth exists as an external reality and it is completely autonomous from the researched elements and the researcher (Bleiker, Morgan-Trimmer & Knapp, 2019). Positivism is focused on testing hypotheses involving causal association through operationalizing variables and using quantitative approaches involving structured questionnaires with predefined and pretested questions on a large sample to collect data, statistically analyzes it for generalization and to test the problematized causal relationships (Park, Konge & Artino, 2020). This was the most appropriate philosophy for this study since it sought to establish the causal association between the fraud risk management practices and fraud occurrence on listed firms at the NSE and if firm size moderated the relationship.

The study operationalized the appropriate variables and developed structured questions quantified on Likert-scales for statistical analysis, data was retrieved from a large sample of respondents for analysis and the results generalized to test the hypothesized relationship between the variables and inferences were made to represent the objective knowledge of the studied phenomena. Similar research investigations (King'ori, Kiragu & Kamau, 2019; Kamaliah et al., 2018; Holtfreter, 2008; Waigumo, 2012; Ogola, K'Aol & Linge, 2016; Kamau, 2015) employed this particular research philosophy to test the relationship between the fraud risk management practices and fraud occurrence in different organizations and sectors. Aside from that, Interpretivists posits that the

truth is based on the subjective reality constructed and glued on the minds of people as a consequence of social interaction (Irshaidat, 2019). It provides an in depth understanding of particular phenomena characterized by complex situations through the employment of qualitative methodologies such as interviews and focused group discussions and utilizing descriptive methodologies such as the narrative analysis to address the particular research question (Al-Ababneh, 2020; Alharahsheh & Pius, 2020). Besides that, based on this research philosophy, the reality keeps on changing as the perceptions of the studied individuals about a particular phenomenon changes with time (Al-Ababneh, 2020).

The research philosophy was not appropriate for this study since its main aim is to understand about a particular phenomena based on an in depth approach and not to assess causal relationships which was the main objective of this study. The final research philosophy is pragmatism which contends that the reality is present in the outside world though the perceptions of people about the world impacts how the reality should be viewed (Al-Ababneh, 2020). Consequently, both objective and subjective approaches are used to determine the truth about a certain reality (Al-Ababneh, 2020). The research philosophy believes that a person cannot wholly rely on positivism or interpretivism to generate the truth but both research paradigms should be employed to produce acceptable knowledge (Al-Ababneh, 2020). Therefore, pragmatists employ both quantitative and qualitative methodologies to clearly understand the phenomena being studied (Bleiker, Morgan-Trimmer, Knapp, 2019). This study could have employed a mixed methodology involving both questionnaires and interviews/focused group discussions. Though interviews do not guarantee anonymity and given the nature of this study that involved investigating sensitive issues in regard to fraud, people would not be able to partake in the study due to fear of giving out confidential information that could put their jobs at risk.

This explains why most of the fraud studies (King'ori, Kiragu & Kamau, 2019; Kamaliah et al., 2018; Waigumo, 2012; Ogola, K'Aol & Linge, 2016; Omar & Abu Bakar, 2012; Rahman & Anwar, 2014; Othman et al., 2015; Zamzami, Musa & Timur, 2016) relied solely on a quantitative methodology involving the exclusive use of questionnaires. Besides that, even though questionnaires guarantees the respondent anonymity thus can make them to confidently air their views on sensitive issues such as fraud, related studies (Omar & Abu Bakar, 2012; Rahman & Anwar, 2014; Othman et al., 2015; Zamzami Musa & Timur, 2016) still recorded a considerably

low responses rate of below 60%. This shows that even employing a quantitative methodology involving the use of questionnaires only can be hard to obtain sufficient information about fraud related issues.

### **3.3 Research Design**

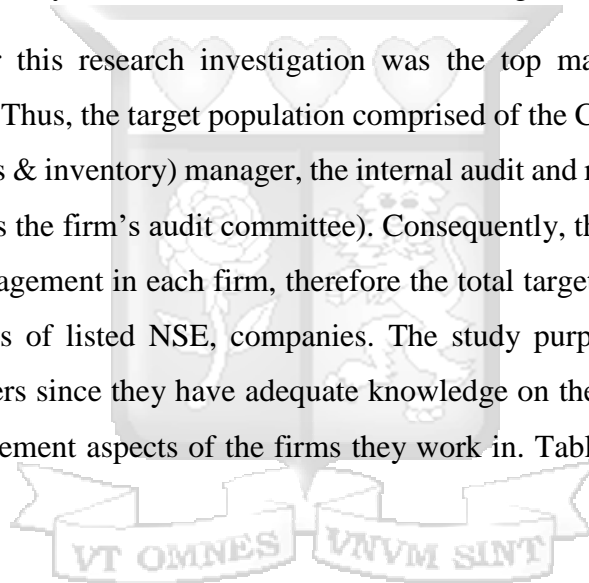
This study applied the causal research design as the most appropriate methodology to address its research objectives. Causal research design involves studies that seek to determine how one or more variables affect the outcome variable (Apuke, 2017). It is quite different from the descriptive research design since descriptive studies seek to establish, identify or describe the present state of affairs of a particular variable or variables but does not seek to identify the relationship between the variables (Ethridge, 2004; Doody & Bailey, 2016). If this study was seeking to establish the perceived effectiveness of anti-fraud techniques without linking them to the outcome variable just like how other fraud studies (Bierstaker et al., 2006; Othman et al., 2015; Rahman & Anwar, 2014) did it, then it could have employed a descriptive research design. Causal research design was suitable for this study since the researcher was interested to establish how preventive, detective and corrective controls as independent variables influenced fraud occurrence as the outcome variable and if firm size moderated the relationship. Causal studies, just like descriptive studies involve collection of quantitative data by use of structured questionnaires for instance, for statistical analysis to be used on the data retrieved to test the hypothesized relationships (Fox & Bayat, 2008; Jefferys, 2018).

This study used structured questionnaires with question items of Likert scales to retrieve the numerical data from the sample of respondents and the data was analyzed by using the regression analysis model to assess the relationship between the fraud risk management controls and fraud occurrence on firms listed at the NSE. Besides that, similar research investigations (King'ori, Kiragu & Kamau, 2019; Kamaliah et al., 2018; Holtfreter, 2008; Waigumo, 2012; Ogola, K'Aol & Linge, 2016; Kamau, 2015) had applied this research design to establish how the relevant anti-fraud techniques affected the level of fraud risk. The causal research design was cross-sectional in nature, since data was collected from the respondents at only one point in time. Causal studies deliver the merit of replication when the need arises and it is linked with high levels of internal validity due to careful selection of the research participants (Zikmund et al., 2012).

### 3.4 Population of the Study

The total population of the firms listed in NSE Kenya was 64 (NSE, 2020). This aggregate number consisted of 6 companies operating in the agricultural sector, 1 firm in the automobiles and accessories sector and 5 firms in the investment sector (NSE, 2020). Moreover, 9 companies listed in the NSE operated in the manufacturing and allied sector, 1 firm in exchange traded fund sector, 1 firm in the real estate investment trust and 1 company in telecommunication and technology sector (NSE, 2020). Additionally, 4 listed companies were in the energy and petroleum sector, 5 firms were in the construction and allied sector and 11 companies operated in commercial services sector (NSE, 2020). Moreover, 1 listed firm was in the investment services sector and 6 firms were in the insurance sector. Finally, 12 listed firms were in the banking sector (NSE, 2020).

The unit of analysis for this research investigation was the top management who were the respondents of the study. Thus, the target population comprised of the CEO, the finance manager, the supply chain (logistics & inventory) manager, the internal audit and risk manager and one non-executive director (who is the firm's audit committee). Consequently, this represented a total of 5 employees in senior management in each firm, therefore the total target population for this study was 320 senior managers of listed NSE, companies. The study purposely targeted this select population of the managers since they have adequate knowledge on the internal controls and the general fraud risk management aspects of the firms they work in. Table 3.1 presented the target population of the study.



**Table 3. 1:Target Population of the Study**

| <b>Sector</b>                    | <b>Targeted Listed Firms in a Particular Sector</b> | <b>Total Targeted Population of the Select Management in each Sector</b> |
|----------------------------------|---|--|
| Agricultural                     | 7   | 35   |
| Automobiles and Accessories      | 1   | 5  |
| Banking                          | 12  | 60   |
| Commercial Services              | 11  | 55   |
| Energy and Petroleum             | 4   | 20   |
| Exchange Traded Fund             | 1   | 5  |
| Manufacturing and Allied         | 9   | 45   |
| Investment                       | 5   | 25   |
| Construction and Allied          | 5   | 25   |
| Telecommunication and Technology | 1   | 5  |
| Real Estate Investment Trust     | 1   | 5  |
| Insurance                        | 6   | 30   |
| Investment services              | 1   | 5  |
| <b>Total</b>                     | <b>64</b>   | <b>320</b>   |

**Source: Researcher (2020)**

### **3.5 Sample and Sampling Techniques**

Stratified sampling technique was applied to divide the target population of the management into strata. Each stratum comprised of the total firms and the aggregate number of target managers working in those firms based on a certain sector. The sampling frame for this study was the list of all the listed firms in NSE contained in NSE (2020) website. Thus, the population was divided into 13 strata comprising of all the 13 sectors identified by NSE (2020) as depicted in Table 3.2. Since the target population was not proportionate owing to the fact that each sector had a different number of firms, then the target sample size of the respondents for each stratum was not equal. Consequently, disproportionate stratified sampling was used to sample the respondents based on the personal judgment of the researcher that was aimed at producing a fair and unbiased sample size for each stratum (Pandey & Pandey, 2015). The total sample size of the respondents that represented the target population of the study was calculated by using Yamane (1967) sample size formula.

The Yamane (1967) sample size calculator is a simplified formula for estimating samples sizes and it is good for both small and large populations (Israel, 1992). It estimates sample size of a given population based on the parameter of 95% confidence level and allows  $\pm 5\%$  (0.05) margin of error. The formula and how the sample size was estimated was presented below;

$$n = \frac{N}{1 + N(e)^2}$$

Whereby; n denotes the sample size.

N was the target population, which in this case was the 64 listed firms.

e was the margin of error at  $\pm 5\%$  (0.05) precision level.

$$n = \frac{64}{1 + 64(0.05)^2}$$

$$= 55$$

Thus, the sample size of our study representing the target population was 55 listed firms

**Table 3. 2: Sample Size Distribution in Each Stratum based on The Target Population**

| Sector                           | Targeted Listed Firms in a Particular Sector | Total Targeted Population of the Select Management in each Sector | Firms to be sampled in each Sector | Number of Respondents/ managers selected in each company operating in a Particular sector | Total number of respondents selected in all Firms in a given Sector |
|----------------------------------|--|---|------------------------------------|---|---|
| Agricultural                     | 7  | 35  | 6                                  | 5   | 30  |
| Automobiles and Accessories      | 1  | 5   | 1                                  | 5   | 5   |
| Banking                          | 12   | 60  | 10                                 | 5   | 50  |
| Commercial Services              | 11   | 55  | 9                                  | 5   | 45  |
| Energy and Petroleum             | 4  | 20  | 4                                  | 5   | 20  |
| Exchange Traded Fund             | 1  | 5   | 1                                  | 5   | 5   |
| Manufacturing and Allied         | 9  | 45  | 7                                  | 5   | 35  |
| Investment                       | 5  | 25  | 5                                  | 5   | 25  |
| Construction and Allied          | 5  | 25  | 5                                  | 5   | 25  |
| Telecommunication and Technology | 1  | 5   | 1                                  | 5   | 5   |
| Real Estate Investment Trust     | 1  | 5   | 1                                  | 5   | 5   |
| Insurance                        | 6  | 30  | 4                                  | 5   | 20  |
| Investment services              | 1  | 5   | 1                                  | 5   | 5   |
| <b>Total</b>                     | <b>64</b>                                    | <b>320</b>  | <b>55</b>                          |   | <b>275</b>  |

**Source: Researcher (2019)**

### 3.6 Data Collection Methods

The study used structured questionnaires as a research instrument to collect primary data from the targeted senior managers in order to assess their perceptions on the variables of interest. It

contained questions measured on 5- point Likert scales that helped in obtaining quantitative data from the targeted senior managers for statistical analysis and interpretation (Zikmund et al., 2010). Structured questionnaires are deemed to be an appropriate data collection tool for this study since they are less costly and easier to administer (Kothari, 2004). Moreover, they cover large sample sizes and the data retrieved by this kind of research instrument can be easily statistically analyzed (Kothari, 2004). Similar studies (Othman et al., 2015; Bierstaker et al., 2006; Mangala & Kumari, 2017; Hakami & Rahmat, 2019; Kamaliah et al., 2018; Waigumo, 2012; Efiog, Inyang & Joshua, 2016) used this type of research instrument to retrieve information of the study variables that helped in addressing their research objectives.

The questionnaire was divided into 3 sections as presented in Appendix Two. The first section (Section A) solicited the demographic information of the targeted firms and the general information of the respondents. The demographic information of the targeted firms this study sought to retrieve were the average annual revenue turnover, asset size, employee size and the sector which the listed corporations operated in. This information was used to establish the firm size of the listed corporations and assisted in addressing the fourth objective of this study. Considering that the fourth specific objective of this study sought to assess the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya. Additionally, Section A sought to ascertain the gender, job titles of the senior managers, their professional experience, education and certificate qualifications. The question items in Section A were on a categorical scale.

Section B sought to retrieve data on the perceptions of the effectiveness of preventive, detective and corrective measures on fraud occurrence that helped to address the first, second and third specific objectives of this study. The antifraud measures were assessed by a 5-point Likert scale of the extent of agreement (1- strongly disagree, 2- disagree, 3- neutral, 4- agree and 5- strongly agree). Finally, Section C sought to retrieve data on the level of fraud occurrence that assisted in addressing the first, third and fourth specific objectives of this study. A 5-point Likert scale of the extent of agreement (1- strongly disagree, 2- disagree, 3- neutral, 4- agree and 5- strongly agree) was employed to establish the level of occurrence of asset misappropriation, corruption and financial statement fraud cases.

### 3.7 Research Quality

The research quality was determined by the validity and reliability of the research instrument. A pilot study was conducted in order to assess the content validity of the questionnaire. It sought the expert recommendations of the respondents that was used to ensure that the question items were sufficient and that they appropriately represented the variables/constructs they intended to measure before administering the final questionnaire. The pilot test was carried out on a sample of 28 senior managers who represented 10% of the aggregate sample size. This figure was deemed appropriate since Connelly (2008) posited that 10% of the total sample size is enough and reliable for pilot tests. The sampled respondents of the pilot study were not be considered in the final study in order to avoid biasness.

The study employed the Cronbach's alpha test to evaluate the reliability of the questionnaire based on the items measured on a Likert scale. It was used to determine the internal consistency of the questionnaire items. A Cronbach's alpha figure 0.7 and above denotes that the questionnaire items are internally consistent (Bonett & Wright, 2015). Thus, the questionnaire can be relied on to collect data and the data subjected to statistical analysis and interpretation (Bonett & Wright, 2015). Consequently, this was the guiding principle that the study used to assess the reliability of the questionnaire. After the pilot study was conducted, the primary data was analyzed in SPSS by the Cronbach's Alpha model and the findings were presented in Table 3.3.

**Table 3. 3: Reliability test Results**

| <b>Fraud Risk Management Practices</b> | <b>Cronbach's Alpha</b> | <b>No. of Items</b> |
|--|-------------------------|---------------------|
| Preventive Controls                    | 0.835                   | 13                  |
| Detective Controls                     | 0.975                   | 13                  |
| Corrective Controls                    | 0.784                   | 5                   |
| <b>Level of Fraud Occurrence</b>       |                         |                     |
| Asset Misappropriation                 | 0.827                   | 5                   |
| Corruption                             | 0.800                   | 6                   |
| Financial Statement Fraud              | 0.909                   | 4                   |

**Source: Researcher (2020)**

In Table 3.3, all the fraud risk management practices comprising of preventive, detective and corrective controls posted Cronbach's alpha values of 0.835, 0.975 and 0.784 respectively, which

were above the benchmark value of 0.7. This meant that all the questionnaire items in the scales of the three fraud risk management practices were internally consistent. Besides that, all the fraud occurrence schemes including asset misappropriation, corruption and financial statement fraud posted Cronbach's alpha values of 0.827, 0.800 and 0.909 respectively, which were above the benchmark value of 0.7. This meant that all the questionnaire items in the scales of the three types of fraud occurrence were internally consistent. Accordingly, the questionnaire was deemed reliable for the main data collection exercise.

### **3.8 Data Collection Procedure**

The researcher after successfully passing the Proposal defense stage sought for the NACOSTI research permit letter that aided the researcher in collecting primary data from the field. The researcher collected data between February and March 2020. The researcher administered the questionnaires to the respondents, waited for them to fill the questionnaires and then picked them up. This was based on the respondents that the researcher was able to meet in field at the particular period of the data collection exercise. The respondents who were not able to respond to the questionnaires at the particular time that the researcher was able to meet them, were given an extension of 3 to 5 days for them to fill the questionnaires. Necessary follow-ups were made through e-mails and phone calls. The researcher procured the assistance of 2 researcher assistants that helped in collecting data from the listed firms.

Interestingly, the study was able to achieve a very high response rate of 77.1% from the data collection process. This is probably the highest response rate recorded in fraud research when compared to other similar studies (Waigumo, 2012; Othman et al., 2015; King'ori, Kiragu & Kamau, 2019; Omar & Abu Bakar, 2012; Zamzami, Musa & Timur, 2016; Rahman & Anwar, 2014; Efiang, Inyang & Joshua, 2016) that were interested in investigating the perceived effectiveness of anti-fraud techniques. One of the reasons why this study recorded a high response rate is because it upheld the principle of anonymity, whereby the respondents were advised not to record their names on the questionnaires thus it gave them confidence to participate in the study without fear of being identified. Moreover, the scope of the study focused on all sectors in the country without profiling or focusing on only one sector, thus this attribute made the respondents to record their responses with great confidence since they knew that their firms or the industry that

they were working in would not be profiled. On top of that, when the respondent missed to find a targeted manager in the office, she was given the email address for that particular respondent.

Then the researcher used the email contact to introduce herself and the study she was conducting to the manager. After that an online questionnaire was sent to him or her via email. Thus, the respondent was able to record their responses at any time even at home and sent it back via email. Hence this type of technique of using an online survey to the managers that the researcher failed to locate in the office proved to be very effective in boosting the response rate. Besides that, the type of respondents the study targeted who were the managers were very cooperative since they were very interested in the findings of the study that could help them formulate the appropriate policies that would curb fraud that is ailing their organizations. Finally, the Corona virus which disrupted the timeline for research since schools were closed and the timetable for the research programme extended by most universities provided the researcher adequate time to collect enough data without worrying about the school deadlines.

### **3.9 Data Analysis Techniques**

To establish the perceived effectiveness of preventive, detective and corrective controls on fraud occurrence, descriptive analysis comprising of mean, standard deviation and ranking were used. Mean scores were employed to summarize the responses and provide a description of the perceived effectiveness rating of each anti-fraud measure while ranking method was able to portray the most perceived effective and the perceived ineffective anti-fraud controls. The SPSS software was used to perform the descriptive analysis and the results were presented in tables. Similar studies (Othman et al., 2015; Bierstaker et al., 2006; Otieno, 2018; Mangala & Kumari, 2017; Hakami & Rahmat, 2019; Zamzami, Nusa & Timur, 2016; Omar & Abu Bakar, 2012; Efiog, Inyang & Joshua, 2016; Micheni, 2016) that sought to establish the perceived effectiveness of fraud detection and preventive controls applied this type of data analysis technique to address their research objectives. Fraud symptoms could have been an interestingly phenomenon to be studied.

Even though fraud can be hardly spotted thus the identification of its symptoms could help in identifying its existence such as abrupt expensive lifestyle of a particular employee who was experiencing financial difficulties, doesn't essentially mean that fraud has been perpetrated (Koh, Arokiasamy & Suat, 2009). Fraud has to be first of all be proved to have occurred by the use of

anti-fraud techniques such as the use of forensic accountants (Koh, Arokiasamy & Suat, 2009). Therefore, it could be pointed to the symptom of high lifestyle only if the employee was involved in the fraud activity, otherwise its source of origin could be something totally different (Koh, Arokiasamy & Suat, 2009). This is considering the fact that fraudsters are very smart and they cannot immediately change their lifestyle based on the proceeds retrieved from fraudulent activities because they would be easily noticed and be questioned. Additionally, Bierstaker et al. (2006) also observed that fraud symptoms in most cases are far much distant from being linked to fraud occurrence and the employment of preventive and detective techniques are the most suitable strategies of identifying fraud risk.

Moreover, analytical symptoms such as abnormal outliers appearing in financial reports for instance, solely depends on data mining fraud detection technique that was one of the detective measures assessed by this study (Ribeiro, Oliveira & Gama, 2016). This is the reason why this study solely focused on preventive, detective and corrective controls only without paying any attention to fraud symptoms. Aside from that, descriptive analysis was used to establish the level of fraud occurrence on firms listed in the NSE. SPSS software was used to perform the descriptive analysis and the results were presented in tables. Mean scores was used to summarize the data set of each statement linked to fraud occurrence and establish the degree of severity of each type of fraud occurrence. Kamaliah et al. (2018) and Waigumo (2012) employed this type of data analysis technique to establish the level of fraud occurrence in the Malaysian public sector and in Kenyan commercial banks respectively. Factor analysis was employed to derive the most influential factors assessing each study construct for regression analysis. Factors that have Eigen figures more than 1 and specific question items with loadings of more than 0.4 are reserved for further analysis (Reis, Hino, & Rodriguez-Anez, 2010).

