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**PERCEPTION OF THE EFFECTIVENESS OF FRAUD PREVENTION  
AND DETECTION TECHNIQUES IN KENYAN COUNTY  
GOVERNMENTS**



**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT  
FOR THE AWARD OF DEGREE OF MASTER OF COMMERCE AT  
STRATHMORE BUSINESS SCHOOL, STRATHMORE UNIVERSITY**

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

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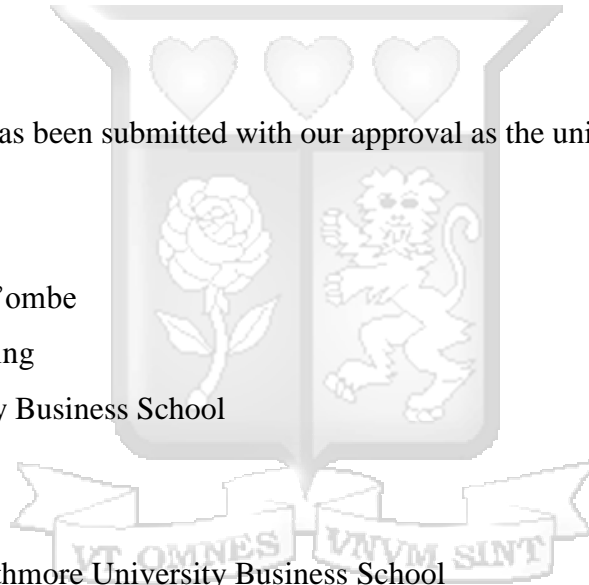
### Approval

This research thesis has been submitted with our approval as the university supervisors

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## ABSTRACT

There is need for adoption that would curb the likelihood of fraud happening. Failure of these measures to curb should be curtailed through development of fraud identifiers and preventive mechanisms. Reliance of audit report by County government may fail to achieve desired results even long after it has been effected. This may have consequential effect on loss of organization sustainability that would collapse the system deployed for service delivery. Moreover, this discovery may lead to reactive response instead of proactive approach by County government. Consequently, the current study sought to establish the perception of the effectiveness of fraud prevention and detection techniques in Kenyan county governments. Particularly, to establish the fraud prevention and detection techniques implemented in Kenyan county governments. To analyze the perceived effectiveness of fraud prevention and detection techniques implemented in Kenyan county governments. The study was anchored on the fraud triangle theory and fraud management lifecycle. The study adopted positivism research philosophy and mixed research design. Primary data was collected through questionnaires administration among 3 respondents (internal auditor, accountant and external auditor) from 47 counties. Similarly 3 respondents (An accountant, senior internal auditor and senior forensic investigator) responsible for county audits drawn from the Auditor General's Office partook an in-depth interview. A total of 144 respondents were considered in the study. Quantitative data was analysed through use of descriptive statistics and Kruskal-Wallis. Qualitative data was analysed through content and thematic analysis. Results of the study indicates that County government in Kenya has adopted that fraud prevention techniques are often implemented in Kenyan county governments. Accordingly, with the mean of 3.9, it is incidental that the respondents have acknowledged to the parameters of fraud detection techniques that those measures are always implemented. It was found that most respondents consented that, the perceived fraud prevention techniques on fraud in county governments were very effective as shown by the grand mean of 4.2. Majority of the respondents generally agreed that indeed the perceived effectiveness of fraud detection techniques on fraud in Kenyan county governments was very effective as shown by the grand mean of 4.2. Consequently, it can be deduced that according to the respondents, the perceived fraud detection techniques on fraud in county governments were very effective. It was recommended that the county government should lay emphasis on enhancing contract reviews, discovery sampling and fraud reporting policy among other techniques for fraud prevention. There is need for analytical review and audit committee as techniques for fraud detection should be enhanced at the county level. There should be harmony with regards to the execution of finance activities by employees at the county level and those responsibilities of the Auditor General's Office in order to mitigate material misstatement which is regularly discovered by the Auditor General's report.

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>i</b>
<b>ABSTRACT</b> .....	<b>ii</b>
<b>TABLE OF CONTENTS</b> .....	<b>iv</b>
<b>LIST OF TABLES</b> .....	<b>vii</b>
<b>LIST OF FIGURES</b> .....	<b>viii</b>
<b>LIST OF APPENDICIES</b> .....	<b>ix</b>
<b>DEDICATION</b> .....	<b>x</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>xi</b>
<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>xii</b>
<b>OPERATIONMAL DEFINITION OF KEY TERMS</b> .....	<b>xiii</b>
<b>CHAPTER ONE</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the Study .....	1
1.1.1 Fraud Prevention .....	4
1.1.2 Fraud Detection.....	5
1.1.3 Kenya County Governments.....	5
1.2 Problem Statement .....	6
1.3 Research Objectives.....	7
1.3.1 General Objective.....	7
1.3.2 Specific Objectives .....	7
1.4 Research Questions.....	8
1.5 Value of the Study .....	8
1.5.1 Government and Policy Formulators .....	8
1.5.2 County Government.....	8
1.5.3 Researchers and Academicians.....	8
1.6 Scope of the Study .....	9
<b>CHAPTER TWO</b> .....	<b>10</b>
<b>LITERATURE REVIEW</b> .....	<b>10</b>
2.1 Introduction.....	10