In line with addressing the first, second and third specific objectives of the study, Multiple Linear regression analysis was employed to establish the effect of preventive, detective and corrective controls on the level of fraud occurrence and if the influence explained was statistically significant. Earlier on the studied had sought to employ ordinal regression model to address the objectives of the study but unfortunately, the findings of the study violated the proportional odds assumption rendering the model inapplicable as presented in chapter four, section 4.6. Moreover, multiple linear regression analysis was applicable to this study since the ordinal data for the variables were

compressed through mean scores in order to develop continuous data appropriate for the regression model. Similarly, past fraud studies (Waigumo, 2012; Kamaliah et al., 2018; Kamau, 2015) employed this type of model to establish the relationship between fraud risk management practices and fraud occurrence. Moreover, the model was appropriate for this study since it had more than two independent variables and the residuals were autonomous based on the Durbin-Watson results (as presented in Chapter 4)(Laerd Statistics, 2018).

Additionally, there was a linear relationship between the predictor and the independent variables, there was no presence of Multicollinearity and the data was normally distributed (as presented in Chapter 4) (Laerd Statistics, 2018). SPSS software was used to perform the regression analysis and the results were presented in tables. Multiple Linear regression analysis was also employed to assess the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya. This was in line with addressing the fourth specific objective of the study. The model was appropriate since it is the only regression model that is easier to use and that can clearly bring out the moderating effect of a certain variable when interacted with the predictor variables when compared to other regression models such as the Ordinal, Multinomial logistic, Partial least squares, Binary logistic and Probit models (Laerd Statistics, 2018). The study developed and presented the regression equation below that was used to illustrate the relationship between the dependent variable (fraud occurrence) and the independent variables (preventive, detective and corrective controls).

$$FO = \alpha + \beta_1 FP + \beta_2 FD + \beta_3 FC + \beta_4 FZ + \beta_5 FP * Z + \beta_6 FD * Z + \beta_7 FC * Z + \epsilon$$

Whereby, (FO) was the dependent variable representing fraud occurrence. On the other hand, ( $\alpha$ ) denoted the constant term representing the percentage of fraud occurrence when preventive, detective and corrective controls are absent. Besides that, (FP) was the independent variable representing preventive controls. Thus, ( $\beta_1$ ) denoted the regression coefficient depicting the degree of fraud occurrence explained by a unit rise of fraud preventive measures. Apart from that, (FD) was the independent variable representing detective controls while ( $\beta_2$ ) denoted the regression coefficient depicting the degree of fraud occurrence explained by a unit rise of fraud detective controls. On the other hand, (FC) was the independent variable representing corrective controls while  $\beta_3$  denoted the regression coefficient depicting the degree of fraud occurrence explained by a unit rise of fraud corrective controls.

On the other hand, (FZ) represented firm size as a covariate variable. Besides that, ( $\beta_1$ ) represented the beta coefficient illustrating the degree to which preventive controls influences fraud occurrence while ( $\beta_4$ ) represented the beta coefficient showing the extent to which firm size influences fraud occurrence (FO). (FP\*Z) represented the interaction between preventive controls and firm size while ( $\beta_5$ ) represented the beta coefficient illustrating the degree to which fraud preventive controls influences fraud occurrence when there is a unit rise of firm size. (FD\*Z) represented the interaction between detective controls and firm size while ( $\beta_6$ ) represented the beta coefficient illustrating the degree to which fraud detective controls influences fraud occurrence when there is a unit rise of firm size. On the other hand, (FC\*Z) represented the interaction between corrective controls and firm size while ( $\beta_7$ ) represented the beta coefficient illustrating the degree to which corrective controls influences fraud occurrence when there is a unit rise of firm size. Finally, ( $\epsilon$ ) denotes the error term that depicted the goodness of fit of the regression model.

### **3.10 Ethical Considerations**

The study sought a research permit letter from NACOSTI that helped the researcher to collect data from the respondents in order to show that the research investigation was indeed a credible one. Moreover, the credibility of the survey instrument that was used to collect data to be relied on was assessed in terms of its reliability by using the Cronbach's Alpha model and the validity was assessed in terms of if the information assessing the constructs were relevant and sufficient through employing factor analysis. Honesty and integrity were adhered to by properly paraphrasing and acknowledging the information, data and concepts that were retrieved from other sources and used in this document. This is because using people's work to build your project without properly acknowledging them is like stealing their academic resources or knowledge. Consequently, such actions would attract negative ramifications such as being sued for hefty fine payments or being prosecuted with an aim of being imprisoned in certain countries. Aside from that, fraud topics in regard to establishing the fraud level in a certain organization or the techniques a firm uses to curb fraud are very sensitive and confidential.

The respondents might fear giving out such information since it is confidential and their jobs can be at risk of being lost. Thus, this study applied the ethical principle of confidentiality, whereby it clearly indicated in the survey instrument that the respondents should not write down their names or that of the firm. Therefore, the responses were treated as those retrieved from anonymous

sources. Additionally, the findings retrieved were used for statistical generalization without profiling a certain sector. Moreover, the study also upheld the informed consent ethical principle by refraining from pressurizing the respondents to participate in the survey, it ensured that the respondents willingly participated in the study. Furthermore, the researcher respected the decision of the managers who refused to participate in the survey. In order to avoid cases of psychological harm that could be caused by the study, the researcher clearly explained the purpose of the study to the respondents and the ramifications of the research findings before issuing out the questionnaires to be responded on.



## CHAPTER FOUR

### PRESENTATION AND INTERPRETATION OF RESEARCH FINDINGS

#### 4.1 Introduction

This chapter presented the results of both descriptive analysis, factor analysis and regression analysis applicable to addressing each specific objective of the study. It first starts by presenting the response rate results followed by the results from the regression diagnostic tests depicting why multiple linear regression analysis was appropriate for this study. Next was the presentation of the descriptive results that summarized and provided the state affairs of the demographic information of the respondents and the listed firms in Kenya. The descriptive analysis was also used to ascertain the perceived effectiveness of the preventive, detective and corrective controls. Finally, descriptive analysis was also employed to reveal the perceived level of fraud occurrence on listed firms in Kenya. Factor analysis results depicted the most influential factors retained for regression analysis. Besides that, multiple regression analysis presented how preventive, detective and corrective controls influenced the level of fraud occurrence on listed firms in Kenya. The model also presented how firm size moderated the relationship between fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

#### 4.2 Response Rate

The study was able to retrieve 212 questionnaires from the targeted senior managers, which were considered worthwhile for analysis. This represented a response rate of 77.1% that was appropriate and sufficient for analysis and interpretation. Since Gordon (2002) posited that, a response rate of 70% and above is adequate for a researcher to make inferences. Only 63 respondents accounting for 22.9% of the target sample failed to respond thus the non-response bias was extremely low. These 63 respondents comprised of 25 who participated in the pilot study and were not included in the main data collection exercise in order to avoid biasness. This study recorded a high response rate since the respondents who were the senior management were interested in the findings of this research in order to know and understand which fraud risk management techniques plays a significant role in curbing fraud in the private sector. The findings of the response rate of the respondents were presented in Table 4.1.

**Table 4. 1: General Response Rate**

| <b>Response Rate of Studied Participants and Firms</b> |                  |                       |
|--|------------------|-----------------------|
| <b>Study Participants</b>                              | <b>Frequency</b> | <b>Percentage (%)</b> |
| Responded  | 212              | 77.1                  |
| Failed to Respond                                      | 63               | 22.9                  |
| Total  | 275              | 100                   |
| <b>Listed Firms</b>                                    | <b>Frequency</b> | <b>Percentage (%)</b> |
| Responded  | 43               | 78.2                  |
| Failed to Respond                                      | 12               | 21.8                  |
| Total  | 55               | 100                   |

**Source: Researcher (2020)**

In regard to the listed firms as presented in Table 4.2, 43 firms out of 55 participated in this research investigation representing 78.2% response rate. This was considered sufficient for analysis and interpretation. Besides that, only 12 accounting for 21.8% of the targeted firms. Table 4.2 presents of the details of the response rate in each sector the listed firms operates in.

**Table 4. 2: Detailed Information on the Response Rate in each Sector**

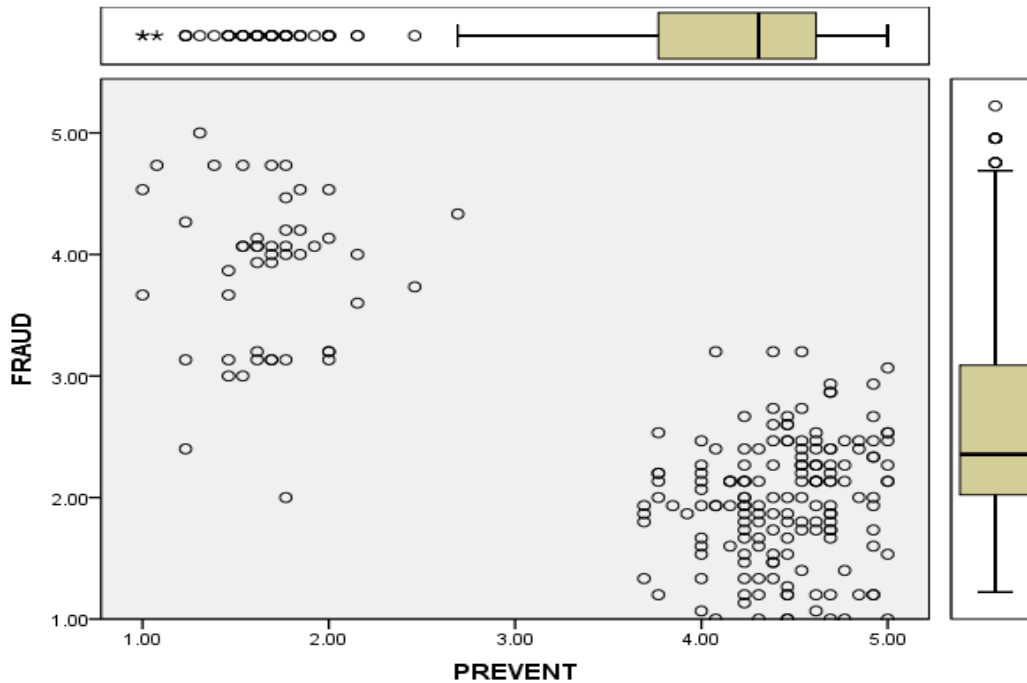
| <b>Sector</b>                  | <b>Targeted Firms</b> | <b>Studied Firms</b> | <b>Firms not Studied</b> | <b>Total Target Participants</b> | <b>Studied Participants</b> | <b>Participants Not Studied</b> |
|--------------------------------|-----------------------|----------------------|--------------------------|----------------------------------|-----------------------------|---------------------------------|
| Agricultural                   | 6                     | 5                    | 1                        | 30                               | 25                          | 5                               |
| Automobiles & Accessories      | 1                     | 1                    | 0                        | 5                                | 5                           | 0                               |
| Banking                        | 10                    | 8                    | 2                        | 50                               | 40                          | 10                              |
| Commercial Services            | 9                     | 7                    | 2                        | 45                               | 35                          | 10                              |
| Energy & Petroleum             | 4                     | 2                    | 2                        | 20                               | 10                          | 10                              |
| Exchange Traded Fund           | 1                     | 1                    | 0                        | 5                                | 5                           | 0                               |
| Manufacturing & Allied         | 7                     | 4                    | 3                        | 35                               | 20                          | 15                              |
| Investment                     | 5                     | 4                    | 1                        | 25                               | 20                          | 5                               |
| Construction & Allied          | 5                     | 5                    | 0                        | 25                               | 25                          | 0                               |
| Telecommunication & Technology | 1                     | 1                    | 0                        | 5                                | 4                           | 1                               |
| Real Estate Investment Trust   | 1                     | 1                    | 0                        | 5                                | 3                           | 2                               |
| Insurance                      | 4                     | 3                    | 1                        | 20                               | 15                          | 5                               |
| Investment Services            | 1                     | 1                    | 0                        | 5                                | 5                           | 0                               |
| <b>Total</b>                   | <b>55</b>             | <b>43</b>            | <b>12</b>                | <b>275</b>                       | <b>212</b>                  | <b>63</b>                       |

**Source: Researcher (2020)**

As presented in Table 4.2, the sectors which recorded a highest response rate were the agricultural, banking and commercial services sectors. Conversely, the sectors that recorded a comparatively low response rate were the manufacturing & allied, real estate investment trust and the energy & petroleum sectors.

### **4.3 Regression Diagnostic Tests**

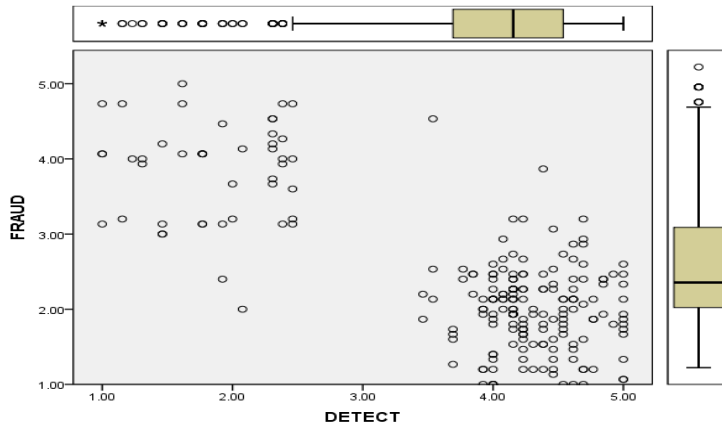
The study conducted diagnostic tests before conducting regression analysis to establish if the data set that would have been retrieved from the respondents, was appropriate for regression analysis to be carried out. This was achieved by testing if the following model assumptions were fulfilled. The first assumption that must be met before conducting linear regression analysis is that the relationship between X (predictor variable) and Y (dependent variable) must be in a linear fashion (Penrose, Nelson & Fisher, 1985). Consequently, the simple scatter plot was used to establish if the linearity assumption was met (Laerd Statistics, 2018). SPSS software was used to construct the scatter plots and the findings were presented in Figures 4.1, 4.2 and 4.3 respectively. In Figure 4.1 the scatter plot results depicted a negative linear relationship between the preventive controls (predictor variable) data set and the level of fraud occurrence (dependent variable) data set. Since the data was concentrated at the extreme end of the horizontal axis while at the extreme end of the vertical axis the data was sparsely concentrated. Thus, the linearity assumption rule to be met before conducting regression analysis was upheld by the results.



**Figure 4. 1: Scatter Plot Depicting the Relationship between Preventive Controls and Fraud Occurrence**

**Source: Researcher (2020)**

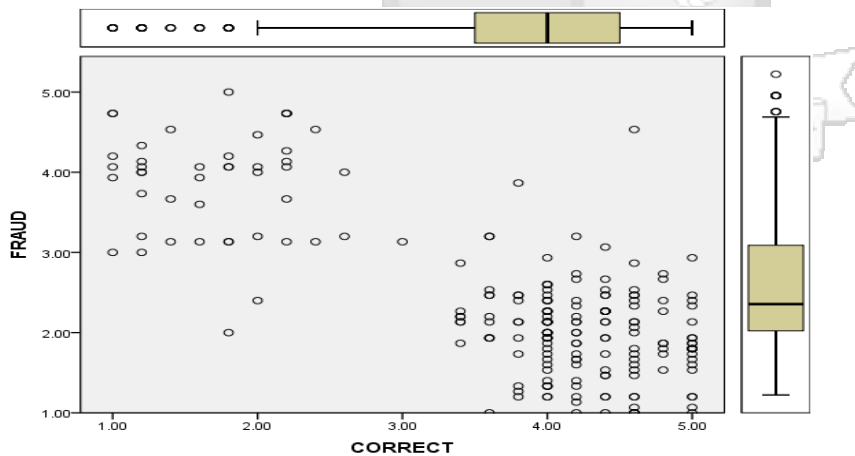
Similarly, in Figure 4.2 presented in the next page, the scatter plot results depicted a negative linear relationship between the detective controls (predictor variable) data set and the level of fraud occurrence (dependent variable) data set. Since the data was concentrated at the extreme end of the horizontal axis while at the extreme end of the vertical axis the data was sparsely concentrated. Thus, the linearity assumption rule to be met before conducting regression analysis was upheld by the results.



**Figure 4. 2: Scatter Plot Depicting the Relationship between Detective Controls and Fraud Occurrence**

**Source: Researcher (2020)**

Correspondingly, in Figure 4.3, the scatter plot results depicted a negative linear relationship between the corrective controls (predictor variable) data set and the level of fraud occurrence (dependent variable) data set. Since the data was concentrated at the extreme end of the horizontal axis while at the extreme end of the vertical axis the data was sparsely concentrated. Thus, the linearity assumption rule to be met before conducting regression analysis was upheld by the results.



**Figure 4. 3: Scatter Plot Depicting the Relationship between Detective Controls and Fraud Occurrence**

**Source: Researcher (2020)**

The second assumption that must be met before conducting linear regression analysis is that the observations have to be independent from each other (Penrose, Nelson & Fisher, 1985). Thus, Durbin-Watson Statistic was used to determine if the error terms are not auto correlated between themselves in order for the assumption to be met and Collinearity diagnostics was used to establish if the independent variables were indeed independent from each other (Statistics Solutions, 2019). A Durbin Watson coefficient that is greater than 1 and closer to 2 will signify that the error terms are autonomous from each other (Field, 2013). SPSS software was employed to perform the Durbin Watson test and the findings displayed in Table 4.1. The findings posted a Durbin-Watson figure of 1.863 meaning that the error terms were not auto correlated between themselves. Therefore, the independence assumption was fulfilled as a requirement for regression analysis.

**Table 4. 3: Durbin-Watson test Results**

| Durbin-Watson   |
|---|
| 1.863   |
| a. Predictors: (Constant), Corrective Controls, Preventive Controls, Detective Controls |
| b. Dependent Variable: Fraud Occurrence   |

**Source: Researcher (2020)**

Additionally, to establish if Multicollinearity (independent variables are related) does not exist in order for the assumption of independence to be met. Then the VIF figures of the independent variables must be greater than 1 but less than 10 and the tolerance figures must be more than 0.1 (Pallant, 2007). Collinearity diagnostic tests were performed by SPSS software and the findings were presented in Table 4.2. All the 3 fraud risk management controls posted tolerance values greater than 0.1 (preventive control = 0.212; detective control = 0.142; corrective control = 0.164) and VIF values were greater than 1 and less than 10 (preventive control = 4.719; detective control = 7.019; corrective control = 6.094). Even though corrective and detective controls posted VIF values that were considerably greater than 5 which could denote presence of correlation between the variables as posited by Ringle et al. (2015). It must be noted that their tolerance values were greater than 0.1. Additionally, variables that have considerably high VIF values mean that they represent categorical variables with more than 3 categories (Allison, 2012).

This was the case for the detective and corrective controls since they were assessed on five categories of level of agreement on a Likert scale. Moreover, VIF figures that are only greater than 10 indicate a serious concern of strong correlation that might lead to dropping of the variables (Stephanie, 2015) which was not the case for our study. In this case the VIF figures were less than 10 meaning that the variables were not seriously dependent on each other. Consequently, this meant that all the independent variables were sovereign from each and no serious case of Multicollinearity existed. Therefore, the independence assumption was fulfilled as a requirement for regression analysis.

**Table 4. 4: Collinearity test Results**

| Independent Variable | Collinearity Statistics |       |
|----------------------|-------------------------|-------|
|                      | Tolerance               | VIF   |
| Preventive Controls  | 0.212                   | 4.719 |
| Detective Controls   | 0.142                   | 7.019 |
| Corrective Controls  | 0.164                   | 6.094 |

a. Dependent Variable: Fraud Occurrence

**Source: Researcher (2020)**

The third assumption that must be met before conducting linear regression analysis is that the data set of all the variables under the research investigation must be normally distributed (Penrose, Nelson & Fisher, 1985). The Shapiro-Wilk’s W test was used to test the assumption since the sample size was not significantly large (Statistics Solutions, 2019). Consequently, the Shapiro-Wilk’s W test must not be significant ( $p\text{-value}>0.05$ ) in order for the normality assumption to be met (Statistics Solutions, 2019). The study employed SPSS software to run the normality test analysis on the retrieved data. The test was conducted by linking the 3 fraud risk management datasets with that of fraud occurrence separately. The normality test results based on the linkage between preventive controls (independent variable) and fraud occurrence (dependent variable) were presented in Table 4.3. The research findings revealed that most of the Shapiro-Wilk’s W test results were statistically insignificant ( $p\text{-value}>0.05$ ) which meant that the datasets of preventive controls and fraud occurrence were normally distributed. Subsequently, this meant that the normality assumption was adhered to as a necessary requirement for regression analysis.

**Table 4. 5: Normality test results for Preventive Control and Fraud Occurrence Datasets**

| Preventive Control |       | Tests of Normality <sup>b,c,d,f,g,h,i,j</sup> |        |        |              |    |      |
|--------------------|-------|---|--------|--------|--------------|----|------|
|                    |       | Kolmogorov-Smirnov <sup>a</sup>               |        |        | Shapiro-Wilk |    |      |
|                    |       | Statistic                                     | df     | Sig.   | Statistic    | df | Sig. |
| Fraud Occurrence   | 1.00  | 0.260   | 2      |        |              |    |      |
|                    | 1.23  | 0.223   | 3      |        | 0.985        | 3  |      |
|                    | 1.46  | 0.252   | 4      |        | 0.903        | 4  |      |
|                    | 1.54  | 0.305   | 4      |        | 0.920        | 4  |      |
|                    | 1.62  | 0.317   | 6      | 0.060  | 0.758        | 6  |      |
|                    | 1.69  | 0.231   | 6      | 0.200* | 0.893        | 6  |      |
|                    | 1.77  | 0.299   | 7      | 0.059  | 0.865        | 7  |      |
|                    | 1.85  | 0.232   | 3      |        | 0.980        | 3  |      |
|                    | 2.00  | 0.351   | 5      | 0.043  | 0.793        | 5  |      |
|                    | 2.15  | 0.260   | 2      |        |              |    |      |
|                    | 3.69  | 0.347   | 4      |        | 0.807        | 4  |      |
|                    | 3.77  | 0.294   | 6      | 0.115  | 0.836        | 6  |      |
|                    | 4.00  | 0.152   | 11     | 0.200* | 0.964        | 11 |      |
|                    | 4.08  | 0.221   | 5      | 0.200* | 0.967        | 5  |      |
|                    | 4.15  | 0.336   | 5      | 0.068  | 0.748        | 5  |      |
|                    | 4.23  | 0.099   | 19     | 0.200* | 0.980        | 19 |      |
|                    | 4.31  | 0.114   | 10     | 0.200* | 0.985        | 10 |      |
|                    | 4.38  | 0.143   | 12     | 0.200* | 0.934        | 12 |      |
|                    | 4.46  | 0.185   | 15     | 0.177  | 0.897        | 15 |      |
|                    | 4.54  | 0.144   | 13     | 0.200* | 0.972        | 13 |      |
| 4.62               | 0.261 | 15  | 0.007  | 0.862  | 15           |    |      |
| 4.69               | 0.120 | 18  | 0.200* | 0.957  | 18           |    |      |
| 4.77               | 0.273 | 5   | 0.200* | 0.899  | 5            |    |      |
| 4.85               | 0.245 | 4   |        | 0.864  | 4            |    |      |
| 4.92               | 0.153 | 11  | 0.200* | 0.958  | 11           |    |      |
| 5.00               | 0.244 | 9   | 0.131  | 0.928  | 9            |    |      |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

b. Fraud Occurrence is constant when Preventive Control = 1.08. It has been omitted.

c. Fraud Occurrence is constant when Preventive Control = 1.31. It has been omitted.

d. Fraud Occurrence is constant when Preventive Control = 1.38. It has been omitted.

f. Fraud Occurrence is constant when Preventive Control = 1.92. It has been omitted.

g. Fraud Occurrence is constant when Preventive Control = 2.46. It has been omitted.

h. Fraud Occurrence is constant when Preventive Control = 2.69. It has been omitted.

i. Fraud Occurrence is constant when Preventive Control = 3.85. It has been omitted.

j. Fraud Occurrence is constant when Preventive Control = 3.92. It has been omitted.

**Source: Researcher (2020)**

The normality test results based on the linkage between detective controls (independent variable) and fraud occurrence (dependent variable) were presented in Table 4.4. The research findings revealed that virtually all of the Shapiro-Wilk’s W test results were statistically insignificant ( $p$ -value>0.05) which meant that the datasets of detective controls and fraud occurrence were normally distributed. Subsequently, this meant that the normality assumption was adhered to as a necessary requirement for regression analysis.

**Table 4. 6: Normality test results for Detective Control and Fraud Occurrence Datasets**

|                   |       | Tests of Normality <sup>b</sup> |        |        |              |       |       |
|-------------------|-------|---------------------------------|--------|--------|--------------|-------|-------|
|                   |       | Kolmogorov-Smirnov <sup>a</sup> |        |        | Shapiro-Wilk |       |       |
| Detective Control |       | Statistic                       | df     | Sig.   | Statistic    | df    | Sig.  |
| Fraud Occurrence  | 1.00  | 0.290                           | 4      |        | 0.932        | 4     | 0.605 |
|                   | 1.15  | 0.260                           | 2      |        |              |       |       |
|                   | 1.31  | 0.260                           | 2      |        |              |       |       |
|                   | 1.46  | 0.385                           | 4      |        | 0.708        | 4     | 0.014 |
|                   | 1.62  | 0.276                           | 3      |        | 0.942        | 3     | 0.537 |
|                   | 1.77  | 0.407                           | 6      | 0.002  | 0.640        | 6     | 0.001 |
|                   | 1.92  | 0.242                           | 3      |        | 0.973        | 3     | 0.683 |
|                   | 2.00  | 0.260                           | 2      |        |              |       |       |
|                   | 2.08  | 0.260                           | 2      |        |              |       |       |
|                   | 2.31  | 0.182                           | 7      | 0.200* | 0.892        | 7     | 0.287 |
|                   | 2.38  | 0.246                           | 5      | 0.200* | 0.960        | 5     | 0.805 |
|                   | 2.46  | 0.191                           | 5      | 0.200* | 0.911        | 5     | 0.473 |
|                   | 3.46  | 0.260                           | 2      |        |              |       |       |
|                   | 3.54  | 0.328                           | 3      |        | 0.871        | 3     | 0.298 |
|                   | 3.69  | 0.314                           | 4      |        | 0.854        | 4     | 0.240 |
|                   | 3.77  | 0.260                           | 2      |        |              |       |       |
|                   | 3.85  | 0.385                           | 3      |        | 0.750        | 3     | 0.000 |
|                   | 3.92  | 0.302                           | 7      | 0.053  | 0.813        | 7     | 0.055 |
|                   | 4.00  | 0.188                           | 19     | 0.077  | 0.907        | 19    | 0.065 |
|                   | 4.08  | 0.303                           | 8      | 0.029  | 0.878        | 8     | 0.179 |
|                   | 4.15  | 0.159                           | 23     | 0.138  | 0.922        | 23    | 0.074 |
|                   | 4.23  | 0.168                           | 17     | 0.200* | 0.949        | 17    | 0.446 |
|                   | 4.31  | 0.263                           | 4      |        | 0.909        | 4     | 0.479 |
|                   | 4.38  | 0.193                           | 10     | 0.200* | 0.853        | 10    | 0.063 |
|                   | 4.46  | 0.168                           | 10     | 0.200* | 0.932        | 10    | 0.463 |
|                   | 4.54  | 0.197                           | 10     | 0.200* | 0.926        | 10    | 0.406 |
|                   | 4.62  | 0.182                           | 12     | 0.200* | 0.959        | 12    | 0.775 |
|                   | 4.69  | 0.168                           | 10     | 0.200* | 0.915        | 10    | 0.316 |
|                   | 4.77  | 0.349                           | 4      |        | 0.865        | 4     | 0.279 |
|                   | 4.85  | 0.367                           | 4      |        | 0.729        | 4     | 0.024 |
| 4.92              | 0.260 | 2                               |        |        |              |       |       |
| 5.00              | 0.121 | 12                              | 0.200* | 0.952  | 12           | 0.670 |       |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

b. Fraud Occurrence is constant when Detective Control = 1.23. It has been omitted.

**Source: Researcher (2020)**

The normality test results based on the linkage between corrective controls (independent variable) and fraud occurrence (dependent variable) were presented in Table 4.5. The research findings revealed that virtually all of the Shapiro-Wilk’s W test results were statistically insignificant ( $p$ -value>0.05) which meant that the datasets of corrective controls and fraud occurrence were normally distributed. Subsequently, this meant that the normality assumption was adhered to as a necessary requirement for regression analysis.

**Table 4. 7: Normality test results for Corrective Control and Fraud Occurrence Datasets**

|                    |      | Tests of Normality <sup>c</sup> |    |        |              |    |       |
|--------------------|------|---------------------------------|----|--------|--------------|----|-------|
|                    |      | Kolmogorov-Smirnov <sup>a</sup> |    |        | Shapiro-Wilk |    |       |
| Corrective Control |      | Statistic                       | df | Sig.   | Statistic    | df | Sig.  |
| Fraud Occurrence   | 1.00 | 0.224                           | 6  | 0.200* | 0.890        | 6  | 0.318 |
|                    | 1.20 | 0.283                           | 8  | 0.058  | 0.868        | 8  | 0.145 |
|                    | 1.40 | 0.229                           | 3  |        | 0.981        | 3  | 0.739 |
|                    | 1.60 | 0.226                           | 4  |        | 0.936        | 4  | 0.630 |
|                    | 1.80 | 0.234                           | 7  | 0.200* | 0.943        | 7  | 0.667 |
|                    | 2.00 | 0.274                           | 5  | 0.200* | 0.919        | 5  | 0.525 |
|                    | 2.20 | 0.206                           | 8  | 0.200* | 0.889        | 8  | 0.228 |
|                    | 2.40 | 0.260                           | 2  |        |              |    |       |
|                    | 2.60 | 0.260                           | 2  |        |              |    |       |
|                    | 3.40 | 0.320                           | 7  | 0.029  | 0.810        | 7  | 0.052 |
|                    | 3.60 | 0.201                           | 11 | 0.200* | 0.924        | 11 | 0.357 |
|                    | 3.80 | 0.216                           | 11 | 0.159  | 0.888        | 11 | 0.132 |
|                    | 4.00 | 0.130                           | 42 | 0.070  | 0.965        | 42 | 0.224 |
|                    | 4.20 | 0.069                           | 21 | 0.200* | 0.980        | 21 | 0.925 |
|                    | 4.40 | 0.160                           | 21 | 0.172  | 0.957        | 21 | 0.466 |
|                    | 4.60 | 0.135                           | 23 | 0.200* | 0.872        | 23 | 0.007 |
|                    | 4.80 | 0.258                           | 9  | 0.086  | 0.910        | 9  | 0.315 |
|                    | 5.00 | 0.162                           | 21 | 0.155  | 0.956        | 21 | 0.443 |

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

c. Fraud Occurrence is constant when Corrective Control = 3.00. It has been omitted.

**Source: Researcher (2020)**

#### 4.4 Demographic Information

The study collected the demographic information from the respondents in order to establish their gender, the job titles they held, their education qualifications, certificate qualifications and their managerial experience. The demographic information was deemed necessary in order to determine the quality of the research findings so that they could be confidently relied on. These demographic findings were presented in Table 4.8.

**Table 4. 8: Demographic Data of the Respondents**

| Demographic Information of the Management |                               | Frequency        | Percentage (%) |
|---|-------------------------------|------------------|----------------|
| <b>Gender</b>                             | Male                          | 122              | 57.5           |
|   | Female                        | 90               | 42.5           |
| <b>Job Title</b>                          | CEO                           | 29               | 13.7           |
|   | Finance Manager               | 88               | 41.5           |
|   | Supply Chain Manager          | 41               | 19.3           |
|   | Internal Audit & Risk Manager | 28               | 13.2           |
|   | Non-Executive Director        | 26               | 12.3           |
| <b>Education Qualification</b>            | Bachelor Degree               | 12               | 5.7            |
|   | Higher Diploma                | 10               | 4.7            |
|   | Master Degree                 | 124              | 58.5           |
|   | PhD/Doctorate Degree          | 66               | 31.1           |
| <b>Certificate Qualification</b>          | CPA                           | 69               | 32.5           |
|   | ACCA                          | 54               | 25.5           |
|   | CIA                           | 30               | 14.2           |
|   | CISA                          | 22               | 10.4           |
|   | CIFA                          | 14               | 6.6            |
|   | CFA                           | 23               | 10.8           |
|   | <b>Managerial Experience</b>  | Less than 1 year | 13             |
| 1-5 years                                 |                               | 76               | 35.8           |
| 6-9 years                                 |                               | 87               | 41.0           |
| More than 10 years                        |                               | 36               | 17.0           |

**Source: Researcher (2020)**

In terms of gender as presented in Table 4.8, most of the senior managers accounting for 57.5% of the respondents were male while the female accounted for 42.5%. Thus, the findings represented a fair view of both males and females. This meant that the study did not suffer from gender bias. With reference to job title, most of the respondents were finance managers accounting for 41.5% of the targeted management followed by the supply managers who accounted for 19.3% coming at a distant second. The CEOs, internal audit & risk managers together with non-executive directors accounted for a few responses with 13.7%, 13.2% and 12.3% respectively. Most of the respondents indicated that they had a Master degree qualification accounting for 58.5% of the studied sample followed by those holding a PhD/Doctorate degree with 31.1%. Only a few of the respondents accounting for 5.7% indicated that they had a Bachelor degree while others had a higher diploma qualification accounting for 4.7%. Besides that, most of the respondents indicated that they were CPA holders accounting for 32.5% of the studied senior managers, this was followed by 25.5% of the respondents who indicated that they were ACCA holders.

Therefore, this portrayed that most of the participants have a background in financial accounting and understands the internal controls put in place to deter misconduct and the types of fraudulent activities involving the firm's finances. Aside from that, only a few proportion of the respondents were CIA, CFA, CISA and CIFA holders accounting for 14.2%, 10.8%, 10.4% and 6.6% of the studied sample respectively. Finally, in regard to managerial experience most of the respondents constituting 41% of the studied sample possessed 6-9 years experience, followed by 35.8% who possessed 1-5 years experience. A few of the respondents accounting for 17% possessed more than 10 years managerial experience tailed by 6.1% of the respondents who had only less than 1 year experience. From these findings it can be noted that the majority of the participants had adequate managerial experience and thus have sufficient practical knowledge of the firm's system including the implementation of fraud risk management practices among the listed firms.

The researcher managed to study 29 CEOs due to the following facts. During the inception of the data collection process, the researcher was connected to one of the CEOs working in the insurance sector by her personal friend who is related to the CEO. Thus getting data from the CEO was easier since it involved the researcher going to the office with her friend for introduction and then the CEO managed to fill the questionnaire before the researcher and her friend left. The CEO was very friendly and was interested in the area of research and its findings and this led him to even connect the researcher to five more CEOs, 3 of them working in the banking sector and 2 at the commercial services sector. It took almost 3 weeks for the 3 CEO working in the banking sector to respondent to the questionnaires due to their busy schedule by due to the fact that the previous respondent had introduced me to them and availed their contacts, the researcher was able to make them respond to the questionnaires by making friendly follow ups in the weekends. On the other hand, the researcher was able to secure an appointment with the 2 CEOs working at the commercial sector and they duly filled the questionnaires as soon as the researcher was able to meet them. The CEOs were also able to connect the researcher to their other colleagues working in the NSE sector and the networking process continued until the researcher was able to study 29 CEOs in the NSE sector.

Additionally, the study collected the demographic information from the listed firms in regard to their characteristics which comprised of the firm revenue, asset size, employee size and the sectors which the firms operated in. The demographic aspects that included the annual revenue, asset and employee size were essential for this study since their data were used to determine if firm size moderated the relationship between antifraud techniques and the level of fraud occurrence in line with the fourth specific objective. The relevant demographic findings were presented in Table 4.9.

**Table 4. 9: Firm Profile**

| <b>Firm Profile</b>              |                              | <b>Frequency</b> | <b>Percentage (%)</b> |
|----------------------------------|------------------------------|------------------|-----------------------|
| <b>Annual Average Revenue</b>    | Less than Kshs. 250 million  | 20               | 9.4                   |
|                                  | Kshs. 251-500 million        | 17               | 8.0                   |
|                                  | Kshs. 501-750 million        | 11               | 5.2                   |
|                                  | Kshs. 751-1000 million       | 74               | 34.9                  |
|                                  | More than Kshs. 1001 million | 90               | 42.5                  |
| <b>Annual Average Asset Size</b> | Less than Kshs. 250 million  | 13               | 6.1                   |
|                                  | Kshs. 251-500 million        | 25               | 11.8                  |
|                                  | Kshs. 501-750 million        | 10               | 4.7                   |
|                                  | Kshs. 751-1000 million       | 58               | 27.4                  |
|                                  | More than Kshs. 1001 million | 106              | 50.0                  |
| <b>Employee Size</b>             | Less than 100                | 28               | 13.2                  |
|                                  | 101-500                      | 10               | 4.7                   |
|                                  | 501-700                      | 27               | 12.7                  |
|                                  | 701-1000                     | 71               | 33.5                  |
|                                  | More than 1001               | 76               | 35.8                  |
| <b>Firm Sector</b>               | Agricultural                 | 25               | 11.8                  |
|                                  | Automobile                   | 5                | 2.4                   |
|                                  | Banking                      | 40               | 18.9                  |
|                                  | Commercial Services          | 35               | 16.5                  |
|                                  | Energy & Petroleum           | 10               | 4.7                   |
|                                  | Exchange Traded Fund         | 5                | 2.4                   |
|                                  | Manufacturing                | 20               | 9.4                   |
|                                  | Investment                   | 20               | 9.4                   |
|                                  | Construction                 | 25               | 11.8                  |
|                                  | Telecommunication            | 4                | 1.9                   |
|                                  | Real Estate                  | 3                | 1.4                   |
|                                  | Insurance                    | 15               | 7.1                   |
|                                  | Investment Services          | 5                | 2.4                   |

**Source: Researcher (2020)**

As presented in Table 4.9, 42.5% of the listed companies generate an annual turnover of more than Kshs. 1 billion. Besides that, the findings also indicated that 34.9% of the listed firms generate between Kshs. 751-1001 million. This could be a justification that most of the listed firms in Kenya

are large-sized organizations. On top of that, a total of 22.6% of the listed companies generates less than Kshs. 750 million per annum. With reference to asset size, most of the listed firms possess an asset base of more than Kshs. 1 billion which accounted for 50% of the responses, followed by 27.4% that constituted the listed companies possessing an asset base between Kshs. 751-1000 million. The findings clearly illustrates that indeed most of the listed firms are large business entities. Conversely, only 22.6% of the listed companies have an asset base of less than Kshs. 750 million.

Additionally, most of the listed firms possessed more than 1000 employees, accounting for 35.8% of the total responses. This was followed by 33.5% of the responses that represented organizations with an employee size ranging between 701 and 1000 personnel. This provides enough justification that most of the listed firms studied were large-sized corporations. In regard to the firm sector, most listed corporations studied operates in the banking, commercial services, agricultural, construction, manufacturing and investment sectors accounting for 18.9%, 16.5%, 11.8% and 9.4% of the responses respectively. Only a few listed firms studied operates in the automobile, exchange traded fund, investment services, telecommunication and real estate sectors accounting for 2.4%, 1.9% and 1.4% of the responses respectively.

#### **4.5 Descriptive Findings**

The following subsections presents the descriptive findings of the perceptions of the management on the effectiveness of fraud risk management practices and the level of fraud occurrence on listed companies in Kenya.

##### **4.5.1 Perceptions of Effectiveness of Preventive Controls on Fraud Occurrence on listed Companies in Kenya**

In order to establish the perceived effectiveness of preventive controls on fraud occurrence on listed companies in Kenya, a 5-point Likert scale of level of agreement was employed. The descriptive analysis involving mean scores and standard deviation were employed and the findings were presented in Table 4.10.

**Table 4. 10: Descriptive Findings of the Perceptions of Effectiveness of Preventive Controls on Fraud Occurrence on listed Companies in Kenya**

| No.                    | Preventive Control                             | Mean         | Median       | Standard Deviation |
|------------------------|--|--------------|--------------|--------------------|
| 1.                     | Segregation of duties.                         | 3.929        | 4.000        | 1.284              |
| 2.                     | Corporate code of conduct.                     | 3.920        | 4.000        | 1.450              |
| 3.                     | Fraud risk assessments.                        | 3.915        | 4.000        | 1.367              |
| 4.                     | Fraud reporting policy.                        | 3.854        | 4.000        | 1.428              |
| 5.                     | Enhanced audit committees.                     | 3.830        | 4.000        | 1.352              |
| 6.                     | Reference checks on employees.                 | 3.826        | 4.000        | 1.381              |
| 7.                     | Code of sanction against supplies/contractors. | 3.821        | 4.000        | 1.459              |
| 8.                     | Positive employee recognition.                 | 3.807        | 4.000        | 1.386              |
| 9.                     | Proper due diligence on customers.             | 3.807        | 4.000        | 1.399              |
| 10.                    | Internal control system.                       | 3.802        | 4.000        | 1.393              |
| 11.                    | Internal audit department.                     | 3.736        | 4.000        | 1.358              |
| 12.                    | Staff rotation policy.                         | 3.684        | 4.000        | 1.424              |
| 13.                    | Anti-fraud training program.                   | 3.679        | 4.000        | 1.374              |
| <b>Aggregate Score</b> |  | <b>3.816</b> | <b>4.000</b> | <b>1.389</b>       |

**Source: Researcher (2020)**

As presented in Table 4.10, the descriptive results ascertained that the majority of the respondents agreed that all the assessed preventive controls are effective in deterring fraud occurrence on listed companies in Kenya. Since all the mean scores were above 3.6 indicating that most of the respondents indicated that they agreed (4 = Agree) or strongly agree (5 = Agree) that the preventive controls are effective in fraud deterrence. Moreover, the median results recorded a score of 4. This meant that most of the respondents agreed that the preventive controls are effective in curbing fraud occurrence on listed companies in Kenya. The findings of the study meant that the code of conduct is usually clearly and frequently communicated to the employees of the listed companies in Kenya about key standards of policies discouraging ethical misconduct (Albrecht et al., 2009; Hassink et al., 2007). The communication of these standards eradicates the justification for perpetuating fraud since employees are encouraged to act ethically and the standards warns the employees in advance of the adverse consequences following an attempt to perpetuate fraud. The results also meant that the listed firms in Kenya implements an effective staff rotation policy that easily unveils fraud cases that would have gone unnoticed (Nnamdi, 1991).