2.2 Theoretical Framework.....	10
2.2.1 The Fraud Triangle Theory.....	10
2.2.2 The Fraud Management Lifecycle.....	11
2.3 Empirical Review.....	12
2.3.1 Fraud Prevention Techniques .....	13
2.3.2 Fraud Detection Techniques .....	16
2.3.3 Perception of the Effectiveness of Fraud Prevention Techniques .....	20
2.3.4 Perception of the Effectiveness of Fraud Detection Techniques .....	22
2.4 The summary of Literature Review and Research Gap .....	24
2.5 Operationalization of the Fraud Prevention and Detection Techniques .....	25
<b>CHAPTER THREE .....</b>	<b>29</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>29</b>
3.1 Introduction.....	29
3.2 Research Philosophy.....	29
3.3 Research Design.....	30
3.4 Population and Sampling Methodology.....	31
3.5 Data Collection Techniques and Procedure.....	32
3.6 Research Quality.....	33
3.7 Data Analysis Techniques.....	34
3.8 Ethical Considerations.....	35
<b>CHAPTER FOUR.....</b>	<b>36</b>
<b>RESULTS AND DISCUSSIONS .....</b>	<b>36</b>
4.1 Introduction.....	36
4.2 Response Rate.....	36
4.3 Reliability Test.....	37
4.4 Demographic Information.....	37
4.4.1 Gender.....	37
4.4.2 Government Body.....	38
4.4.3 Job Occupation.....	38
4.4.4 Highest Level of Education .....	39

4.4.5 Current Certification .....	40
4.4.6 Years of Professional Experience .....	40
4.5 Descriptive Statistics.....	41
4.5.1 Fraud Prevention Techniques Implemented in Kenyan County Governments .....	41
4.5.2 Fraud Detection Techniques Implemented in Kenyan County Governments .....	43
4.5.3 Perceived Effectiveness of Fraud Prevention Techniques on Fraud in County Governments .....	44
4.5.4 Perceived Effectiveness of Fraud Detection Techniques on Fraud in County Governments .....	45
4.6 Inferential Statistics .....	47
4.6.1 Testing of the Model Assumptions .....	47
4.6.2 Assumption of Independence.....	47
4.6.3 The Kruskal Wallis Model Test.....	48
4.7 Interview Guide Response .....	54
<b>CHAPTER FIVE .....</b>	<b>58</b>
<b>DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS ...</b>	<b>58</b>
5.1 Introduction.....	58
5.2 Discussion of Findings.....	58
5.2.1 Fraud Prevention and Detection Techniques in Kenyan County Governments .....	58
5.2.2 Perceived Effectiveness of Fraud Prevention and Detection Techniques in Kenyan County Governments .....	60
5.3 Conclusion .....	61
5.4 Recommendations.....	62
5.5 Limitations of the Study.....	63
<b>REFERENCES.....</b>	<b>64</b>
<b>APPENDICIES .....</b>	<b>71</b>

## LIST OF TABLES

<b>Table 2.01:</b> Operationalization of Fraud Prevention Techniques .....	26
<b>Table 2.02:</b> Operationalization of Fraud Detection Techniques .....	28
<b>Table 4.01:</b> Response Rate.....	36
<b>Table 4.02:</b> Reliability Test.....	37
<b>Table 4.03:</b> Gender.....	38
<b>Table 4.04:</b> Government Body.....	38
<b>Table 4.05:</b> Job Occupation .....	39
<b>Table 4.06:</b> Highest Level of Education .....	39
<b>Table 4.07:</b> Current Certification .....	40
<b>Table 4.08:</b> Years of professional Experience .....	41
<b>Table 4.09:</b> Fraud Prevention Techniques Implemented In Kenyan County Governments	42
<b>Table 4.10:</b> Fraud Detection Techniques Implemented in Kenyan County Governments	43
<b>Table 4.11:</b> Perceived Effectiveness of Fraud Prevention Techniques in County Governments .....	44
<b>Table 4.12:</b> Perceived Effectiveness of Fraud Detection Techniques in County Governments .....	46
<b>Table 4.13:</b> Independent Samples Kruskal-Wallis for FPT & PFPT .....	53