The descriptive results also meant that listed firms conduct serious reference checks on their employees and segregate duties, which play an essential role in curbing asset misappropriation

(Ekaterina, 2013). The findings of the study also meant that listed firms are usually keen on employing enhanced audit committees that assists the corporations in deciding and employing the most effective fraud risk assessment programs based on the expertise and knowledge of the committee members in line with precisely curbing fraud (Otieno, 2018). Additionally, the findings of the study meant that listed firms implements fraud reporting policies that enlightens the employees and the relevant stakeholders on how the firms responds to fraud cases and the importance of safeguarding the firm’s reputation and resources (Wang’ombe, 2017).

#### **4.5.2 Perceptions of Effectiveness of Detective Controls on Fraud Occurrence on listed Companies in Kenya**

In order to establish the perceived effectiveness of detective controls on fraud occurrence on listed companies in Kenya, a 5-point Likert scale of level of agreement was employed. The descriptive analysis involving mean scores and standard deviation were employed and the findings were presented in Table 4.11.

**Table 4. 11: Descriptive Findings of the Perceptions of Effectiveness of Detective Controls on Fraud Occurrence on listed Companies in Kenya**

| <b>No.</b>             | <b>Detective Control</b>            | <b>Mean</b>  | <b>Median</b> | <b>Standard Deviation</b> |
|------------------------|-------------------------------------|--------------|---------------|---------------------------|
| 1.                     | Fraud hotlines.                     | 4.019        | 4.000         | 1.363                     |
| 2.                     | Ethics officer.                     | 3.948        | 4.000         | 1.314                     |
| 3.                     | Operational audits.                 | 3.943        | 4.000         | 1.327                     |
| 4.                     | Financial ratios.                   | 3.934        | 4.000         | 1.183                     |
| 5.                     | Inventory observation.              | 3.830        | 4.000         | 1.273                     |
| 6.                     | Proactive data monitoring/analysis. | 3.778        | 4.000         | 1.170                     |
| 7.                     | Bank reconciliation.                | 3.759        | 4.000         | 1.225                     |
| 8.                     | Internal audit review.              | 3.736        | 4.000         | 1.316                     |
| 9.                     | Data mining.                        | 3.693        | 4.000         | 1.253                     |
| 10.                    | Surprise audits.                    | 3.689        | 4.000         | 1.359                     |
| 11.                    | Cash reviews.                       | 3.637        | 4.000         | 1.179                     |
| 12.                    | Continuous auditing.                | 3.627        | 4.000         | 1.302                     |
| 13.                    | Forensic accountants.               | 3.609        | 4.000         | 1.388                     |
| <b>Aggregate Score</b> |                                     | <b>3.785</b> | <b>4.000</b>  | <b>1.281</b>              |

**Source: Researcher (2020)**

As presented in Table 4.11, the descriptive results established that the majority of the respondents agreed that all the assessed detective controls are effective in deterring fraud occurrence on listed

companies in Kenya. Since all the mean scores were above 3.6 indicating that most of the respondents indicated that they agreed (4 = Agree) or strongly agree (5 = Agree) that the detective controls are effective in curbing fraud. Moreover, the median results recorded a score of 4. This meant that most of the respondents agreed that the detective controls are effective in curbing fraud occurrence on listed companies in Kenya. The implications of the study is that listed companies in Kenya implements fraud hotline systems that hides the identities of employees and other stakeholders who report ongoing fraud incidences (Mangala & Kumari, 2017). Thus, it provides the whistle-blowers an incentive to alert the firms of the ongoing fraud without fear of reprisal (Mangala & Kumari, 2017). Therefore, preventing fraud losses from occurring and discouraging future fraudulent actions.

The findings also meant that forensic accountants are very effective in detecting present fraudulent actions and are good at providing mechanisms that are precise in mitigating future fraud risks on listed companies in Kenya, since their investigative/analytical professional skills goes beyond the traditional accounting figures (Haron et al., 2014). Besides that, the descriptive outcomes meant that the listed firms in Kenya utilizes continuous auditing to gather audit evidence unceasingly, which consequently helps them to uncover fraud risks thus preventing fraud losses (Mangala & Kumari, 2017). The findings could also denote the fact that the listed Kenyan companies employs data mining to examine their reports grounded on an algorithm produced from historical fraud data that assists them in uncovering unique patterns indicating a possible fraud risk (Gupta & Gill, 2012; Zhou & Kapoor, 2011).

The findings could also mean that bank reconciliation employed by listed Kenyan companies assists in discovering fraudulent disbursements since it helps in verifying if a vendor listed on the reconciliation corresponds with the vendor on the cleared bank cheque (Brager, 2017). Besides that, it assists the listed firms in Kenya, in researching on a particular vendor that the firm is not aware about (Brager, 2017). For instance, if a strange vendor provided a truck service for the listed firm, then the accountant/auditor can check with the operations team to establish if indeed that particular truck was repaired and to establish if the truck was repaired by the claimed vendor (Brager, 2017). If that was not the case then it could signify that a fraudulent transaction took place. Furthermore, the findings of this study meant that cash reviews helps listed firms in Kenya in identifying fraudulent debtor payments and preventing the same fraud risks from occurring in

the future, through comparing dates with customers made their payments with the dates the payments were posted in the accounting system (ACFE, 2016).

#### 4.5.3 Perceptions of Effectiveness of Corrective Controls on Fraud Occurrence on listed Companies in Kenya

In order to establish the perceived effectiveness of corrective controls on fraud occurrence on listed companies in Kenya, a 5-point Likert scale of level of agreement was employed. The descriptive analysis involving mean scores and standard deviation were employed and the findings were presented in Table 4.12.

**Table 4. 12: Descriptive Findings of the Perceptions of Effectiveness of Corrective Controls on Fraud Occurrence on listed Companies in Kenya**

| No.                    | Corrective Control                                       | Mean         | Median       | Standard Deviation |
|------------------------|--|--------------|--------------|--------------------|
| 1.                     | Referral of fraud cases to law enforcement institutions. | 3.906        | 4.000        | 1.281              |
| 2.                     | Suspension from work duty.                               | 3.774        | 4.000        | 1.301              |
| 3.                     | Job termination.   | 3.736        | 4.000        | 1.365              |
| 4.                     | Prosecution and imprisonment.                            | 3.675        | 4.000        | 1.236              |
| 5.                     | Prosecution and payment of hefty fines.                  | 3.476        | 4.000        | 1.282              |
| <b>Aggregate Score</b> |  | <b>3.713</b> | <b>4.000</b> | <b>1.293</b>       |

**Source: Researcher (2020)**

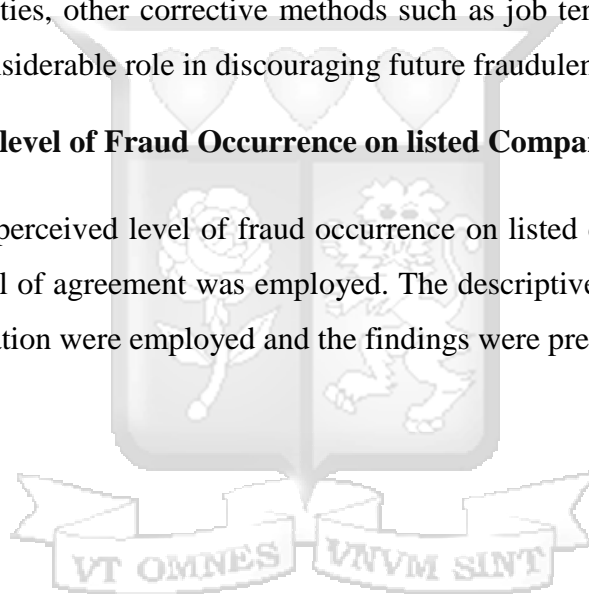
As presented in Table 4.12, the descriptive results established that the majority of the respondents agreed that all the assessed corrective controls are effective in deterring fraud occurrence on listed companies in Kenya. Since all the mean scores were above 3.4 indicating that most of the respondents indicated that they agreed (4 = Agree) or strongly agree (5 = Agree) that the corrective controls are effective in curbing fraud. Moreover, the median results recorded a score of 4. This meant that most of the respondents agreed that the corrective controls are effective in curbing fraud occurrence on listed companies in Kenya. Logically if someone is punished for conducting fraud through suspension, job termination, payment of fines, prosecution and imprisonment, then it would implant fear on other people who plans to commit corporate fraud in future. Even when a person is pressurized to get money immediately, in order to sort out his/her financial problems, the employee will be forced to pursue other alternatives to sort out his/her financial problems. Since he/she would have rationalized that committing fraud would be bad and it might end up costing

his/her job security or even freedom. Consequently, listed firms in Kenya have implemented the corrective actions stipulated in Table 4.12 to discourage future fraud actions, thus effectively curbing fraud occurrence.

The findings contrasted with the research outcomes of studies (Kimeli, 2018; Waitimu, 2014) conducted in Kenya. For instance the findings disagreed with the research outcomes of Kimeli (2018) who had established that the arrest of fraudsters does not have any considerable effect on the mitigation of fraud risk in the Kenyan Capital Markets Authority. It also disagreed with the research outcomes of Waitimu (2014) that even though there exists complications in the prosecution process, lack of enough evidence and short jail terms that can still encourage the escalation of fraud activities, other corrective methods such as job termination and payment of hefty fines can play a considerable role in discouraging future fraudulent actions.

#### **4.5.4 Perceptions of the level of Fraud Occurrence on listed Companies in Kenya**

In order to establish the perceived level of fraud occurrence on listed companies in Kenya, a 5-point Likert scale of level of agreement was employed. The descriptive analysis involving mean scores and standard deviation were employed and the findings were presented in Table 4.13.



**Table 4. 13: Descriptive Findings of the Perceptions of the level of Fraud Occurrence on listed Companies in Kenya**

| <b>Types of level of Fraud Occurrences</b>   | <b>Mean</b>  | <b>Median</b> | <b>Standard Deviation</b> |
|--|--------------|---------------|---------------------------|
| <b>Asset Misappropriation</b>  |              |               |                           |
| Stealing the firm's cash.  | 2.561        | 2.000         | 1.394                     |
| A person uses his/her profession to create expenses for personal or inappropriate use.   | 2.396        | 2.000         | 1.256                     |
| Increasing costs in order to pocket some money.  | 2.255        | 2.000         | 1.364                     |
| Use of company's assets for personal gain.   | 2.123        | 2.000         | 1.222                     |
| Theft of cash receipts.  | 2.099        | 2.000         | 1.190                     |
| <b>Aggregate Score</b>   | <b>2.287</b> | <b>2.000</b>  | <b>1.285</b>              |
| <b>Corruption</b>  |              |               |                           |
| Purchasing scheme involving favouring a supplier related to an employee who had a financial interest in the purchasing transactions. | 2.495        | 2.000         | 1.312                     |
| Employee assisting to secure a payment involving an inflated invoice.  | 2.486        | 2.000         | 1.358                     |
| Conflict of interest involving selling of goods to a close relation at a cheaper price than the actual price.                        | 2.410        | 2.000         | 1.305                     |
| Firms make the winning party to get contracts at competitive prices.   | 2.406        | 2.000         | 1.312                     |
| Making false or illegal gratuity payment for personal gain.  | 2.349        | 2.000         | 1.310                     |
| Bribery.   | 1.750        | 1.000         | 1.212                     |
| <b>Aggregate Score</b>   | <b>2.316</b> | <b>2.000</b>  | <b>1.302</b>              |
| <b>Financial Statement Fraud</b>   |              |               |                           |
| Misleading financial disclosures are made to paint a financially ailing firm to look good.   | 2.868        | 2.000         | 1.612                     |
| Assets are improperly valued in order to make the balance sheet look good.   | 2.679        | 3.000         | 1.524                     |
| Companies overstate their liabilities and expenses.  | 2.609        | 3.000         | 1.388                     |
| Companies present false revenues in financial statements.  | 2.495        | 3.000         | 1.423                     |
| <b>Aggregate Score</b>   | <b>2.663</b> | <b>3.000</b>  | <b>1.487</b>              |
| <b>Overall Score</b>   | <b>2.422</b> | <b>2.000</b>  | <b>1.358</b>              |

**Source: Researcher (2020)**

In general as presented in Table 4.13, it can be established that the level of fraud occurrence was moderately low on the listed companies in Kenya ( $M = 2.422$ ;  $SD = 1.358$ ). This is because most of the respondents indicated that they disagreed (2) or strongly disagreed (1) that the three types of fraud, namely, corruption, asset misappropriation and financial statement fraud usually occurs in their organizations. The relatively low occurrence of these three types of fraud could denote the

fact that the listed companies in Kenya utilizes the most effective fraud preventive, detective and corrective controls to combat fraud. Considering the fact that most of the respondents in the preceding pages had agreed (4) or strongly agreed (5) that the aforementioned fraud risk management controls are effective in managing fraud. Therefore indicating a negative relationship between the 3 aforementioned fraud risk management controls and the level of fraud occurrence on listed firms in Kenya. Besides that, the findings could mean that not all the listed firms experience serious fraud scandals as those brought to the public limelight. In addition, those firms that had been brought to the limelight owing to the corporate scandals experienced could be because they failed to utilize the perceived effective fraud risk management controls.

Nevertheless, the findings revealed that financial statement fraud was relatively high on the listed companies in Kenya ( $M = 2.663$ ;  $SD = 1.487$ ). The findings are consistent with the theoretical proposition of the fraud diamond theory, that fraud especially financial statement fraud is perpetuated by the professionals who have the knowledge and capacity that enables them to commit fraud without being easily detected. This explains why several financial statement fraud cases that came to the limelight involved top management, like for instance the CBK case, whereby CMA took corrective action against the former management of the bank for manipulating accounting figures (CMA, 2018). This is in addition to the scandals revealed in Mumias Sugar Ltd and Uchumi Supermarket Ltd whereby the senior management were involved in smoothening of accounting figures (Cytonn Investment, 2018). Though the findings revealed that financial statement fraud was relatively high on the listed companies in Kenya ( $M = 2.663$ ;  $SD = 1.487$ ). Interestingly, corruption and asset misappropriation in general had a relatively low level of occurrence on listed companies in Kenya justified by mean scores of 2.316 and 2.287 respectively and standard deviations of 1.302 and 1.285 correspondingly.

Besides that, it can be revealed that the most common asset misappropriation schemes experienced on listed companies in Kenya are cash theft and the use of one's profession to create expenses for personal use justified by mean scores of 2.561 and 2.396 respectively and standard deviations of 1.394 and 1.256 in that order. On the other hand, theft of cash receipts was the least perpetuated form of asset misappropriation scheme on the listed companies in Kenya ( $M = 2.099$ ;  $SD = 1.190$ ). Furthermore, in regard to corruption, purchasing scheme involving favouring a supplier related to an employee who had a financial interest in the purchasing transactions was the most

common form of corruption fraud perpetuated on listed companies in Kenya ( $M = 2.495$ ;  $SD = 1.312$ ). Moreover, employee assistance in securing a payment involving an inflated invoice was the second most perpetuated corruption scheme on listed companies in Kenya ( $M = 2.486$ ;  $SD = 1.358$ ). This was followed by conflict of interest involving sale of goods to a close relation at a cheaper price than the actual price as the third most perpetuated corruption scheme on listed companies in Kenya ( $M = 2.410$ ;  $SD = 1.305$ ). Interestingly, bribery was the least common corruption scheme perpetuated on listed companies in Kenya ( $M = 1.750$ ;  $SD = 1.212$ ).

With reference to financial statement fraud, the study revealed that all the four assessed fraud schemes were relatively commonly perpetuated on listed companies in Kenya. The highest common fraud scheme being providing misleading financial disclosures to paint a financially ailing firm to look good ( $M = 2.868$ ;  $SD = 1.612$ ). The following most common fraud scheme practiced on listed firms in Kenya was improper valuation of assets with an aim of making the balance sheet to look good ( $M = 2.679$ ;  $SD = 1.524$ ). The third common fraud scheme frequently practiced by listed corporations in Kenya was the overstatement of liabilities and expenses ( $M = 2.609$ ;  $SD = 1.388$ ). Finally, the last commonly practiced fraud scheme though at a moderately low rate was the presentation of false revenues in financial statements ( $M = 2.495$ ;  $SD = 1.423$ ).

#### **4.6 Factor Analysis and Presentation**

The study conducted factor analysis to derive the most significant factors to be retained for ordinal and multiple linear regression analysis. The findings were presented and interpreted in the subsequent subsections.

##### **4.6.1 Derivation of Preventive Control Variable**

Prior carrying out factor analysis to derive the preventive control variable, the research investigation conducted the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett's Test of sphericity to establish if the dataset was applicable for factor analysis. Factor analysis is only suitable for a specific dataset given that the figure of the KMO test is greater than 0.5 and the Bartlett's test of sphericity is significant when the  $p$ -value is less than 0.05 (Williams, Onsman & Brown, 2010). Table 4.14 presented the results of the aforementioned tests. The research outcomes established that the KMO test was 0.956 which was greater than 0.5 and the

Bartlett's Test of sphericity was significant ( $p$ -value<0.05) thus the dataset of preventive controls was established to be applicable and sufficient for factor analysis.

**Table 4. 14: KMO and Bartlett's Test results for the statements linked to Preventive Controls**

| <b>KMO and Bartlett's Test</b>                   |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | 0.956    |
| Bartlett's                                       | Approx. Chi-Square | 3140.729 |
| Test of  | df                 | 78       |
| Sphericity                                       | Sig.               | 0.000    |

**Source: Researcher (2020)**

The research investigation then conducted principal component analysis by first of all establishing the factors/components that accounted for significant variability in the dataset so that they could be derived and embody the variables anticipated to be studied. The findings were presented in Table 4.15. As presented in Table 4.15 only one factor accounted for a significant variance in the dataset since it posted an Eigen value greater than one (Fredrick, 2013) which was 9.811 accounting for 75.468% of the variance. Thus, Component 1 (Preventive controls) was preserved for further analysis while the rest were cast-off.

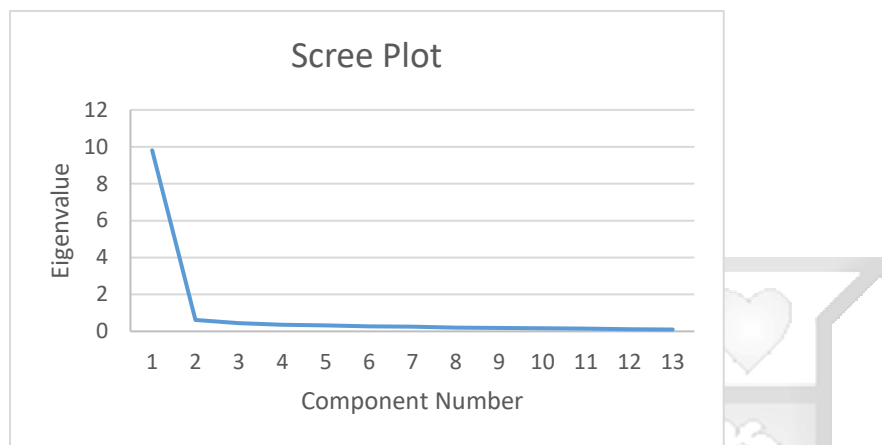
**Table 4. 15: Total Variance explained by Preventive Control Factors**

| Component               | <b>Total Variance Explained</b> |               |              |                                     |               |              |
|-------------------------|---------------------------------|---------------|--------------|-------------------------------------|---------------|--------------|
|                         | Initial Eigen values            |               |              | Extraction Sums of Squared Loadings |               |              |
|                         | Total                           | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % |
| 1 (Preventive Controls) | 9.811                           | 75.468        | 75.468       | 9.811                               | 75.468        | 75.468       |
| 2                       | 0.612                           | 4.705         | 80.173       |                                     |               |              |
| 3                       | 0.447                           | 3.438         | 83.611       |                                     |               |              |
| 4                       | 0.361                           | 2.779         | 86.390       |                                     |               |              |
| 5                       | 0.325                           | 2.497         | 88.887       |                                     |               |              |
| 6                       | 0.270                           | 2.076         | 90.963       |                                     |               |              |
| 7                       | 0.258                           | 1.984         | 92.947       |                                     |               |              |
| 8                       | 0.199                           | 1.528         | 94.475       |                                     |               |              |
| 9                       | 0.186                           | 1.433         | 95.908       |                                     |               |              |
| 10                      | 0.161                           | 1.242         | 97.151       |                                     |               |              |
| 11                      | 0.150                           | 1.153         | 98.303       |                                     |               |              |
| 12                      | 0.121                           | 0.931         | 99.235       |                                     |               |              |
| 13                      | 0.099                           | 0.765         | 100.000      |                                     |               |              |

**Extraction Method: Principal Component Analysis.**

**Source: Researcher (2020)**

The Scree plot presented in Figure 4.4 illustrated the association between the Eigen figures and the preventive control factors/components. The factors preserved in the Scree plot denoted those after a point whereby the plot was taking an elbow shape. In this case, the Scree plot started to sharply elbow from Component 2. This meant that only one component could be retained for further analysis which was Component 1 (Preventive controls).



**Figure 4. 4: Scree Plot depicting the Association between Eigenvalues and Preventive Control Factors**

**Source: Researcher (2020)**

Principal component matrix analysis was conducted to establish the controls assessing the construct of Preventive controls component and if the factor loadings of the given statements were greater than 0.4, in order to be preserved for further analysis. The findings were presented in Table 4.16. In Table 4.16 the research results established that all the 13 preventive controls had factor loadings of greater than 0.4 and they assessed component 1 (preventive controls). Thus, Component 1 in this case became the derived preventive control variable that would be used in the regression analysis. Therefore, it provided the study adequate justification to use averages as a composite measure for determining the preventive control variable.

**Table 4. 16: Component Matrix of the Preventive Control Factor**

| <b>Component Matrix<sup>a</sup></b>                     |  |
|---|--|
|   | <b>Component<br/>1 (Preventive Controls)</b> |
| 1. Segregation of duties.                               | 0.897  |
| 2. Fraud reporting policy.                              | 0.882  |
| 3. Proper due diligence on customers.                   | 0.913  |
| 4. Enhanced audit committees.                           | 0.793  |
| 5. Staff rotation policy.                               | 0.770  |
| 6. Reference checks on employees.                       | 0.891  |
| 7. Anti-fraud training program.                         | 0.846  |
| 8. Positive employee recognition.                       | 0.888  |
| 9. Corporate code of conduct.                           | 0.895  |
| 10. Code of sanction against supplies/contractors.      | 0.896  |
| 11. Internal audit department.                          | 0.840  |
| 12. Fraud risk assessments.                             | 0.889  |
| 13. Internal control system.                            | 0.881  |
| <b>Extraction Method: Principal Component Analysis.</b> |  |
| <b>a. 1 components extracted.</b>                       |  |

**Source: Researcher (2020)**

#### **4.6.2 Derivation of Detective Control Variable**

Prior carrying out factor analysis to derive the detective control variable, the research investigation conducted the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett’s Test of sphericity to establish if the dataset was applicable for factor analysis. Table 4.17 presented the results of the aforementioned tests. The research outcomes established that the KMO test was 0.923 which was greater than 0.5 and the Bartlett’s Test of sphericity was significant ( $p$ -value<0.05) thus the dataset of detective controls was established to be applicable and sufficient for factor analysis.

**Table 4. 17: KMO and Bartlett’s Test results for the statements linked to Detective Controls**

| <b>KMO and Bartlett's Test</b>                   |                             |
|--|-----------------------------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | 0.923                       |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square 3086.317 |
|  | df 78                       |
|  | Sig. 0.000                  |

**Source: Researcher (2020)**

The study then conducted principal component analysis by first of all establishing the factors/components that accounted for significant variability in the dataset so that they could be derived and embody the variables anticipated to be studied. The findings were presented in Table 4.18. As presented in Table 4.18 only one factor accounted for a significant variance in the dataset since it posted an Eigen value of 9.374 that was greater than 1 accounting for 72.105% of the variance. Thus, Component 1 was preserved for further analysis while the rest were cast-off.

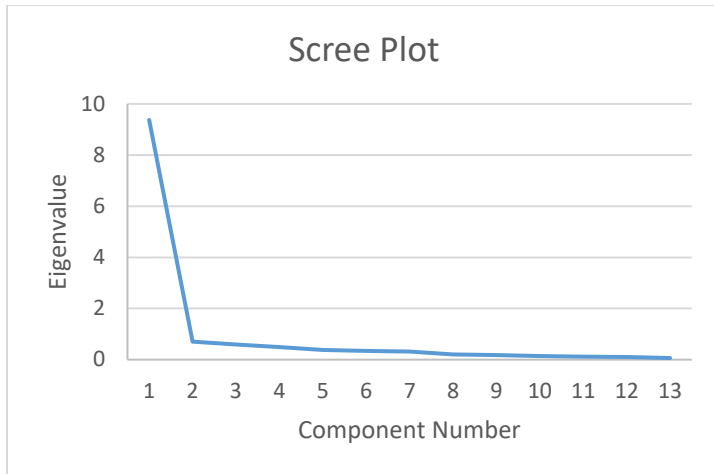
**Table 4. 18: Total Variance explained by Detective Control Factors**

| Component             | Total Variance Explained |                      |              |                                     |               |              |
|-----------------------|--------------------------|----------------------|--------------|-------------------------------------|---------------|--------------|
|                       | Total                    | Initial Eigen values |              | Extraction Sums of Squared Loadings |               |              |
|                       |                          | % of Variance        | Cumulative % | Total                               | % of Variance | Cumulative % |
| 1(Detective controls) | 9.374                    | 72.105               | 72.105       | 9.374                               | 72.105        | 72.105       |
| 2                     | 0.702                    | 5.402                | 77.507       |                                     |               |              |
| 3                     | 0.597                    | 4.591                | 82.098       |                                     |               |              |
| 4                     | 0.488                    | 3.757                | 85.856       |                                     |               |              |
| 5                     | 0.376                    | 2.892                | 88.748       |                                     |               |              |
| 6                     | 0.337                    | 2.590                | 91.338       |                                     |               |              |
| 7                     | 0.322                    | 2.479                | 93.817       |                                     |               |              |
| 8                     | 0.198                    | 1.527                | 95.344       |                                     |               |              |
| 9                     | 0.174                    | 1.336                | 96.680       |                                     |               |              |
| 10                    | 0.143                    | 1.103                | 97.784       |                                     |               |              |
| 11                    | 0.121                    | 0.929                | 98.713       |                                     |               |              |
| 12                    | 0.104                    | 0.802                | 99.515       |                                     |               |              |
| 13                    | 0.063                    | 0.485                | 100.000      |                                     |               |              |

**Extraction Method: Principal Component Analysis.**

**Source: Researcher (2020)**

The Scree plot presented in Figure 4.5 illustrated the association between the Eigen figures and the detective control factors/components. The factors preserved in the Scree plot denoted those after a point whereby the plot was taking an elbow shape. In this case the Scree plot started to sharply elbow from Component 2. Thus, only Component 1 (Detective controls) was preserved for further analysis.



**Figure 4. 5: Scree Plot depicting the Association between Eigenvalues and Detective Control Factors**

**Source: Researcher (2020)**

Principal component matrix analysis was conducted to establish the detective controls assessing the construct of detective controls/Component 1 and if the factor loadings of the given statements were greater than 0.4, in order to be preserved for further analysis. The findings were presented in Table 4.19. In Table 4.19 the research results established that all the 13 detective controls had factor loadings of greater than 0.4 and they assessed Component 1 (detective controls). Thus, Component 1 in this case became the derived detective control variable that would be used in the regression analysis. Therefore, it provided the study adequate justification to use averages as a composite measure for determining the detective control variable.

**Table 4. 19:Component Matrix of the Detective Control Factor**

| <b>Component Matrix<sup>a</sup></b>                     |  |
|---|--|
|   | <b>Component<br/>1(Detective<br/>Controls)</b> |
| 1. Fraud hotlines.                                      | 0.926  |
| 2. Proactive data monitoring/analysis.                  | 0.863  |
| 3. Operational audits.                                  | 0.845  |
| 4. Financial ratios.                                    | 0.838  |
| 5. Forensic accountants.                                | 0.811  |
| 6. Data mining.   | 0.890  |
| 7. Continuous auditing.                                 | 0.834  |
| 8. Bank reconciliation.                                 | 0.896  |
| 9. Ethics officer.                                      | 0.913  |
| 10. Surprise audits.                                    | 0.818  |
| 11. Cash reviews.                                       | 0.707  |
| 12. Inventory observation.                              | 0.840  |
| 13. Internal audit review.                              | 0.835  |
| <b>Extraction Method: Principal Component Analysis.</b> |  |
| <b>a. 1 component extracted.</b>                        |  |

**Source: Researcher (2020)**

#### **4.6.3 Derivation of Corrective Control Variable**

Prior carrying out factor analysis to derive the corrective control variable, the study conducted the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett’s Test of sphericity to establish if the dataset was applicable for factor analysis. Table 4.20 presented the results of the aforementioned tests. The research outcomes established that the KMO test was 0.886 which was greater than 0.5 and the Bartlett’s Test of sphericity was significant ( $p$ -value<0.05) thus the dataset of corrective controls was established to be applicable and sufficient for factor analysis.

**Table 4. 20:KMO and Bartlett’s Test results for the statements linked to Corrective Controls**

| <b>KMO and Bartlett's Test</b>                   |                    |
|--|--------------------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | 0.886              |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square |
|  | df                 |
|  | Sig.               |
|  | 840.572            |
|  | 10                 |
|  | 0.000              |

**Source: Researcher (2020)**

The study then conducted principal component analysis by first of all establishing the factors/components that accounted for significant variability in the dataset so that they could be derived and embody the variables anticipated to be studied. The findings were presented in Table 4.21. As presented in Table 4.21 only one factor accounted for a significant variance in the dataset since it posted an Eigenvalue of 3.917 that was greater than 1 accounting for 78.340% of the variance. Therefore, Component 1 (corrective controls) was preserved for further analysis while the rest were cast-off.

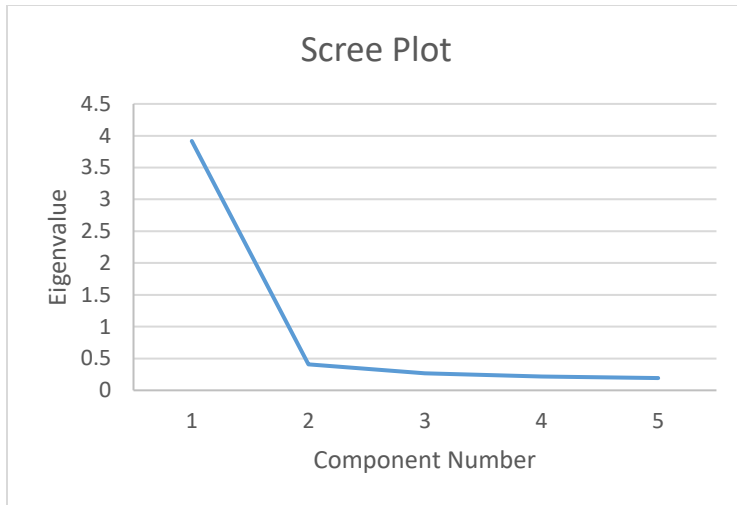
**Table 4. 21: Total Variance explained by Corrective Control Factors**

| Component               | Total Variance Explained |               |              |                                     |               |              |
|-------------------------|--------------------------|---------------|--------------|-------------------------------------|---------------|--------------|
|                         | Initial Eigenvalues      |               |              | Extraction Sums of Squared Loadings |               |              |
|                         | Total                    | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % |
| 1 (corrective controls) | 3.917                    | 78.340        | 78.340       | 3.917                               | 78.340        | 78.340       |
| 2                       | 0.407                    | 8.140         | 86.479       |                                     |               |              |
| 3                       | 0.267                    | 5.336         | 91.815       |                                     |               |              |
| 4                       | 0.216                    | 4.329         | 96.145       |                                     |               |              |
| 5                       | 0.193                    | 3.855         | 100.000      |                                     |               |              |

**Extraction Method: Principal Component Analysis.**

**Source: Researcher (2020)**

The Scree plot presented in Figure 4.6, illustrated the association between the Eigen figures and the corrective control factors/components. The factors preserved in the Scree plot denoted those after a point whereby the plot was taking an elbow shape. In this case, the Scree plot started to sharply elbow from Component 2. As a result, only Component 1 (corrective controls) was preserved for further analysis.



**Figure 4. 6: Scree Plot depicting the Association between Eigenvalues and Corrective Control Factors**

**Source: Researcher (2020)**

Principal component matrix analysis was conducted to establish the corrective controls assessing the construct of Component 1 (corrective controls) and if the factor loadings of the given statements were greater than 0.4, in order to be preserved for further analysis. The findings were presented in Table 4.22. In Table 4.22 the research results established that all the 5 controls had factor loadings of greater than 0.4 and they assessed Component 1 (corrective controls). Thus, Component 1 in this case became the derived corrective control variable that would be used in the regression analysis. Therefore, it provided the study adequate justification to use averages as a composite measure for determining the corrective control variable.

**Table 4. 22:Component Matrix of the Corrective Control Factor**

| <b>Component Matrix<sup>a</sup></b>                         |  |
|---|--|
|   | <b>Component<br/>1 (Corrective Controls)</b> |
| 1. Referral of fraud cases to law enforcement institutions. | 0.913  |
| 2. Prosecution and imprisonment.                            | 0.858  |
| 3. Prosecution and payment of hefty fines.                  | 0.895  |
| 4. Job termination.   | 0.893  |
| 5. Suspension from work duty.                               | 0.864  |

**Extraction Method: Principal Component Analysis.**  
**a. 1 component extracted.**

**Source: Researcher (2020)**

#### 4.6.4 Derivation of Fraud Occurrence Variable

Prior carrying out factor analysis to derive the fraud occurrence variable, the study conducted the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett's Test of sphericity to establish if the dataset was applicable for factor analysis. Table 4.23 presented the results of the aforementioned tests. The research outcomes established that the KMO test was 0.863 which was greater than 0.5 and the Bartlett's Test of sphericity was significant ( $p$ -value $<0.05$ ) thus the dataset of fraud occurrence was established to be applicable and sufficient for factor analysis.

**Table 4. 23:KMO and Bartlett's Test results for the statements linked to Fraud Occurrence**

| KMO and Bartlett's Test                          |          |
|--|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | 0.863    |
| Bartlett's Test of Approx. Chi-Square            | 2075.240 |
| Sphericity df                                    | 105      |
| Sig.   | 0.000    |

**Source: Researcher (2020)**

The study then conducted principal component analysis by first of all establishing the factors/components that accounted for significant variability in the dataset so that they could be derived and embody the variables anticipated to be studied. The findings were presented in Table 4.24. As presented in Table 4.24, only two factors namely, Component 1 and 2 accounted for a significant variance in the dataset. Component 1 had an Eigen value of 7.659 accounting for 38.197% of the variance in the dataset while Component 2 had an Eigen value of 1.531 accounting for 23.067% of the variance in the dataset. Therefore, Component 1 and 2 were preserved for further analysis while the rest were cast-off.

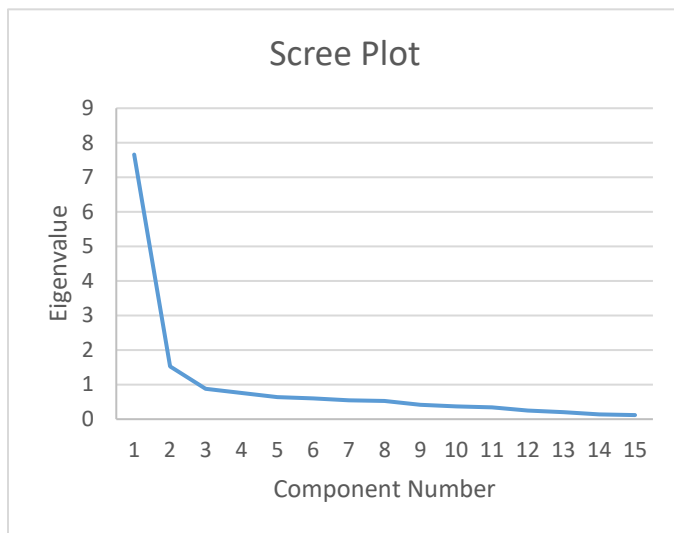
**Table 4. 24: Total Variance explained by Fraud Occurrence Factors**

| Component                                       | Total Variance Explained |               |              |                                     |               |              |                                   |               |              |
|---|--------------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|   | Initial Eigenvalues      |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |               |              |
|   | Total                    | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1 (Asset Misappropriation and Corruption Fraud) | 7.659                    | 51.059        | 51.059       | 7.659                               | 51.059        | 51.059       | 5.729                             | 38.197        | 38.197       |
| 2 (Financial Statement Fraud)                   | 1.531                    | 10.204        | 61.263       | 1.531                               | 10.204        | 61.263       | 3.460                             | 23.067        | 61.263       |
| 3   | 0.882                    | 5.877         | 67.141       |                                     |               |              |                                   |               |              |
| 4   | 0.761                    | 5.076         | 72.217       |                                     |               |              |                                   |               |              |
| 5   | 0.639                    | 4.258         | 76.475       |                                     |               |              |                                   |               |              |
| 6   | 0.605                    | 4.031         | 80.507       |                                     |               |              |                                   |               |              |
| 7   | 0.549                    | 3.660         | 84.167       |                                     |               |              |                                   |               |              |
| 8   | 0.526                    | 3.507         | 87.674       |                                     |               |              |                                   |               |              |
| 9   | 0.416                    | 2.771         | 90.445       |                                     |               |              |                                   |               |              |
| 10  | 0.372                    | 2.480         | 92.925       |                                     |               |              |                                   |               |              |
| 11  | 0.346                    | 2.304         | 95.228       |                                     |               |              |                                   |               |              |
| 12  | 0.252                    | 1.677         | 96.906       |                                     |               |              |                                   |               |              |
| 13  | 0.203                    | 1.355         | 98.260       |                                     |               |              |                                   |               |              |
| 14  | 0.143                    | 0.950         | 99.211       |                                     |               |              |                                   |               |              |
| 15  | 0.118                    | 0.789         | 100.000      |                                     |               |              |                                   |               |              |

**Extraction Method: Principal Component Analysis.**

**Source: Researcher (2020)**

The Scree plot presented in Figure 4.7 illustrated the association between the Eigen figures and the fraud occurrence factors/components. The factors preserved in the Scree plot denoted those after a point whereby the plot was taking an elbow shape. In this case, the Scree plot started to sharply elbow from Component 3. As a result, Component 1 (Asset Misappropriation and Corruption) and 2 (Financial Statement Fraud) were preserved for further analysis.



**Figure 4.7: Scree Plot depicting the Association between Eigen values and Fraud Occurrence Factors**

**Source: Researcher (2020)**

Principal component matrix analysis was conducted to establish the fraud occurrence factors assessing the constructs of Component 1 (Asset Misappropriation and Corruption) and 2 (Financial Statement Fraud) and if they could be preserved for further analysis. The findings were presented in Table 4.25 in the next page. In Table 4.25, the research results established that the first 11 fraud occurrence statements in Component 1 represented the asset misappropriation and corruption fraud schemes. Aside from that, the last four fraud occurrence statements were assessing the construct of financial statement fraud. Both the two factors were assessing fraud occurrence, the only difference was that Component 2 was independent on its own since financial statement fraud had a high level of occurrence on listed companies in Kenya when compared to the other two types of fraud schemes. All the types of fraud occurrence statements posted factor loadings of greater than 0.4 as presented in Components 1 and 2. Thus, they were retained for the development of fraud occurrence variable. Therefore, it provided the study adequate justification to use averages as a composite measure for determining the fraud occurrence variable.

**Table 4. 25: Rotated Component Matrix of the Fraud Occurrence Factors**

| <b>Rotated Component Matrix<sup>a</sup></b>   |   |                               |
|---|---|-------------------------------|
|   | Component                                 |                               |
|   | 1 (Asset Misappropriation and Corruption) | 2 (Financial Statement Fraud) |
| 1. Stealing the firm's cash   | <b>0.779</b>                              | 0.174                         |
| 2. A person uses his/her profession to create expenses for personal or inappropriate use.   | <b>0.768</b>                              | 0.309                         |
| 3. Increasing costs in order to pocket some money.  | <b>0.610</b>                              | 0.455                         |
| 4. Theft of cash receipts.  | <b>0.729</b>                              | 0.226                         |
| 5. Use of company's assets for personal gain.   | <b>0.798</b>                              | 0.190                         |
| 6. Conflict of interest involving selling of goods to a close relation at a cheaper price than the actual price.                        | <b>0.759</b>                              | 0.123                         |
| 7. Purchasing scheme involving favouring a supplier related to an employee who had a financial interest in the purchasing transactions. | <b>0.714</b>                              | 0.251                         |
| 8. Bribery.   | <b>0.570</b>                              | 0.168                         |
| 9. Making false or illegal gratuity payment for personal gain.  | <b>0.739</b>                              | 0.280                         |
| 10. Employee assisting to secure a payment involving an inflated invoice.   | <b>0.577</b>                              | 0.515                         |
| 11. Firms makes the winning party to get contracts at competitive prices.   | <b>0.557</b>                              | 0.444                         |
| 12. Companies presents false revenues in financial statements.  | 0.513                                     | <b>0.527</b>                  |
| 13. Companies overstates their liabilities and expenses.  | 0.272                                     | <b>0.776</b>                  |
| 14. Assets are improperly valued in order to make the balance sheet look good.  | 0.202                                     | <b>0.873</b>                  |
| 15. Misleading financial disclosures are made to paint a financially ailing firm to look good.  | 0.117                                     | <b>0.866</b>                  |

**Extraction Method: Principal Component Analysis.**  
**Rotation Method: Varimax with Kaiser Normalization.**  
**a. Rotation converged in 3 iterations.**

**Source: Researcher (2020)**

#### **4.7 Ordinal Regression Results**

Ordinal regression is only applicable when the findings do not violate the proportional odds assumption (Institute for Digital Research & Education, 2020). The proportional odds assumption indicates that the association between each pair of outcome groups should be the same (Institute for Digital Research & Education, 2020). Since the association between all pairs of groups are similar, then there exists only a single set of coefficients (only one model)(Institute for Digital

Research & Education, 2020). When this is not the case, the researcher has to explore other regression models to illustrate the association between each pair of the outcome groups (Institute for Digital Research & Education, 2020). Consequently, the null hypothesis of the Chi-square test is that there is no variation in the co-efficient between the models thus meaning that the test of Parallel lines should be statistically insignificant (Institute for Digital Research & Education, 2020). In our case as presented in Table 4.26, the results were statistically significant meaning that we have violated the proportional odds assumption and ordinal regression could not be used to assess the relationship between the study variables. Therefore, the study employed multiple linear regression to assess the effect of preventive, detective and corrective control on the level fraud occurrence on listed firms in Kenya.