## LIST OF FIGURES

<b>Figure 4.01:</b> Histogram for Fraud Prevention Techniques .....	49
<b>Figure 4.02:</b> Histogram for Fraud Detection Technique.....	50
<b>Figure 4.03:</b> Histogram for Perceived Effectiveness of Fraud Prevention Techniques....	51
<b>Figure 4.04:</b> Histogram for Perceived Effectiveness of Fraud Detection Techniques .....	52



## LIST OF APPENDICIES

<b>Appendix I:</b> Letter of Introduction .....	71
<b>Appendix II:</b> University Authority Letter .....	72
<b>Appendix III:</b> University Ethical Review Certificate.....	73
<b>Appendix IV:</b> Authority Letter from NACOSTI.....	74
<b>Appendix V:</b> Questionnaire .....	75
<b>Appendix V:</b> List of County Governments in Kenya per Region.....	83



## DEDICATION

I dedicate this thesis to Ms. Kerubo Okioga who was convinced that with a Master's degree my service delivery is enhanced, and in her own words; "I am sure when you get this masters, you will serve more; yeah yeah, yeah". To my Congregation the Franciscan Sisters of St. Anna and to the entire Catholic Church who have encouraged education to women religious and would expect improved service delivery from the knowledge developed. Finally, to Sr. Seraphine Apiyo who would have loved to celebrate the successful completion of the study but passed on untimely, her constant support and encouragement even at the time when she was unwell kept me focused

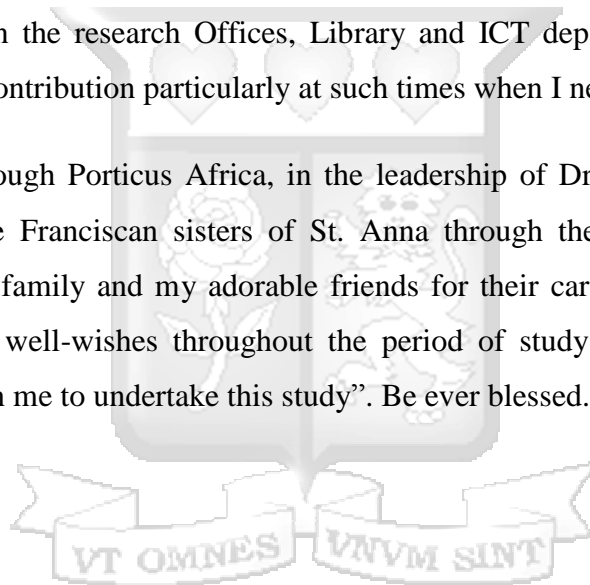


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Thanks to the accounting practitioners from the county Governments of Kenya and those of the Auditor General's office of Kenya from where the primary data were drawn; they sacrificed their time to share relevant information to the study. I also remember with appreciation the staff at Strathmore in the research Offices, Library and ICT department, my lectures and classmates for their contribution particularly at such times when I needed their services most.

To my sponsors, through Porticus Africa, in the leadership of Dr. Christine Bodewes, my Religious family, the Franciscan sisters of St. Anna through the leadership of Sr. Mary Benigna, my natural family and my adorable friends for their care, resources, inspirations, encouragements and well-wishes throughout the period of study. "Thank you all for the confidence you had in me to undertake this study". Be ever blessed.



## ACRONYMS AND ABBREVIATIONS

<b>ACCA</b>	Association of Chartered Certified Accountants
<b>CFA</b>	Chartered Financial Analyst
<b>CFE</b>	Certified Fraud Examiner
<b>CISA</b>	Certified Information Systems Auditor
<b>CPA</b>	Certified Public Accountant
<b>EACC</b>	Ethics and Anti-Corruption Commission
<b>FDA</b>	Fraud Detection Techniques
<b>FPT</b>	Fraud Prevention Techniques
<b>PFDT</b>	Perceived Fraud Detection Techniques
<b>PFPT</b>	Perceived Fraud Prevention Techniques

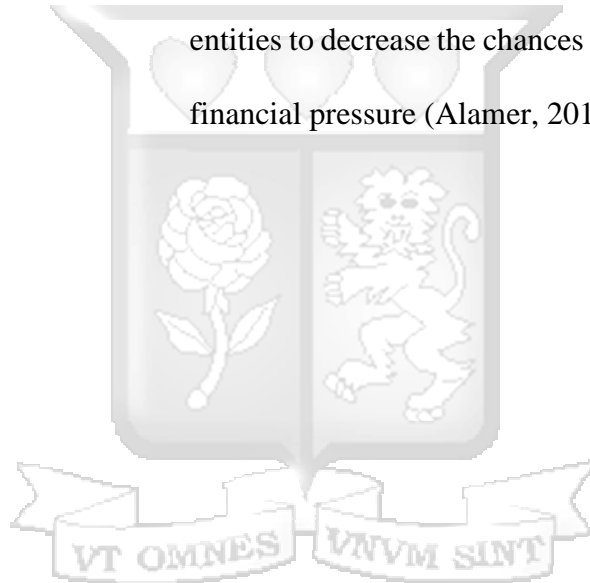


## OPERATIONMAL DEFINITION OF KEY TERMS

**Fraud** The term fraud commonly embraces actions such as stealing, exploitation, collusion, misappropriation, enticement and coercion (Wells, 2007).