**Table 4. 26: Test of Parallel Lines for Ordinal Regression**

| <b>Test of Parallel Lines<sup>a</sup></b> |                    |            |    |       |
|---|--------------------|------------|----|-------|
| Model                                     | -2 Log Likelihood  | Chi-Square | df | Sig.  |
| Null Hypothesis                           | 105.498            |            |    |       |
| General                                   | 0.000 <sup>b</sup> | 105.498    | 36 | 0.000 |

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value is practically zero. There may be a complete separation in the data. The maximum likelihood estimates do not exist.

**Source: Researcher (2020)**

#### 4.8 Multiple Linear Regression Analysis Results

Multiple linear regression analysis was run in the SPSS software and the findings were presented in Table 4.27. The first section of Table 4.27 which displayed the model summary results revealed that 80.1% (R-value = 0.801) of the dataset was described by the regression model thus meaning that the model had an extraordinary predictive strength. Besides that, 64.1% (R-Square = 0.641) of the variability accounted on the level of fraud occurrence was explained by all the 3 fraud risk management controls. Finally, the value of the standard error of estimate, which was 0.577 turned out to be a relatively low figure, meaning that the assessed data fitted closely to the regression line making the model to have a high predictive power.

The Analysis of Variance (ANOVA) was conducted to ascertain if the variability accounted on the level of fraud occurrence by all the 3 fraud risk management controls was statistically

significant. The findings were presented in the second section of Table 4.27. The ANOVA results actually established that the preventive, detective and corrective controls significantly accounted for the variance explained on the level of fraud occurrence on listed firms in Kenya. This was justified by a  $p$ -value of 0.000<sup>b</sup>, which was less than 0.05, and an F-statistic figure of 123.731.

**Table 4. 27: Multiple Linear Regression Analysis Results depicting the Effects of Preventive, Detective and Corrective Controls on the level of Fraud Occurrence on listed Companies in Kenya**

| <b>Model Summary<sup>b</sup></b>                                      |                     |                             |                   |                            |               |                    |
|---|---------------------|-----------------------------|-------------------|----------------------------|---------------|--------------------|
| Model   | R                   | R Square                    | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |                    |
| 1   | 0.801 <sup>a</sup>  | 0.641                       | 0.636             | 0.577                      | 1.863         |                    |
| a. Predictors: (Constant), Corrective, Preventive, Detective Controls |                     |                             |                   |                            |               |                    |
| b. Dependent Variable: Fraud Occurrence                               |                     |                             |                   |                            |               |                    |
| <b>ANOVA<sup>a</sup></b>  |                     |                             |                   |                            |               |                    |
| Model   |                     | Sum of Squares              | df                | Mean Square                | F             | Sig.               |
| 1   | Regression          | 123.516                     | 3                 | 41.172                     | 123.731       | 0.000 <sup>b</sup> |
|   | Residual            | 69.213                      | 208               | 0.333                      |               |                    |
|   | Total               | 192.729                     | 211               |                            |               |                    |
| a. Dependent Variable: Fraud Occurrence                               |                     |                             |                   |                            |               |                    |
| b. Predictors: (Constant), Corrective, Preventive, Detective Controls |                     |                             |                   |                            |               |                    |
| <b>Coefficients<sup>a</sup></b>                                       |                     |                             |                   |                            |               |                    |
| Model   |                     | Unstandardized Coefficients |                   | Standardized Coefficients  | t             | Sig.               |
|   |                     | B                           | Standard. Error   | Beta                       |               |                    |
| 1   | (Constant)          | 4.977                       | 0.144             |                            | 34.476        | 0.000              |
|   | Preventive Controls | -0.337                      | 0.072             | -0.425                     | -4.712        | 0.000              |
|   | Detective Controls  | -0.093                      | 0.097             | -0.105                     | -0.956        | 0.340              |
|   | Corrective Controls | -0.253                      | 0.086             | -0.303                     | -2.958        | 0.003              |
| a. Dependent Variable: Fraud Occurrence                               |                     |                             |                   |                            |               |                    |

**Source: Researcher (2020)**

The third section of Table 4.27 displaying the regression co-efficient results led to the study to conceive and propose the ensuing regression equation;

$$FO = 4.977 - 0.337FP - 0.093FD - 0.253FC$$

Whereby;

FO is fraud occurrence

FP is preventive control  
FD is detective control  
FC is corrective control

The constant term displaying a figure of 4.977 signified that in the absence of preventive, detective and corrective controls then the degree of fraud occurrence on listed companies in Kenya would significantly be at 497.7% ( $p$ -value =  $0.000 < 0.05$ ). The results denoted that the lack of fraud risk management practices would encourage fraudsters to perpetuate fraudulent activities on the listed companies in Kenya at an unimaginable level. The results of the regression co-efficients of the preventive, detective and corrective controls were discussed in line with the specific objectives of this research investigation in the ensuing subsections.

#### **4.8.1 The Effect of Preventive Controls on the level of Fraud Occurrence on listed Companies in Kenya**

The regression co-efficient of the preventive controls was used to address the first objective of the study. Keeping in mind that the first objective of the study was to establish the effect of preventive controls on the level of fraud occurrence on listed companies in Kenya. The unstandardized beta co-efficient of the preventive controls clearly illustrated that a unit rise of the preventive controls would significantly reduce the degree of fraud occurrence on listed companies in Kenya by 33.7% ( $\beta = -0.337$ ;  $p$ -value =  $0.000 < 0.05$ ). The research outcomes meant that the perceived effective preventive controls momentarily curbs asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya.

#### **4.8.2 The Effect of Detective Controls on the level of Fraud Occurrence on listed Companies in Kenya**

In line with addressing the second specific objective of the study, the regression co-efficient of detective controls was employed. Considering that, the second objective of the study was to establish the effect of detective controls on the level of fraud occurrence on listed companies in Kenya. The unstandardized beta co-efficient of the detective controls clearly illustrated that a unit rise of the detective controls would reduce the degree of fraud occurrence on listed companies in Kenya by 9.3% ( $\beta = -0.093$ ) though it would be inconsequential ( $p$ -value =  $0.340 > 0.05$ ). The research outcomes meant that the perceived effective detective controls does not meaningfully

lessen asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya.

#### **4.8.3 The Effect of Corrective Controls on the level of Fraud Occurrence on listed Companies in Kenya**

With reference to addressing the third specific objective of the study, the regression co-efficient of corrective controls was employed. Considering that, the third objective of the study was to establish the effect of corrective controls on the level of fraud occurrence on listed companies in Kenya. The unstandardized beta co-efficient of the corrective controls clearly illustrated that a unit rise of the corrective controls would significantly reduce the degree of fraud occurrence on listed companies in Kenya by 25.3% ( $\beta = -0.253$ ;  $p\text{-value} = 0.003 < 0.05$ ). The research outcomes meant that the perceived effective corrective controls profoundly decreases asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya.

#### **4.8.4 The Moderating Effect of Firm Size on the Relationship between Fraud Risk Management and the level of Fraud Occurrence on listed Companies in Kenya**

Firm size was considered as an ideal moderator when compared to firm age and business sector due to the following reasons. First of all fraud does not inflate or decrease due to the age of a certain organization. Consequently it cannot really be a determining factor on the relationship between fraud risk management and fraud occurrence. Besides that, business sector was also not considered as a factor that could moderate the relationship between fraud risk management controls and fraud occurrence. Because ACFE (2018) based on the global survey it conducted in 2018 revealed that high level of fraud cases occurred in generally all the sectors that deals with finances that motivates people to perpetuate fraud in the first place. The sectors comprised of the banking, financial services, government, manufacturing, construction, mining, real estate, energy and administration sectors. Therefore this meant that operating in a type of business sector does not guarantee that there will be a minimal fraud risk or high level fraud risk in the sector. Since the fraud cases cuts across all the sectors so long as they are dealing with financial transactions.

The study conducted multiple linear regression analysis through the SPSS software to ascertain the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya. This was made possible by running three

distinct regression analyses whereby each fraud risk management control was interacted with firm size in order to establish the moderating effect of the latter. Thus in this case, a special type of multiple linear regression model known as the hierarchical linear regression model was used. Whereby, when the researcher was conducting the analysis in SPSS, only one independent variable was entered in the first model. Then in the second model the moderator variable was added as a predictor, then after it was converted into a dichotomous variable it was interacted by the original independent variable in the same second model in order to establish the moderating effect. The findings were presented in Tables 4.28, 4.29 and 4.30 in that order. In Table 4.28 based on its first section that presented the model summary results, the R-Square changed from 0.604 to 0.682 when firm size was added in the model.

This actually meant that firm size explained the additional 7.8% variability on the level of fraud occurrence besides the 60.4% accounted by preventive controls. This additional change was statistically significant based on the ANOVA results in the second model of the second section of Table 4.23 ( $p\text{-value} = 0.000 < 0.05$ ). Based on the third section of Table 4.28 that displayed the regression co-efficient results, preventive controls in the absence of firm size as a moderator had a negative significant effect on the level of fraud occurrence on listed companies in Kenya ( $\beta = -0.616$ ;  $p\text{-value} = 0.000 < 0.05$ ). Conversely, firm size had no profound effect on the relationship between preventive controls and the level of fraud occurrence on listed companies in Kenya ( $\beta = 0.244$ ;  $p\text{-value} = 0.366 > 0.05$ ). This meant that the level of firm revenue, asset and employee size does not play an important role on the employment of the most effective preventive controls in mitigating fraud on listed companies in Kenya. Based on the regression co-efficient results, the study conceived and proposed the ensuing regression equations;

$$FO = 4.749 - 0.616FP$$

$$FO = 3.913 - 0.037FP - 2.858FZ + 0.244FP*Z$$

Whereby;

FO is fraud occurrence

FP is preventive control

FZ is firm size

FP\*Z is interaction term between preventive control and firm size

**Table 4. 28:Regression Analysis results depicting the Moderating Effect of Firm Size on the Relationship between Preventive Controls and the level of Fraud Occurrence on listed Companies in Kenya**

| <b>Model Summary<sup>c</sup></b>   |   |                             |                   |                                |               |                    |
|--|---|-----------------------------|-------------------|--------------------------------|---------------|--------------------|
| Model  | R   | R Square                    | Adjusted R Square | Standard Error of the Estimate | Durbin-Watson |                    |
| 1  | 0.777 <sup>a</sup>  | 0.604                       | 0.602             | 0.603                          |               |                    |
| 2  | 0.826 <sup>b</sup>  | 0.682                       | 0.678             | 0.543                          | 1.771         |                    |
| a. Predictors: (Constant), Preventive Controls   |   |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Preventive Controls, Firm Size, Interaction term between Preventive Control and Firm size |   |                             |                   |                                |               |                    |
| c. Dependent Variable: Fraud Occurrence  |   |                             |                   |                                |               |                    |
| <b>ANOVA<sup>a</sup></b>   |   |                             |                   |                                |               |                    |
| Model  |   | Sum of Squares              | df                | Mean Square                    | F             | Sig.               |
| 1  | Regression  | 116.315                     | 1                 | 116.315                        | 319.655       | 0.000 <sup>b</sup> |
|  | Residual  | 76.414                      | 210               | 0.364                          |               |                    |
|  | Total   | 192.729                     | 211               |                                |               |                    |
| 2  | Regression  | 131.467                     | 3                 | 43.822                         | 148.789       | 0.000 <sup>c</sup> |
|  | Residual  | 61.262                      | 208               | 0.295                          |               |                    |
|  | Total   | 192.729                     | 211               |                                |               |                    |
| a. Dependent Variable: Fraud Occurrence  |   |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Preventive Controls   |   |                             |                   |                                |               |                    |
| c. Predictors: (Constant), Preventive Controls, Firm Size, Interaction term between Preventive Control and Firm size |   |                             |                   |                                |               |                    |
| <b>Co-efficients<sup>a</sup></b>   |   |                             |                   |                                |               |                    |
| Model  |   | Unstandardized Coefficients |                   | Standardized Coefficients      | t             | Sig.               |
|  |   | B                           | Standard. Error   | Beta                           |               |                    |
| 1  | (Constant)  | 4.749                       | 0.138             |                                | 34.455        | 0.000              |
|  | Preventive Control  | -0.616                      | 0.034             | -0.777                         | -17.879       | 0.000              |
| 2  | (Constant)  | 3.913                       | 0.407             |                                | 9.616         | 0.000              |
|  | Preventive Control  | -0.037                      | 0.238             | -0.047                         | -0.157        | 0.875              |
|  | Firm Size   | -2.858                      | 0.698             | -1.254                         | -4.091        | 0.000              |
|  | Interaction term between Preventive Control and Firm Size | 0.244                       | 0.270             | 0.482                          | 0.905         | 0.366              |
| a. Dependent Variable: Fraud Occurrence  |   |                             |                   |                                |               |                    |

**Source: Researcher (2020)**

Table 4.29, displayed the regression results of the moderating effect of firm size on the relationship between detective controls and the level of fraud occurrence on listed companies in Kenya. In Table 4.29 based on its first section that presented the model summary results, the R-Square changed from 0.566 to 0.679 when firm size was added in the model. This actually meant that firm size explained the additional 11.3% variability on the level of fraud occurrence besides the 56.6% accounted by detective controls. This additional change was statistically significant based on the ANOVA results in the second model of the second section of Table 4.29 ( $p$ -value =  $0.000 < 0.05$ ). Based on the third section of Table 4.29 that displayed the regression co-efficient results, detective controls in the absence of firm size as a moderator had a negative significant effect on the level of fraud occurrence on listed companies in Kenya ( $\beta = -0.662$ ;  $p$ -value =  $0.000 < 0.05$ ). Conversely, firm size had no profound effect on the relationship between detective controls and the level of fraud occurrence on listed companies in Kenya ( $\beta = -0.097$ ;  $p$ -value =  $0.573 > 0.05$ ).

This meant that the level of firm revenue, asset and employee size does not play an important role on the usage of the most effective preventive controls in mitigating fraud occurrence on listed companies in Kenya. Therefore, it is not only enough for the procurement of the most effective detective controls that is usually capital intensive, but firms should go ahead to ensure that the procured detective controls are actually used exhaustively in managing fraud risk and limiting the level of fraud occurrence.

Based on the regression co-efficient results, the study conceived and proposed the ensuing regression equations;

$$FO = 4.904 - 0.662FD$$

$$FO = 3.738 + 0.057FD - 1.594FZ - 0.097FD*Z$$

Whereby;

FO is fraud occurrence

FD is detective control

FZ is firm size

FD\*Z is interaction term between detective control and firm size

**Table 4. 29:Regression Analysis results depicting the Moderating Effect of Firm Size on the Relationship between Detective Controls and the level of Fraud Occurrence on listed Companies in Kenya**

| <b>Model Summary<sup>c</sup></b>   |  |                             |                   |                                |               |                    |
|--|--|-----------------------------|-------------------|--------------------------------|---------------|--------------------|
| Model  | R  | R Square                    | Adjusted R Square | Standard Error of the Estimate | Durbin-Watson |                    |
| 1  | 0.752 <sup>a</sup>                                       | 0.566                       | 0.564             | 0.631                          |               |                    |
| 2  | 0.824 <sup>b</sup>                                       | 0.679                       | 0.674             | 0.546                          | 1.798         |                    |
| a. Predictors: (Constant), Detective Control   |  |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Detective Control, Firm Size, Interaction term between Detective Control and Firm size  |  |                             |                   |                                |               |                    |
| c. Dependent Variable: Fraud Occurrence  |  |                             |                   |                                |               |                    |
| <b>ANOVA<sup>a</sup></b>   |  |                             |                   |                                |               |                    |
| Model  |  | Sum of Squares              | df                | Mean Square                    | F             | Sig.               |
| 1  | Regression   | 109.047                     | 1                 | 109.047                        | 273.654       | 0.000 <sup>b</sup> |
|  | Residual   | 83.682                      | 210               | 0.398                          |               |                    |
|  | Total  | 192.729                     | 211               |                                |               |                    |
| 2  | Regression   | 130.781                     | 3                 | 43.594                         | 146.372       | 0.000 <sup>c</sup> |
|  | Residual   | 61.948                      | 208               | 0.298                          |               |                    |
|  | Total  | 192.729                     | 211               |                                |               |                    |
| a. Dependent Variable: Fraud Occurrence  |  |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Detective Controls  |  |                             |                   |                                |               |                    |
| c. Predictors: (Constant), Detective Controls, Firm Size, Interaction term between Detective Control and Firm size |  |                             |                   |                                |               |                    |
| <b>Co-efficients<sup>a</sup></b>   |  |                             |                   |                                |               |                    |
| Model  |  | Unstandardized Coefficients |                   | Standardized Coefficients      |               | Sig.               |
|  |  | B                           | Standard Error    | Beta                           | t             |                    |
| 1  | (Constant)   | 4.904                       | 0.157             |                                | 31.134        | 0.000              |
|  | Detective Control  | -0.662                      | 0.040             | -0.752                         | -16.542       | 0.000              |
| 2  | (Constant)   | 3.738                       | 0.255             |                                | 14.677        | 0.000              |
|  | Detective Control  | 0.057                       | 0.124             | 0.065                          | 0.463         | 0.644              |
|  | Firm Size  | -1.594                      | 0.574             | -0.700                         | -2.778        | 0.006              |
|  | Interaction term between Detective Control and Firm Size | -0.097                      | 0.172             | -0.186                         | -0.564        | 0.573              |
| a. Dependent Variable: Fraud Occurrence  |  |                             |                   |                                |               |                    |

**Source: Researcher (2020)**

Table 4.30, displayed the regression results of the moderating effect of firm size on the relationship between corrective controls and the degree of fraud occurrence on listed companies in Kenya. In Table 4.30 based on its first section that presented the model summary results, the R-Square changed from 0.762 to 0.828 when firm size was added in the model. This actually meant that firm size explained the additional 6.6% variability on the level of fraud occurrence besides the 76.2% accounted by corrective controls. This additional change was statistically significant based on the ANOVA results in the second model of the second section of Table 4.30 ( $p$ -value =  $0.000 < 0.05$ ). Based on the third section of Table 4.30 that displayed the regression co-efficient results, corrective controls in the absence of firm size as a moderator had a negative significant effect on the level of fraud occurrence on listed companies in Kenya ( $\beta = -0.637$ ;  $p$ -value =  $0.000 < 0.05$ ). Conversely, firm size had no profound effect on the relationship between corrective controls and the level of fraud occurrence on listed companies in Kenya ( $\beta = -0.245$ ;  $p$ -value =  $0.093 > 0.05$ ).

This meant that the level of firm revenue, asset and employee size does not play an important role on the implementation of corrective controls in mitigating fraud occurrence on listed companies in Kenya. This is because corrective actions such as suspension and firing of fraudsters as observed by ACFE (2018) and Deloitte (2018) does not really need the employment of huge finances or human capital to curb fraud. Since the aforementioned corrective actions that are free, only aims at instilling fear on potential fraudsters of losing their jobs if found perpetuating fraud (ACFE, 2018; Deloitte, 2018). Thus, this in turn discourages them in being involved in fraudulent activities (ACFE, 2018; Deloitte, 2018). Besides that, prosecution and imprisonment does not really need huge financial and human capital to discourage fraudsters from committing fraud.

Based on the regression co-efficient results, the study conceived and proposed the ensuing regression equations;

$$FO = 4.762 - 0.637FC$$

$$FO = 3.799 + 0.028FC - 0.899FZ - 0.245FC*Z$$

Whereby;

FO is fraud occurrence

FC is corrective control

FZ is firm size

FC\*Z is interaction term between corrective control and firm size

**Table 4. 30:Regression Analysis results depicting the Moderating Effect of Firm Size on the Relationship between Corrective Controls and the level of Fraud Occurrence on listed Companies in Kenya**

| <b>Model Summary<sup>c</sup></b>  |   |                             |                   |                                |               |                    |
|---|---|-----------------------------|-------------------|--------------------------------|---------------|--------------------|
| Model   | R   | R Square                    | Adjusted R Square | Standard Error of the Estimate | Durbin-Watson |                    |
| 1   | 0.762 <sup>a</sup>  | 0.581                       | 0.579             | 0.620                          |               |                    |
| 2   | 0.828 <sup>b</sup>  | 0.686                       | 0.681             | 0.539                          | 1.841         |                    |
| a. Predictors: (Constant), Corrective Control   |   |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Corrective Control, Firm Size, Interaction term between Corrective Control and Firm Size |   |                             |                   |                                |               |                    |
| c. Dependent Variable: Fraud Occurrence   |   |                             |                   |                                |               |                    |
| <b>ANOVA<sup>a</sup></b>  |   |                             |                   |                                |               |                    |
| Model   |   | Sum of Squares              | df                | Mean Square                    | F             | Sig.               |
| <b>1</b>  | Regression  | 111.996                     | 1                 | 111.996                        | 291.321       | 0.000 <sup>b</sup> |
|   | Residual  | 80.733                      | 210               | 0.384                          |               |                    |
|   | Total   | 192.729                     | 211               |                                |               |                    |
| <b>2</b>  | Regression  | 132.215                     | 3                 | 44.072                         | 151.486       | 0.000 <sup>c</sup> |
|   | Residual  | 60.513                      | 208               | 0.291                          |               |                    |
|   | Total   | 192.729                     | 211               |                                |               |                    |
| a. Dependent Variable: Fraud Occurrence   |   |                             |                   |                                |               |                    |
| b. Predictors: (Constant), Corrective Control   |   |                             |                   |                                |               |                    |
| c. Predictors: (Constant), Corrective Control, Firm Size, Interaction term between Corrective Control and Firm size |   |                             |                   |                                |               |                    |
| <b>Co-efficients<sup>a</sup></b>  |   |                             |                   |                                |               |                    |
| Model   |   | Unstandardized Coefficients |                   | Standardized Coefficients      |               | Sig.               |
|   |   | B                           | Standard Error    | Beta                           | t             |                    |
| 1   | (Constant)  | 4.762                       | 0.145             |                                | 32.871        | 0.000              |
|   | Corrective Control  | -0.637                      | 0.037             | -0.762                         | -17.068       | 0.000              |
| 2   | (Constant)  | 3.799                       | 0.216             |                                | 17.618        | 0.000              |
|   | Corrective Control  | 0.028                       | 0.110             | 0.034                          | 0.256         | 0.798              |
|   | Firm Size   | -0.899                      | 0.462             | -0.394                         | -1.946        | 0.053              |
|   | Interaction term between Corrective Control and Firm size | -0.245                      | 0.145             | -0.470                         | -1.686        | 0.093              |
| a. Dependent Variable: Fraud Occurrence   |   |                             |                   |                                |               |                    |

**Source: Researcher (2020)**

#### 4.9 Chapter Summary

First of all the chapter presented the regression diagnostic results and the findings revealed that the data set retrieved fulfilled all the necessary assumptions required to be met before conducting the regression analysis. It then proceeded presenting the response rate results and based on those results, it was observed that the response rate was sufficient for the descriptive, factor and regression analysis findings to be relied on. The chapter then proceeded to presenting the demographic results that was produced by the descriptive analysis. The interesting aspect about the findings is that most of the respondents studied had a background in accounting thus they possessed knowledge about the internal controls put in place to curb fraud. Moreover, the chapter presented the descriptive analysis results touching on each particular variable. In regard to the preventive controls, the findings established that the respondents generally agreed that the controls were effective in managing fraud occurrence. With reference to detective controls, the descriptive results revealed that all the controls were perceived to be effective in managing fraud occurrence on listed firms in Kenya. Similarly, with respect to corrective controls, the findings observed that all the assessed controls were perceived to be effective in curbing fraud occurrence.

Moreover, in regard to the occurrence of fraud on listed firms in Kenya, the descriptive analysis results revealed that all the types of fraud did not record a high severity level of occurrence on listed firms in Kenya. Though financial statement fraud had a considerably high level of occurrence when compared to other forms of fraud. The chapter then proceeded to present factor analysis results. The results showed how only one factor was derived for each variable thus providing justification for the use of averages as a composite measure for developing each study variable appropriate for the regression analysis. Aside from that, the chapter concluded by presenting the regression analysis results. The regression results revealed that only preventive and corrective controls had a significant negative effect on the degree of fraud occurrence on listed companies in Kenya. Conversely, detective controls had no significant effect on the degree of fraud occurrence on listed companies in Kenya. The study also observed that firm size had no considerable moderating effect on the relationship between the three assessed fraud risk management controls and the level of fraud occurrence on listed companies in Kenya.

## CHAPTER FIVE

### SUMMARY OF DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

The chapter presented the discussion of the research findings linked to the existing literature and the underlying theories meant to make sense of the findings. After the discussion of the findings, conclusions were drawn that assisted in the formulation of recommendations that would be useful to the relevant stakeholders of this study. The chapter closes by presenting and elaborating on the limitations of the study and suggestions for future research.

#### 5.2 Discussion of Research Findings

The following subsections summarize and discuss the research findings in line with each specific objective.

##### 5.2.1 The Effect of Preventive Controls on the level of Fraud Occurrence on listed Companies in Kenya

In order to address the first objective of the study, the research examination first sought to establish the perceived effectiveness of the preventive controls and the level of fraud occurrence on listed companies in Kenya. The descriptive results ascertained that all the assessed preventive controls were perceived to be effective in deterring fraud occurrence on listed companies in Kenya. The findings were congruent with the research outcomes of ACFE (2018), Hakami and Rahmat (2019), Bierstaker et al. (2006) together with Zamzami, Nusa and Timur (2016) that corporate code of conduct was perceived to be effective in deterring fraud in Saudi Arabian banks, American private sector and Indonesian banks respectively. The findings meant that when code of conduct is clearly and frequently communicated to the staff about key standards of acceptable behaviour and policies discouraging ethical conduct, then it would considerably curb fraud risk on listed companies in Kenya (Albrecht et al., 2009; Bierstaker et al., 2006; Hassink et al., 2007).

Interestingly, the research outcomes conflicted with the findings of Omar and Abu Bakar (2012) who established that the preventive control was perceived to be ineffective on deterring fraud in Malaysian government linked corporations. Additionally, the findings of the study also concurred with the research outcomes of Othman et al. (2015), Agathee and Ramen (2017) together with Rahman and Anwar (2014) that staff rotation policy was perceived to be effective in curbing fraud.

The research findings could mean that the implementation of a strong staff rotation policy on listed firms in Kenya would always unveil fraud cases that would go unnoticed, especially fraudulent cash disbursements thus deterring such fraudulent schemes from transpiring in the future (Nnamdi, 1991; ACFE, 2016). Conversely, the findings were inconsistent with the research outcomes made by Bierstaker et al. (2006) who established that the preventive control was perceived not to be effective in deterring fraud occurrence in the American private sector.

Besides that, the research findings also agreed with ACFE (2018) that fraud risk assessments, fraud reporting policy, internal audit department, enhanced audit committees and anti-fraud training programs were perceived to be effective in managing fraud risk. The research findings also concurred with the findings made by Ekaterina (2013) in Russian small-scale enterprises that segregation of duties and reference check on employees were perceived to be effective in deterring fraud. The findings also agreed with the research outcomes made by Otieno (2018) in the Kenyan motor insurance sector that proper due diligence on customers and reference checks on employees were perceived to be effective in managing fraud risk. The findings could mean that segregation of duties and reference checks on employees can play an important role in mitigating asset misappropriation on listed firms in Kenya (Ekaterina, 2013). Additionally, the findings could denote that the usage of enhanced audit committees would play an important role in curbing fraud on listed firms in Kenya since their primary duty is to ensure that the companies employ effective fraud risk assessment programs and controls to mitigate fraud (Otieno, 2018). Furthermore, the findings could mean that the employment of fraud reporting policies on listed firms in Kenya assists the staff and other stakeholders of the firms to be enlightened on how the companies addresses fraud issues and provides them incentives to partake in safeguarding the firm's resources and reputation (Wang'ombe, 2017).

Moreover, the research findings also agreed with the findings made by Zamzami, Nusa and Timur (2016) together with Rahman and Anwar (2014) that internal control system was perceived to be effective in managing fraud risk in Indonesian tertiary institutions and Malaysian Islamic banks respectively. Though it was inconsistent with the observations made by Wang'ombe (2017) in a study carried out in Kiambu county government that internal control system is not sufficiently effective in curbing fraud in the county government. Muslimat and Hamid (2012) contended that internal control systems could turn to be a poor mechanism of detecting and deterring fraud if the

internal audit staff lacks sufficient knowledge of fraud risk management policies, strategies and techniques. Additionally, the research findings concurred with Hakami and Rahmat (2019) that positive employee recognition was perceived to be effective in managing fraud occurrence.

Concerning the level of fraud occurrence on listed firms in Kenya, the findings revealed that the degree of fraud occurrence on listed firms in Kenya was relatively low. The findings concurred with the research outcomes of Kamaliah et al. (2018), Waigumo (2012) together with King'ori, Kiragu and Kamau (2019) who had conducted similar studies in the Malaysian public sector and the Kenyan banking sectors respectively. Interestingly, financial statement fraud had a high level of occurrence on listed companies in Kenya when compared to other fraud schemes comprising of asset misappropriation and corruption schemes. The findings concurred with the theoretical proposition of the fraud diamond theory, that fraud especially financial statement fraud is perpetuated by the professionals who have the knowledge and capacity that enables them to commit fraud without being easily detected.

The regression analysis results observed that preventive controls had a negative significant effect on the level of fraud occurrence on listed companies in Kenya. The research outcomes meant that the perceived effective preventive controls momentarily curbs asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya. Thus, the study upheld the theoretical proposition of the fraud triangle theory that preventive controls are effective in mitigating pressure (greed, debt, addiction etc.) and rationalization (justification of immoral deed) that consequently leads to fraud. The research findings concurred with the research outcomes of Kamaliah et al. (2018) who conducted a study in the Malaysian public sector that preventive controls significantly curbs fraud occurrence. The research findings also concurred with the observations made by ACFE (2018) in an international context that preventive controls momentarily reduces asset misappropriation, corruption and financial statement fraud schemes. Conversely, the findings disagreed with the research outcomes of Waigumo (2012) who revealed that preventive controls does not significantly curb fraud occurrence on commercial banks in Kenya.

Thus, the employment of enhanced audit committees, staff rotation policy, code of conduct, reference checks on employees, antifraud training programs and fraud reporting policies among

other preventive controls on listed companies in Kenya would play an important role in assisting the firms to profoundly mitigate the level of fraud cases.

### **5.2.2 The Effect of Detective Controls on the level of Fraud Occurrence on listed Companies in Kenya**

In order to address the second objective of the study, the research examination first sought to establish the perceived effectiveness of the detective controls on managing fraud risk in listed companies in Kenya. The descriptive results established that all the assessed detective controls were effective in deterring fraud occurrence on listed companies in Kenya. The findings were consistent with the research outcomes of Othman et al. (2015) that fraud hotlines, forensic accountants and operational audits were perceived to be effective in unravelling fraud occurrence. The findings meant that forensic accountants could be good in unravelling fraud cases on listed firms in Kenya since they investigate beyond the accounting figures over the traditional auditors or accountants (Haron et al., 2014). This is because forensic accountants use their own investigative procedures to not only discover fraud, but the perpetrator behind it and use the collected evidence against the perpetrator (Mangala & Kumari, 2017). Besides that, the findings could mean that if the listed firms employ fraud hotlines that guarantee people anonymity then it would motivate any person to report a fraud case without fear of reprisal (Mangala & Kumari, 2017).

Interestingly, the findings of this study were inconsistent with the observations made by Efiang, Inyang and Joshua (2016) in the Nigerian public sector that fraud hotlines were perceived to be ineffective in detecting fraud. Meaning that if the responsible parties in the firm fail to take action in terms of investigating and punishing those who have been reported through the fraud hotline or that the fraud hotlines do not provide anonymity to whistleblowers in order for their safety to be guaranteed, then people would not be motivated to report any fraud case using those hotlines. Aside from that, the research findings also corresponded with the findings made by Bierstaker et al. (2006), Othman et al. (2015) and Otieno (2018) that continuous auditing was perceived to be effective in detecting and managing fraud risk. Additionally, the research findings were consistent with the observations made by Mangala and Kumari (2017) in the Indian corporate sector and Bierstaker et al. (2006) in the American private sector that data mining was perceived to be effective in unravelling fraud occurrence. The findings meant that continuous auditing on listed

firms in Kenya plays an important role in utilizing information technology to collect audit evidence on a continuous basis that helps to detect a fraud incidence(Mangala & Kumari, 2017).

Besides that, the findings could also mean that the listed firms in Kenya employs data mining control to scrutinize their reports based on an algorithm constructed from historical fraud data that would help in detecting unknown or unique patterns that might indicate a likely fraud risk (Gupta & Gill, 2012; Zhou & Kapoor, 2011). Additionally, the findings of the study were in agreement with the findings of ACFE (2018) that proactive data monitoring/analysis and internal audit review were perceived to be effective controls in detecting fraud occurrence. Moreover, the findings of this research investigation were consistent with the research outcomes of (ACFE, 2018; Deloitte, 2018; Bierstaker et al., 2006; Rahman, 2014; Othman et al., 2015) that bank reconciliation, financial ratios, cash reviews and surprise audits were perceived to be effective in detecting fraud occurrence.

The findings could also mean that bank reconciliation employed by listed Kenyan companies assists in discovering fraudulent disbursements since it helps in verifying if a vendor listed on the reconciliation corresponds with the vendor on the cleared bank cheque (Brager, 2017). Besides that, it assists the listed firms in Kenya, in researching on a particular vendor that the firm is not aware about (Brager, 2017). Moreover, the findings of this study meant that cash reviews helps listed firms in Kenya in identifying fraudulent debtor payments and preventing the same fraud risks from occurring in the future, through comparing dates with customers made their payments with the dates the payments were posted in the accounting system (ACFE, 2016).

The regression analysis findings of the study revealed that the detective controls had a negative but insignificant effect on the level of fraud occurrence on listed companies in Kenya. The research outcomes meant that the perceived effective detective controls does not meaningfully lessen asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya. The research findings were inconsistent with the research outcomes of Ogola, K'Aol and Linge (2016), Lee (2017), ACFE (2018), Holtfreter (2008) and Kamau (2015) which had actually revealed that detective controls significantly reduces fraud occurrence. Interestingly, the findings were consistent with the research outcomes of Waigumo (2012) which had established that detective controls does not significantly curb fraud occurrence on commercial banks in Kenya. The findings of the study failed to uphold the theoretical proposition of the fraud triangle theory

since it revealed that detective controls would not be able to momentarily deny the fraudsters the opportunity to perpetuate fraud. Since it would have already have been committed when it is detected.

This is because fraud detection is always employed after fraud has been committed when the preventive controls have failed to seal the loopholes that would encourage fraud. Therefore, a fraud action has to be detected, acted upon through corrective action in order to prevent future fraud occurrence. Consequently, based on the fraud management lifecycle theory, the preventive and detective controls must go hand in hand in order to effectively deter fraud risks.

### **5.2.3 The Effect of Corrective Controls on the level of Fraud Occurrence on listed Companies in Kenya**

In order to address the third objective of the study, the research examination first sought to establish the perceived effectiveness of the corrective controls on managing fraud risk in listed companies in Kenya. The descriptive results established that all the assessed corrective controls were effective in deterring fraud occurrence on listed companies in Kenya. The findings were consistent with the observations made by ACFE (2018) in the international context that corrective controls involving the suspension or termination of the job contracts of employees turned fraudsters as a mechanism of managing fraud. It was also consistent with the recommendations made by United Nations (2016) that fraudsters should be prosecuted and imprisoned in order to discourage the perpetration of fraudulent activities. Interestingly, ACFE (2018) had established that organizations fear to refer fraud cases to law enforcement bodies owing to the fact that it is a very expensive affair and it might paint a bad image of their brands. Besides that, Kultanen (2017) contended that corrective actions could prove futile in discouraging future perpetration of fraudulent activities if the responsible parties are bribed by the fraudsters in order to escape punishment for their unethical actions.

The regression analysis findings revealed that corrective controls had a negative significant effect on the level of fraud occurrence on listed companies in Kenya. The research outcomes meant that the perceived effective corrective controls profoundly decreases asset misappropriation, corruption and financial statement fraud schemes on the listed companies in Kenya. Therefore, the research outcomes of this study upheld the theoretical proposition of the fraud triangle theory by establishing that corrective controls are effective in deterring rationalization that consequently

leads to fraud. Meaning that the punishment of fraudsters would make potential fraudsters to realize that fraud action is immoral and unlawful which can attract a serious penalty, thus this would suppress them from committing fraud in the future. The findings of this study agreed with ACFE (2018) that corrective action involving internal discipline such as suspending or firing a fraudster subsequently instils fear and discourages potential fraudsters from perpetuating fraudulent acts in the future. The findings also concurred with Deloitte (2018) based on the study carried out in India that the employment of corrective actions involving serious penalties would discourage and limit future fraudulent acts.

The findings contrasted with the research outcomes of studies (Kimeli, 2018; Waitimu, 2014) conducted in Kenya. For instance the findings disagreed with the research outcomes of Kimeli (2018) who had established that the arrest of fraudsters does not have any considerable effect on the mitigation of fraud risk in the Kenyan Capital Markets Authority. It also disagreed with the research outcomes of Waitimu (2014) that even though there exist complications in the prosecution process, lack of enough evidence and short jail terms that can still encourage the escalation of fraud activities, other corrective methods such as job termination and payment of hefty fines can play a considerable role in discouraging future fraudulent actions.

#### **5.2.4 The Moderating Effect of Firm Size on the Relationship between Fraud Risk Management and the level of Fraud Occurrence on listed Companies in Kenya**

In line with addressing the fourth objective of the study, which sought to establish the moderating effect of firm size on the relationship between fraud risk management and the level of fraud occurrence on listed companies in Kenya. The regression analysis results revealed that firm size characterized by firm revenue, asset and employee size had no significant impact on the relationship between the three fraud risk management practices and the level of fraud occurrence on listed companies in Kenya. This meant that preventive and corrective controls does not need a great financial muscle or a huge human capital for them to be effectively employed to curb fraud occurrence on the listed companies in Kenya. For instance, preventive controls such as code of conduct, fraud reporting policy and anti-fraud training programs does not need huge investments to be effected in order to discourage and curb fraud risk. Besides that, corrective actions such as suspension and firing of fraudsters as observed by ACFE (2018) and Deloitte (2018) also does not really need the employment of huge finances or human capital to curb fraud. Since the

aforementioned corrective actions that are free, only aims at instilling fear on potential fraudsters of losing their jobs if found perpetuating fraud (ACFE, 2018; Deloitte, 2018).

Thus, this in turn discourages them in being involved in fraudulent activities (ACFE, 2018; Deloitte, 2018). Besides that, prosecution and imprisonment does not really need huge financial and human capital to discourage fraudsters from committing fraud. On top of that, it is not only enough for the procurement of the most effective detective controls that is usually capital intensive, but firms should go ahead to ensure that the procured detective controls are actually used exhaustively in managing fraud risk and limiting the level of fraud occurrence. The findings conflicted with the research outcomes of Holtfreter (2008), ACFE (2012), Agathee and Ramen (2017) together with Bierstaker et al. (2006) which established that the greater the firm size the greater the employment of the finances and human capital in the investment of the most effective detective controls which in turn reduces the level of fraud occurrence.

### **5.3 Conclusions**

From the discussed findings, the study concluded that all the preventive, detective and corrective controls are effective in managing fraud risk on listed companies in Kenya based on the perceptions of the management. Additionally, the level of fraud occurrence was generally low, but financial statement fraud had a relatively high level of occurrence when compared to other forms of fraud. Besides that, preventive controls profoundly curbs the level of fraud occurrence on listed companies in Kenya. Since it provides employees the knowledge of fraud, how it is immoral and offers mechanisms that would motivate the employees to stop fraud from occurring. Furthermore, it can also be concluded that detective controls decreases the level of fraud occurrence on listed companies in Kenya but not significantly. Since fraud detection is always effective only in unravelling fraud that has already happened. Thus, for the detective controls to deter future fraud actions, then the controls have to unravel the fraud actions in a specific area in order for appropriate mechanisms to be conceived to seal those loopholes encouraging fraud perpetration.

Moreover, it can also be concluded that corrective actions considerably decreases the level of fraud occurrence on listed companies in Kenya. This is because punishing fraudsters would discourage future fraudulent actions. Finally, it can also be concluded that firm size has no significant effect on the relationship between fraud risk management practices and the level of fraud occurrence on listed companies in Kenya. This means that firms do not need to invest huge capital in terms of

finances and human labour for the effective employment of preventive and corrective controls to deter fraud risk. It also meant that the investment on the most effective detective controls that is a costly affair is not enough in combating fraud, but the management should see to it that the detective controls are effectively and efficiently employed to curb fraud occurrence.

Interestingly, when equated with the most recent fraud survey conducted by PwC (2020) which was carried out almost the same time as this research investigation revealed that financial statement fraud least occurred in organizations globally when compared to customer fraud, cybercrime, asset misappropriation, bribery and corruption. This is considering the fact that the findings of this study observed that financial statement fraud had a high relative occurrence when compared to asset misappropriation and bribery & corruption fraud schemes. The reason being that the perpetrators of fraud at listed firms in Kenya are smart professional accountants who embezzle the firm's finances and assets through manipulation of financial statements. Since the employment of this type of fraud strategy helps the professionals to cover their tracks smoothly and makes it hard for them to be detected when compared to asset misappropriation and bribery & corruption frauds.