**Fraud Detection** These are measures adopted by public and private entities to minimize the likelihood of institutional resources spillage (Smith, 2012)

**Fraud Prevention** These are strategies deployed by public and private entities to decrease the chances of resources wastage and financial pressure (Alamer, 2015)



# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Fraud remains costly and adversely shakes financial performance of organizations at any one time. According to ACFE (2010), fraud resulted to losses close to \$3.5 trillion globally through asset misappropriation, corruption and even financial statement fraud. It is a problem in the public sector since government institutions were established (Douglas, 2018) and is a consequence of poor governance that is detrimental to any economic development (Shah, 2012). The accumulative speed of globalization and the development in technology has inflamed the degree of fraud (Zagaris, 2010). According to Kranacher, Riley and Wells (2010), fraud chances can be enormously hard to discover because of the complexity in technology; hence, organizations may use significant means trying to discover and preventing fraud.

According to Silverstone & Davia (2005), there are three main categories of fraud: openly identified and already uncovered fraud; that which is discovered by the institution but is still concealed to the public and fraud which is yet to be identified. Another category of fraud include, that which is committed by management employee including financial statement fraud, bribery and corruption and the like and finally, the Employee fraud which may also involve asset misappropriation and the misappropriation of material facts (Elliot & Willingham, 1980). Silverstone and Sheetz (2004) additionally emphasized on another category of fraud as internal and external.

Current operating environment has been a recipe for fraud. Financial fraud is credited with collapse of large companies such as Enron, WorldCom, Satyam and Lucent. Hence the need to develop mechanisms for identifying and evaluating financial frauds (Yu et al., 2007). Financial fraud is a threat to accounting and audit profession and the need for development of measures to curb it. Although, fraud can be detected effectiveness of fraud detection is an uphill task in accounting profession. Traditionally, auditors could not manage to curb fraud

due to lack of requisite data mining skills, inexperience due to its low frequency and use of non-computerised computer systems (Ngai et al., 2011).

In an Indian perspective it is illustrated that the importance and depth of corporate fraud through a study reported that 25% of business firms are affected by financial misconduct. Fraud of Corporate organizations encompasses huge amount of money and causes hostility on several sectors. A survey conducted in 2012 revealed that 0.5 of fraud committers were the employees and were not drawn from the management (KPMG, 2013). In the year 2009, this category of fraud perpetrators in contrast, represented about 0.34, a frightening details to the government and management, as there were increase of 0.16 in the following year. The other group of fraud culprits were customers, followed by those who held positions of management representing 0.18 respectively. Others discovered were perpetrators who provide services at 0.08 and suppliers at 0.06. The information further revealed that stealing of outgoing funds was highest at 0.67 in 2013 compared to 0.57 of 2009 assessment. Stealing of physical asset was classified at 0.58 in rank followed by theft of incoming resources at 0.34. By individual assessment, the greatest kinds of fraud were stealing of cash and cash receipts (0.26), followed by wrong billing of 0.16 and stealing of stock at 0.13 (KPMG Malaysia, 2013). Ernst and Young (2014) claimed that governments and corporations contented that corruption and bribery are detrimental to businesses and the society, and thus critical actions should be engaged to decrease them.

Increased fraud cases in Nigeria has been blamed on dilapidation of provision of social amenities by government. According to Modugu and Anyaduba (2013) there is negative perception towards government auditors since they have failed to rescue money laundering and embezzlement of public resources. Consequently, the need for forensic auditing has been called for. The situation is grave since 65% of revenue generated in Nigeria is incurred by only 20% of Country population (Abdullahi & Mansor, 2015). This creates skewed distribution of resources. Although, Nigeria the greatest oil producer in Africa, at least 70% of its population leaves below poverty line courtesy of corruption and mismanagement of resources (Adebisi & Gbegi, 2015).

Fraud is a big problem in Kenya since country's independence in 1963 (Nyamu, 2012). The inception of the devolved county governments' systems of 2013 has not improved the situation

either, despite the fact that several laws like the Bribery Act 2016, Public Procurement & Disposals Act 2016 and Proceeds of Crime & Anti-Money Laundering Act 2009 were put in place to prevent fraud. The Ethics and Anti-Corruption Commission (EACC) report of 2016 survey reveals that individuals pay bribes to obtain government services. Wajir County documented the greatest (90%) amount of those seeking public services paid bribes for the services while Meru County recorded (88.5%), Trans Nzoia County (83.3%) and Kajiado County (81.5%) (EACC, 2018).

The 2016 Auditor General report indicated that some counties like West Pokot sustained excess expenses contrary to Public Finance Management Regulations 2015. The same report shows that Wajir County had cases of unaccounted goods while Uasin Gishu County had cases of inaccuracies in financial statements and unreconciled revenue (Auditor General, 2016). The same Auditor General's Report revealed that most of the Counties in Kenya lack an independent audit unit and an audit committee to monitor the entity governance process, accountability process and control systems (Auditor General, 2016). This gives an impression that most Counties have a challenge with the fraud prevention and detection techniques implementation and have several fraud cases reported, it also implies that the Counties either have a weak fraud detection and prevention techniques or have not implemented the techniques that had previously been recommended.

Kimani (2012) recognised extents of fraud to comprise lack of employment, thirst of power and control, and the near total decay of an organisation, poor infrastructures, inconsistent water supply, poor health services and lack of other social needs. However, in the context of county governments in the devolved systems, sound fiscal health is imperative to ensuring effective operation of county governments. For this reason, periodic assessment of the financial condition of county governments is necessary. Looting of public resources continues in public administration regardless of the control strategies employed to combat fraud. The Monitoring Unit of efficiency, the office of internal audit, from the Ministry of finance, state corporation inspectorate, the Auditor General's office and the Anti-Corruption Commission of Kenya were developed to sanction effective controls systems and techniques that deals with issues related to fraud in Kenya (Oguda, Odhiambo & Byaruhanga, 2015).

In the study Oguda et al., (2015) it was intended to determine the influence of internal controls on fraud prevention and detection within the Kakamega County District treasury. These findings exposed an existence of substantial connection between the internal control structures and prevention and detection of fraud in the treasury of the District. The recommendation of the study specified an effective and efficient internal control guidelines and measures that ought to be employed in order to prevent and detect fraud within the treasury. Conversely it can be assumed that County governments are associated with weak controls generally and lack of respect for adherence to rules, regulations and controls by the elected officials and senior employees of the county governments who are in most cases the accounting officers of their respective offices.

### **1.1.1 Fraud Prevention**

The term fraud is a universal word describing a thoughtful act of misleading another person, resulting into destruction, harm or unwarranted cost. The fraud prevention is a deliberate action that can be single out and described in several ways including all processes used to cease fraud from happening (Rezaee, 2002).

In a report of 2010 to the Nations about Occupational Fraud and Abuse, institutions suffer financial losses of up to 0.05 their annual revenue to fraud. Fraud prevention therefore demands for actions to end fraud from happening (Bolton & Hand, 2002). According to Sengur (2012) external audit is more effective for fraud prevention. Similarly, appropriate guideline is best for preventing false financial reports (Alamer, 2015). According to Albrecht et al., (2009) better prevention of fraud may help reduce the financial pressure on governments through effective financial reporting. This is why governments across the globe responds to fraudulent actions by inaugurating laws and regulatory reforms intended to encourage organisations becoming extra independent.

In facing threats of fraud, organizations need to be clear about instituting effective mechanism to prevent fraud. Fraud prevention techniques are designed to help lessen its risks from happening. The techniques may include administrative communications about prejudice to deceitful actions, implementing clear performance and employment compensation schemes,

while most expressively suggesting a culture of fraud alertness (PwC, 2012). PwC (2014) in its survey shown that 0.37 of respondents worldwide testified that fraud actually occurred within the organizations, and the amount of economic misconducts seemed to create a persistent menace to businesses. According to Nyamu (2012) while talking about fraud, the fact is the calculated approach and to recognise the reality of fraud threats and the opportunities for savings that exists. This acknowledgement should begin from the top management leading to performance.

### **1.1.2 Fraud Detection**

The term fraud commonly embraces actions such as stealing, exploitation, collusion, misappropriation, enticement and coercion (Wells, 2007). According to Bolton & Hand (2002) the consequence of fraud can be seen in the collapse of an organization, huge investment loss, substantial legal costs, confinement of important persons, reduction of confidence in capital markets of a country, injury to status of organizations worldwide. Detection of fraud comes after the deterrence of fraud is unsuccessful. It involves recognising fraud once it has been committed.

Most effective techniques of preventing fraud includes but not limited to reducing the motive of workers and improving the internal controls systems hence reducing chances and making sure that there is no rationalization about fraud (CIMA, 2009). Fraud detection technique in its nature must be endlessly implemented as the tricks of fraud progresses. The method of preventing and detecting fraud through auditing, may not sufficiently be effective, the technique enables fraud to be noticed several months after the occurrence. Such delayed detection would only have remedy on punishment demonstrating a reactive approach, instead of a proactive one where action is taken to prevent the occurrence.