Another important aspect noted when equated with the PwC (2020) findings is that even if firms have the best preventive and detective controls at hand, they should always seek to improve them since fraudsters and the strategies they employ to commit fraud evolve with time. Moreover, if a firm's fraud defences contains any loopholes, then it exposes itself to fraud risk and it should develop appropriate mechanisms to seal off these loopholes. Furthermore, based on PwC (2020) findings, customer fraud is a serious issue in the financial services and consumer market sectors considering that the main perpetrators of fraud are external parties of the organization. Thus, when linked to this research study, the listed firms in Kenya operating in the financial services and consumer market sectors should be careful with how they relate with their customers by enhancing their proper due diligence strategies to curb any customer fraud risk that might arise.

Finally, PwC (2020) observed that most organizations are planning to increase their investment in anti-fraud controls but as established by this study, the financial investment in anti-fraud technology is not enough. Proper governance which ensures that the procured techniques are fully implemented in key in managing fraud risk.

## **5.4 Recommendations**

The study proposes the following recommendations to the managers and policy formulators as presented in the following sub-sections. The section closes with the new knowledge contributed in fraud research.

### **5.4.1 Managerial Recommendations**

The management should be motivated in formulating appropriate mechanisms that would lead to the development and application of the identified effective preventive and corrective controls to precisely mitigate fraud occurrence on listed firms in Kenya. Since it does not involve a high degree of investment in terms of finances and labour. The management should not hesitate in firing, suspending or penalizing an employee found guilty to have committed fraud, since these corrective actions discourages future fraudulent actions by instilling fear. Moreover, though it is essential for the management to invest greater sufficient finances and human resources on the deployment of the most effective preventive, detective and corrective controls identified by this research investigation. It is the responsibility of the management to always ensure that the aforementioned antifraud controls are frequently implemented in order to unravel fraud cases, mitigate fraud risk or to discourage future fraud perpetration.

Since there mere procurement of the most effective anti-fraud techniques without seeing to it that they are properly implemented would not do anything in significantly curbing the level of fraud risk.

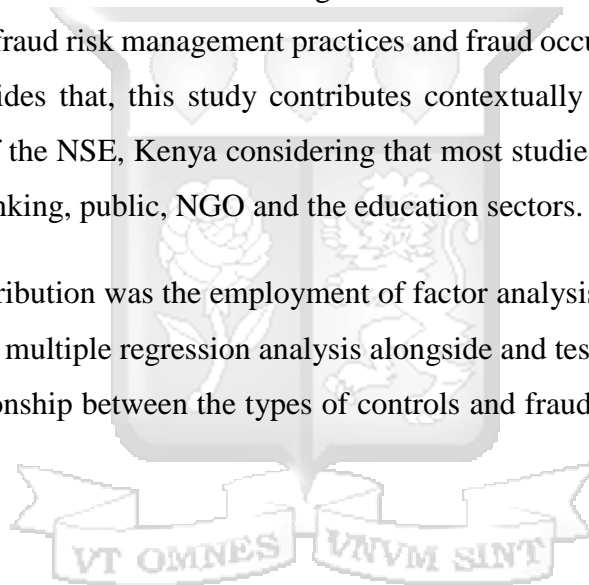
### **5.4.2 Policy Recommendations**

The study recommends to the government and policy formulators to conceive enactments or policies for the Kenyan private sector that would subject the listed companies in employing the most effective fraud risk management controls pointed out by this study. Additionally, the government should add stiffer penalties against people involved in unethical conducts in order to discourage future fraud actions. The executive government should also liaise with the judiciary in ensuring that the courts provides smooth prosecution trials of suspected fraudsters that would lead to fair judgment through eradicating any form of technicalities that might lead to the miscarriage of justice.

### **5.4.3 Contribution to Knowledge**

Finally, the research investigation contributes to the existing literature of the effect of fraud risk management controls on the level of fraud occurrence by extending the literature to the listed companies in Kenya since a knowledge gap existed in this particular field. Additionally, it contributed to the fraud literature by seeking to establish the effect of corrective controls on the degree of fraud occurrence and the moderating effect of firm size on the relationship between fraud risk management practices and the level of fraud occurrence on listed companies in Kenya. The study contributes to fraud research knowledge by establishing that corrective controls significantly influences fraud occurrence in a negative way. Since this kind of information was not known. Moreover, it contributes to fraud research knowledge that firm size does not significantly moderate the relationship between fraud risk management practices and fraud occurrence on firms operating at the NSE, Kenya. Besides that, this study contributes contextually by studying the research problem in the context of the NSE, Kenya considering that most studies focused on other sectors such as the insurance, banking, public, NGO and the education sectors.

The methodological contribution was the employment of factor analysis to reduce variables, then analysis of the data using multiple regression analysis alongside and testing the moderating effect of firm size on the relationship between the types of controls and fraud occurrence alongside the descriptive analysis.



### **5.5 Limitations and Suggestions for Future Research**

The main limitation of this research study was that it was solely based on perceptions of the respondents. The limitation being that though the thoughts and opinions of the management are based on expert knowledge it could be subject to bias. Therefore, the study cannot completely ratify that it retrieved credible information on the effect of fraud risk management and firm size on the level of fraud occurrence on listed firms in Kenya. Consequently, future studies should incorporate both qualitative and empirical methodologies to produce objective outcomes that would clearly depict the effect of firm size on the relationship between fraud risk management and fraud occurrence in Kenyan listed companies. Future studies should be extended to the public

sector in regard to the government ministries and the distinctive partitions of the private sector such as the insurance, real estate, manufacturing, automobile sectors among others respectively.



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## APPENDICES

### Appendix One: Introduction Letter

Ole Sengale Rd, Madaraka Estate,  
P.O Box 59857 00200, Nairobi, Kenya.  
Cell: +254 703 414/6/7, Twitter: @SBSKenya  
Email: [info@sbs.ac.ke](mailto:info@sbs.ac.ke) or visit [www.sbs.strathmore.edu](http://www.sbs.strathmore.edu)



20<sup>th</sup> March 2020

#### **RE: FACILITATION OF RESEARCH – SEVERINA MWANGI**

This is to introduce Severina Mwangi who is a Master of Commerce (MCOM) Student at Strathmore University Business School, admission number MCOM/057586. As part of our MCOM Program, Severina is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MCOM course. To this effect, Severina would like to request for appropriate data from your organization.

Severina is undertaking a research paper on “**Effect of Fraud Risk Management and Firm Size on the level of Fraud Occurrence among Listed Companies in Kenya.**” The information obtained shall be treated confidentially and shall be used for academic purposes only.

Our MCOM seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Caroline Tiara".

Caroline Tiara  
Manager – Graduate Programs.

Association of African  
Business Schools



Strathmore Business School is a Proud member of:



AACSB

## Appendix Two: Questionnaire

This questionnaire seeks to collect data on the effect of fraud firm size on the relationship between fraud risk management and fraud occurrence in Kenyan listed companies . You are requested to respond to all the items in this questionnaire truthfully. You will not be required to record your name or that of your company since the data retrieved will be used for generalization purposes.

**(Please tick  $\surd$  inside the box  where it is relevant)**

1. Gender: Male  Female
2. Sector which your firm operates in: Agricultural  Automobile & Accessories   
 Banking  Commercial Services  Energy & Petroleum   
 Exchange Traded Fund  Manufacturing & Allied   
 Telecommunication & Technology  Construction & Allied   
 Real Estate Investment Trust  Investment
3. Job Title: CEO  Finance Manager  Supply Chain Manager   
 Internal Audit & Risk Manager  Non-Executive Director
4. Managerial Experience: Less than 1 year  1-5 years  6-9 years   
 More than 10 years
5. Certificate Qualification: CPA  ACCA  CIA  CISA  CIFA   
 CFA
6. Education Qualification: Bachelor Degree  Higher Diploma  Master Degree   
 PhD/Doctorate Degree
7. Average firm's revenue: Less than Kshs. 250 million  Kshs. 251-500 million   
 Kshs. 501-750 million  Kshs. 751-1000 million   
 More than Kshs. 1001 million
8. Average firm's asset size: Less than Kshs. 250 million  Kshs. 251-500 million   
 Kshs. 501-750 million  Kshs. 751-1000 million   
 More than Kshs. 1001 million
9. Firm's employee size: Less than 100  101-500  501-700  701-1000   
 More than 1001

**SECTION B: PERCEPTIONS OF THE EFFECTIVENESS OF FRAUD RISK MANAGEMENT MEASURES ON FRAUD OCCURRENCE**

Rate based on the level of agreement if the fraud risk management measures in the table below are effective in managing fraud by ticking (√) in the applicable column.

| No. | Preventive Measure                                       | Strongly Disagree: 1 | Disagree: 2 | Neutral: 3 | Agree: 4 | Strongly Agree: 5 |
|-----|--|----------------------|-------------|------------|----------|-------------------|
| 1.  | Segregation of duties.                                   |                      |             |            |          |                   |
| 2.  | Fraud reporting policy.                                  |                      |             |            |          |                   |
| 3.  | Proper due diligence on customers.                       |                      |             |            |          |                   |
| 4.  | Enhanced audit committees.                               |                      |             |            |          |                   |
| 5.  | Staff rotation policy.                                   |                      |             |            |          |                   |
| 6.  | Reference checks on employees.                           |                      |             |            |          |                   |
| 7.  | Anti-fraud training program.                             |                      |             |            |          |                   |
| 8.  | Positive employee recognition.                           |                      |             |            |          |                   |
| 9.  | Corporate code of conduct.                               |                      |             |            |          |                   |
| 10. | Code of sanction against supplies/contractors.           |                      |             |            |          |                   |
| 11. | Internal audit department.                               |                      |             |            |          |                   |
| 12. | Fraud risk assessments.                                  |                      |             |            |          |                   |
| 13. | Internal control system.                                 |                      |             |            |          |                   |
| No. | Detective Measure  | Strongly Disagree: 1 | Disagree: 2 | Neutral: 3 | Agree: 4 | Strongly Agree: 5 |
| 1.  | Fraud hotlines.  |                      |             |            |          |                   |
| 2.  | Proactive data monitoring/analysis.                      |                      |             |            |          |                   |
| 3.  | Operational audits.                                      |                      |             |            |          |                   |
| 4.  | Financial ratios.  |                      |             |            |          |                   |
| 5.  | Forensic accountants.                                    |                      |             |            |          |                   |
| 6.  | Data mining.   |                      |             |            |          |                   |
| 7.  | Continuous auditing.                                     |                      |             |            |          |                   |
| 8.  | Bank reconciliation.                                     |                      |             |            |          |                   |
| 9.  | Ethics officer.  |                      |             |            |          |                   |
| 10. | Surprise audits.   |                      |             |            |          |                   |
| 11. | Cash reviews.  |                      |             |            |          |                   |
| 12. | Inventory observation.                                   |                      |             |            |          |                   |
| 13. | Internal audit review.                                   |                      |             |            |          |                   |
| No. | Corrective Measure                                       | Strongly Disagree: 1 | Disagree: 2 | Neutral: 3 | Agree: 4 | Strongly Agree: 5 |
| 1.  | Referral of fraud cases to law enforcement institutions. |                      |             |            |          |                   |
| 2.  | Prosecution and imprisonment.                            |                      |             |            |          |                   |
| 3.  | Prosecution and payment of hefty fines.                  |                      |             |            |          |                   |
| 4.  | Job termination.   |                      |             |            |          |                   |
| 5.  | Suspension from work duty.                               |                      |             |            |          |                   |

### SECTION C: LEVEL OF FRAUD OCCURRENCE

Rate based on the level of agreement if the following types of fraud occurs on listed companies in Kenya by ticking (√) in the applicable column.

| No.                              | Form of Fraud Occurrence  | Strongly Disagree: 1 | Disagree: 2 | Neutral: 3 | Agree: 4 | Strongly Agree: 5 |
|----------------------------------|---|----------------------|-------------|------------|----------|-------------------|
| <b>Asset Misappropriation</b>    |   |                      |             |            |          |                   |
| 1.                               | Stealing the firm's cash  |                      |             |            |          |                   |
| 2.                               | A person uses his/her profession to create expenses for personal or inappropriate use.  |                      |             |            |          |                   |
| 3.                               | Increasing costs in order to pocket some money.   |                      |             |            |          |                   |
| 4.                               | Theft of cash receipts.   |                      |             |            |          |                   |
| 5.                               | Use of company's assets for personal gain.  |                      |             |            |          |                   |
| <b>Corruption</b>                |   |                      |             |            |          |                   |
| 6.                               | Conflict of interest involving selling of goods to a close relation at a cheaper price than the actual price.                       |                      |             |            |          |                   |
| 7.                               | Purchasing scheme involving favoring a supplier related to an employee who had a financial interest in the purchasing transactions. |                      |             |            |          |                   |
| 8.                               | Bribery.  |                      |             |            |          |                   |
| 9.                               | Making false or illegal gratuity payment for personal gain.   |                      |             |            |          |                   |
| 10.                              | Employee assisting to secure a payment involving an inflated invoice.   |                      |             |            |          |                   |
| 11.                              | Firms makes the winning party to get contracts at competitive prices.   |                      |             |            |          |                   |
| <b>Financial Statement Fraud</b> |   |                      |             |            |          |                   |
| 12.                              | Companies presents false revenues in financial statements.  |                      |             |            |          |                   |
| 11.                              | Companies overstates their liabilities and expenses.  |                      |             |            |          |                   |
| 13.                              | Assets are improperly valued in order to make the balance sheet look good.  |                      |             |            |          |                   |
| 14.                              | Misleading financial disclosures are made to paint a financially ailing firm to look good.  |                      |             |            |          |                   |

**THANK YOU FOR YOUR RESPONSES IN THIS QUESTIONNAIRE AND PLEASE CHECK IF YOU HAVE RESPONDED TO ALL THE QUESTION ITEM**

**Appendix Three: List of Firms Listed in the Kenyan NSE**

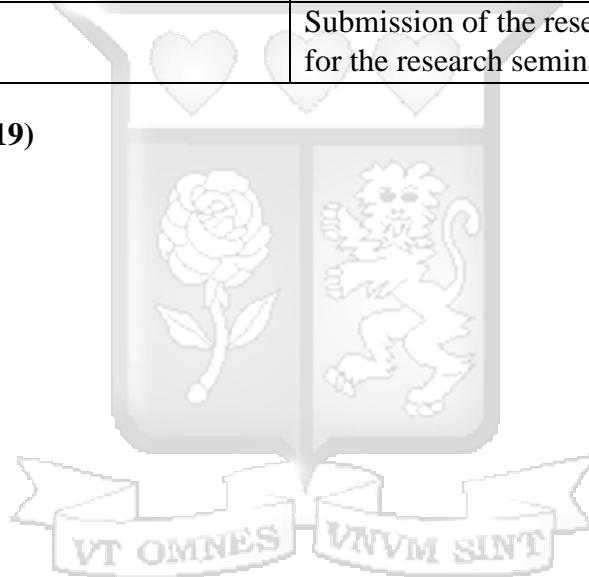
|  |   |
|--|---|
| <b>Agricultural</b>  | <b>Energy and Petroleum</b>   |
| 1. Eaagads Ltd.<br>2. Kapchorua Tea Co. Ltd.<br>3. Kakuzi Ltd.<br>4. Rea Vipingo Plantations Ltd.<br>5. Sasini Ltd.<br>6. Willianson Tea Kenya Ltd.<br>7. Limuru Tea Co. Ltd   | 39. Total Kenya.<br>40. KenGen Ltd.<br>41. Kenya Power & Lighting Co. Ltd.<br>42. Umeme Ltd.  |
| <b>Automobiles and Accessories</b>   | <b>Exchange Traded Fund</b>   |
| 8. Car and General (K) Ltd.  | 43. New Gold Issuer (RP) Ltd.   |
| <b>Banking</b>   | <b>Manufacturing and Allied</b>   |
| 9. Barclays Bank Ltd.<br>10. Stanbic Holdings PLC.<br>11. I & M Holdings Ltd.<br>12. Diamond Trust Bank Kenya Ltd.<br>13. HF Group Ltd.<br>14. KCB Group Ltd.<br>15. National Bank of Kenya Ltd.<br>16. NCBA Group PLC.<br>17. Standard Chartered Bank Ltd.<br>18. Equity Group Holdings.<br>19. The Cooperative Bank of Kenya.<br>20. BK Group PLC. | 44. B.O.C. Kenya.<br>45. British American Tobacco Kenya Ltd.<br>46. Carbacid Investment Ltd.<br>47. East African Breweries Ltd.<br>48. Mumias Sugar Co. Ltd.<br>49. Unga Group Ltd.<br>50. Eveready East Africa Ltd.<br>51. Kenya Orchards Ltd.<br>52. Flame Tree Group Holdings Ltd. |
| <b>Commercial Services</b>   | <b>Investment</b>   |
| 21. Express Ltd.<br>22. Sameer Africa PLC.<br>23. Kenya Airways Ltd.<br>24. Nation Media Group.<br>25. Standard Group Ltd.<br>26. TPS Eastern Africa (Serena) Ltd.<br>27. Scan group Ltd.<br>28. Uchumi Supermarket Ltd.<br>29. Longhorn Publishers Ltd.<br>30. Deacons (East Africa) PLC.<br>31. Nairobi Business Ventures Ltd.                     | 53. Olympia Capital Holdings Ltd.<br>54. Centum Investment Co. Ltd.<br>55. Trans-Century Ltd.<br>56. Home Africa Ltd.<br>57. Kurwitu Ventures.  |
| <b>Construction and Allied</b>   | <b>Insurance</b>  |
| 32. Athi River Mining.<br>33. Bamburi Cement Ltd.<br>34. Crown Paints Kenya PLC.<br>35. E.A. Cables Ltd.<br>36. E.A. Portland Cement Ltd.  | 58. Jubilee Holdings Ltd.<br>59. Sanlam Kenya.<br>60. Kenya Re-Insurance Corporation Ltd.<br>61. Liberty Kenya Holdings Ltd.<br>62. CIC Insurance Group Ltd.<br>63. Britam Holdings Ltd.  |
| <b>Telecommunication and Technology</b>  | <b>Real Estate Investment Trust</b>   |
| 37. Safaricom PLC.   | 64. Stanlib Fahari I-REIT.  |
| <b>Investment Services</b>   |   |
| 38. Nairobi Securities Exchange.   |   |

**Source: NSE (2020)**

### Appendix Four: Timeline for the Study

| <b>TIMELINE OF THE RESEARCH STUDY</b>                |  |
|--|--|
| 18 <sup>th</sup> to 21 <sup>st</sup> January 2020    | Corrections of the research project based on the comments of the panel members and application and retrieval of research permit letter from NACOSTI. |
| 23 <sup>rd</sup> and 24 <sup>th</sup> January 2020   | To conduct a pilot study.  |
| 25 <sup>th</sup> and 26 <sup>th</sup> January 2020   | Analysis of the pilot study results and correction of the questionnaire to enhance its validity based on the recommendations of the respondents.     |
| 27 <sup>th</sup> January to 1 <sup>st</sup> May 2020 | Main data collection exercise.   |
| 4 <sup>th</sup> May to 28 <sup>th</sup> May 2020     | Data analysis, interpretation, discussion and production of the final research report.   |
| June 2020  | Submission of the research report and preparation for the research seminar defense.  |

**Source: Researcher (2019)**



## Appendix Five: Budget for the Study






### BUDGET PLAN

|   | KShs. | KShs.        |
|---|-------|--------------|
| Cost of printing 1 questionnaire that will be used for photocopying the rest of the 164 questionnaires (1×3×10) | 30    |              |
| Cost of photocopying the rest of the 164 questionnaires (142×3×3)   | 1476  | 1506         |
| Transportation cost 8000  |       |              |
| Remuneration expense for the two research assistants (15000×2)  |       | 30000        |
| Printing and Binding costs (5 copies)   |       | 3500         |
| <b>TOTAL</b>  |       | <b>43006</b> |

Source: Researcher (2019)



## Appendix Six: NACOSTI Research License

|  |  |
|--|--|
| <br><b>REPUBLIC OF KENYA</b>  | <br><b>NATIONAL COMMISSION FOR<br/>SCIENCE, TECHNOLOGY &amp; INNOVATION</b>                            |
| Ref No: <b>759270</b>  | Date of Issue: <b>09/April/2020</b>  |
| <b>RESEARCH LICENSE</b>  |  |
|   |  |
| <b>This is to Certify that Ms.. Severinah Wanjiru Mwangi of Strathmore University, has been licensed to conduct research in Kiambu, Mombasa, Nairobi on the topic: Effect of Fraud Risk Management and Firm Size on the Level of Fraud Occurrence among Listed Companies in Kenya for the period ending : 09/April/2021.</b> |  |
| License No: <b>NACOSTI/P/20/4717</b>   |  |
| <b>759270</b><br>Applicant Identification Number   | <br>Director General<br><b>NATIONAL COMMISSION FOR<br/>SCIENCE, TECHNOLOGY &amp;<br/>INNOVATION</b> |
|  | Verification QR Code<br>  |
| <b>NOTE: This is a computer generated License. To verify the authenticity of this document,<br/>Scan the QR Code using QR scanner application.</b>   |  |