### **1.1.3 Kenya County Governments**

Kenyan Constitution created 47 counties based on the previous administrative Districts formed under the Provinces and Districts Act of 1992. The obligation of County Government is to implement development plans in collaboration with the National Government. This is annually

done through budget allocation. In spite of the annual budget allocation, the County Governments experience financial challenges occasioned by corruption, misappropriation of funds as well as ineffective financial systems. Public sector on the other hand has experienced massive corruption and fraud related cases Adari, (2007). Preventing fraud therefore demands extra embracing of moral practice and honest partnership between County and National Governments with strategic approach to fraud.

County governments in Kenya are faced with risks emanating from poor forensic audits as well as internal control weaknesses which more often than not result to financial losses for the counties (Njoroge, 2003). Njui (2012) explored the usefulness of audit and internal control in stimulating good governance in the public sector in Kenya. He also established that the control has the positive influence on corporate governance in the government offices followed by management of risk while compliance and consulting had the bear minimum. It follows therefore that for county governments, it is about using local knowledge, ability and a unit of purpose to handle fraud, whereas the responsibility of National Government remains to create the relevant environments for county governments to take up such initiatives.

## **1.2 Problem Statement**

Profit and non-profit organizations are exposed to multitude of frauds. They can be an outcome of customers, supplier or customers. In retail set up there are chances of shop lifting that may expose venture into revenue losses. In government situation frauds can be perpetuated through denied provision of government services or exaggeration of pricing for inputs required. It perceived that there is need for adherence to institutional policies and legal procedures failure to which massive government entities will be exposed to losses. This would lead to use of public offices for personal gain.

There is need for adoption that would curb the likelihood of fraud happening. Failure of these measures to curb should be curtailed through development of fraud identifiers and preventive mechanisms. Reliance of audit report by County government may fail to achieve desired results even long after it has been effected. This may have consequential effect on loss of organization

sustainability that would collapse the system deployed for service delivery. Moreover, this discovery may lead to reactive response instead of proactive approach by County government.

While, majority of past studies in Malaysia, about fraud prevention and detection techniques focused mainly on the private sector with a few in the public sector, the studies stated that audit procedures were useful in detecting fraud in the public institutions (Bierstaker, Brody & Pacini, 2006; Smith, 2012; Oluwagbemiga, 2010; Durtschi, Rahman & Anwar, 2014). Interestingly, most of these studies discovered that analytical procedures were the most effective techniques. Although previous studies have considered the issue of effectiveness of some of the fraud detection techniques (Bierstaker et al., 2006), the findings mostly have been either statistical analyses or survey based. To justify these results, Munir et al., (2016) states that, there is need to assess the practices in various sectors.

While these discoveries are essential, and significantly contributed to the current literature, it is absolutely essential to explore the perception of the effectiveness of these techniques in a developing African country like Kenya. Furthermore, these studies has led to methodological gaps since they relied on parametric analysis criterion on non-parametric data. The choice for parametric analysis were carried out in absence of requisite diagnostic tests on normality and uniformity of variance. There are geographical gaps from past studies since most of them considered private sector corporations from developed economies whose strategies on fraud detection may be superior compared to local.

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

To establish the perception of the effectiveness of fraud prevention and detection techniques in Kenyan county governments

#### **1.3.2 Specific Objectives**

- i. To establish the fraud prevention and detection techniques implemented in Kenyan county governments.

- ii. To analyze the perceived effectiveness of fraud prevention and detection techniques implemented in Kenyan county governments.

#### **1.4 Research Questions**

- i. What are the fraud prevention and detection techniques implemented in Kenyan county governments?
- ii. What is the perceived effectiveness of fraud prevention and detection techniques implemented in Kenyan county governments?

#### **1.5 Value of the Study**

##### **1.5.1 Government and Policy Formulators**

The finding of this study may help the Kenyan Government and policy formulators to come up with policy framework based on the recommendations that the study establishes

##### **1.5.2 County Government**

The results of the study might assist in identifying the gap within the County governments in Kenya. It was also the researcher's belief that this study might benefit the Management team and those charged with internal forensic audits in County Governments since they might implement and streamline the best techniques.

##### **1.5.3 Researchers and Academicians**

The findings of the study adds value to future researchers, scholars and academicians who desire to make a research inquiry about the effectiveness of fraud prevention and detection techniques in Kenyan county governments. This study also builds on the future literature and bridges the research gap.

## 1.6 Scope of the Study

The focus of study was on all the 47 Counties in Kenya. Participants of the research investigation from the counties comprised of accountants, internal auditors and external auditors who were expected to have sufficient understanding on fraud prevention and detection techniques and were the direct implementers of public policy with regards to financial related issues. From the Auditor General's Office, the respondents comprised of one accountant, one internal auditor and one forensic investigator who were selected through a purposive sampling.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The chapter entails theoretical models applicable to the study which includes fraud triangle theory and fraud management lifecycle theory. It also entails the existing literature on fraud prevention and detection techniques and why it is needed for implementation by organizations based on the studies reviewed. The chapter entails the similarities and contrasts in findings of various studies conducted in various sectors and geographical set-ups to establish the effectiveness of fraud prevention and detection techniques. It also entails the research gap to be bridged. Finally, the chapter closes with an illustration on how the fraud prevention and detection techniques are to be operationalized guided by the existing literature.

#### 2.2 Theoretical Framework

This section presents a theoretical review on fraud prevention and detection techniques and their effectiveness. This study is informed by the theory of fraud triangle and fraud management lifecycle.

##### 2.2.1 The Fraud Triangle Theory

The fraud triangle theory was developed by (Cressey, 1953). In the year 1950 the criminologist carried out a study to know the motives behind people committing fraud and examined 250 criminals within 5 months (Abdullahi, Mansor & Nuhu, 2015). From the findings (Cressy, 1953) discovered that fraud is committed based on three major reasons; pressure, opportunity and rationalization. Hence the birth of the fraud triangle theory.

Pressure is one reason that leads somebody to perpetuate a fraudulent action (Ruankaew, 2016). Pressure motivated factors that can lead an individual in committing fraud includes, a pressing financial need to pay a personal debt or hospital bills, greed. Opportunity on the other

hand, is a weakness in an organization that presents a chance for an employee with powers to use that power at his or her own advantage to perpetuate fraud without being easily identified (Rae & Subramanian, 2008; Kassem & Higson, 2012). Therefore when a firm's internal control system is weak, it presents a great opportunity to commit and hide fraud. Hooper and Pornelli (2010), contended that an individual may be faced with excess pressure, but still do not commit fraud unless an opportunity exists. This means that weak fraud prevention or detection techniques leads to fraudulent issues.

Finally, rationalization which is personal justification of a fraudulent act occurs when a fraudster has to convey different types of morally acceptable deeds used to justify the idea of perpetuating a fraud crime. Instances of rationalization could be; "everyone does it", "I was underpaid and had to compensate for the loss" or "I just needed is like others do" among other examples (Cressey, 1953)

The relevance of fraud triangle theory to the study given the fact that the accounting practitioners from whom the data is drawn have the opportunity, may be in pressure of financial need and can equally rationalize their financial processes' executers and policy implementers and may choose to implement the systems or ignore the policies for their own personal interest. The theory supports the essence of examination of fraud detection and prevention measures adopted by Kenyan County government.

### **2.2.2 The Fraud Management Lifecycle**

According to Wilhelm (2004), effective management of fraud management lifecycle begins by mutually accepting different phases in the cycle. This is a system where by every phase of the cycle is aggregated and interconnected. It has interdependent and independent actions, purposes and procedures (Albrecht, 2000). The fraud management lifecycle consists of four stages namely; Deterrence stage, involving ending fraud before its occurrence. Deterrence is realized by generating fear of penalties that discourages fraudulent activity from being tried (Kimani, 2011). The second stage which is regulatory procedures must pursue preventive value, decreasing loss, operational scalability and cost effectiveness (Wright, 2007). These policy development may include continuously congregating the circumstances in the analysis

stage, combining it with internal, external and interactive environmental factors in order to create focused policies (Wilhelm, 2004). Those who make policies are mostly leaders in the fraud management organization and they consider all disciplines within the fraud management department as well as the needs of the rest of the organization at large (Hassink et al., 2010).

The investigation stage includes gaining ample proof besides evidence to end deceitful action. The investigation may be concentrated on three main areas; internal investigations, external investigations and application of law (Albrecht, et al., 2009). Internal investigations includes examinations of workers, contractors, suppliers among others while external investigations include enquiries on consumers, fraudsters and the like (Wilhelm, 2004). Law application management as further argued by Gottschalk (2010) provide both an incremental boost in deterrence and the conservation of an effective connection with law enforcement. Lastly the prosecution stage focuses on prosecution and legal authorities (Wilhelm, 2004). The purpose of prosecution in fraud-related issues is to discipline the perpetrator in an effort to stop more stealing, institute, sustain and improve the organizations' name (Albrecht et al., 2009).

The relevance of this theory is pegged on the fact that fraud management life cycle involves deterrence stage which is stopping fraud before it happens which also speaks to the prevention as well as detection of fraud in an organization. In this case financial practitioners at the county governments' offices who are managing the financial processes can decide never to give attention to the policies that points to preventing or detecting fraud so as to give them opportunity for personal gains.

### **2.3 Empirical Review**

Firms have to institute effective fraud prevention and detection techniques to lessen the likelihoods of fraud from occurring and mitigate financial losses (Bierstaker, Brody & Pacini, 2006). Considering fraud prevention, employment of policies is ideal (Bolton & Hand, 2002). Since fraud detection comes after fraud prevention has become unsuccessful, it involves the identification of an already perpetrated action (Bolton & Hand, 2002). There is a justified need for research approaches that can facilitate investigators to prevent and detect potential fraud.

Numerous research studies based on perception have been done to establish the effectiveness of fraud prevention and detection techniques in both the private and public sectors (Bierstaker, Brody & Pacini, 2006; Jans, Lybaert & Vanhoof, 2010; Olaoye, 2009; Othman et al., 2015; Shore, 2018; Siyanbola, 2013; Efiang, Inyang & Joshua, 2016; Haron et al., 2014.). These studies have come up with policy recommendation frameworks stipulating the best techniques to be used to prevent and detect fraud in various sectors. The studies have mostly been based on perception because it is hard for a researcher to obtain secondary data from the management to assess the effectiveness of the firm's anti-fraud techniques owing to the sensitivity of the issue and fear of reputational damage.

In addition, due to the major differences that existed in terms of geographical, social, cultural and economic differences between the countries i.e. Malaysia, Mauritius, Turkey, Indonesia where most of these studies were carried out, the same generalization could not be made in Kenya, this implied that both a knowledge gap and literature gap did exist. Therefore there is need for a study to establish the perceived effectiveness of fraud prevention and detection techniques in county governments in Kenya that may have prevented the implementation of previously recommended techniques.

### **2.3.1 Fraud Prevention Techniques**

This section discusses some of the techniques that have been used by various organizations to prevent fraud.

#### ***Fraud Hotline***

Implementing fraud reporting mechanisms provides a chance of receiving fraud information from both internal and external sources. The workers should be encouraged to inform of the management of any suspicious activity without fear of victimization as the company should protect the informer (Bierstaker, et al., 2006). A study carried out by Shore (2018) established that fraud hotlines was found to be more effective in detecting fraud compared to internal controls and routine checks. The findings concurred with the research outcomes of Othman et al. (2015) who conducted a similar study in the Malaysian public sector and also established

that the accounting professionals perceived fraud hotlines as very effective in preventing and detecting fraud. In contrast, a study conducted by Efiang, Inyang and Joshua (2016) reported that fraud hotlines were perceived to be ineffective in deterring and detecting fraud in the Nigerian public sector.

### ***Password Protection***

When employees know that their supervisors are in a position of getting into the user computers and examining their work, they can be careful not to commit fraud lest they be discovered. A password can be obtained earlier ahead of accessing to tasks that deviate from the normal practice. Even though passwords are older line of computer defences, they quiet represent the most efficient and effective means in regulating access and thus deemed as an effective fraud prevention technique (Bierstaker et al., 2006).

### ***Reference Check on Employees***

Human resource Officer may seek permission of a potential employee to carry out a background check on his (employees') past performance. The check can include contacting referees, past employments, criminal convictions and the like. This process may reveal offenders who have been involved in fraudulent operations. According to Agathee and Ramen (2017) virus protection, discovery sampling, reference checks on employees and vendor contract reviews are less often used. In addition the study revealed that smaller firms seem to have less recourse on reference checks on their employees.

### ***Forensic Accounting Services***

Accounting, auditing and investigative skills are carried out by forensic accountants to conduct an examination of an institution. The investigative skills are applied when ordinary system has been exhausted. Forensic accounting provides an analysis that could be used in a law court. Fraudulent practices have contributed to the increase in losses and downfall of institutions, thus it is important to apply forensic accounting services to prevent and/or detect such fraudulent activities. According to Haron, Mohamed, Jomitin and Omar (2014) it was

established that forensic accounting is essential for an organization because it reduces the intention of fraud occurrences. Computer forensic is an effective tool to prevent such malpractices as it is the process of detecting and preventing crimes which is recorded digitally (Gavish, 2007; Dixon, 2007). However, previous research such as Ernst & Young (2003), proved that despite being a very effective technique, only about 20% of organizations across the world adopted forensic accounting to combat fraud. In contrast a study carried out by Zamzami et al., (2015) established that among the least effective of fraud prevention and detection techniques was the use of forensic accountants.

### ***Firewalls Protection***

The use of firewall controls illegal access to the system. It may be used both as the software and/or hardware level. While being used as software, Zone Alarm is synchronized with internet software programs to safeguard the information being transmitted. The hardware on the other hand stop the discovery of an organization's link to the internet. Bierstaker, et al. (2006) resolved that firewalls, password protection and computer viruses are frequently used to prevent fraud. A study of Rahman and Anwar (2014) in Malaysia about Islamic banks established that there was effective fraud prevention and detection when protection software such as firewalls and filtering software was put in in the computer. However, Zamzami et al., (2015) concluded that firewalls is a less effective fraud and prevention technique. It was also found that virus protection is most frequently used in larger firms rather than smaller ones (Agathee & Ramen, 2017)

### ***Fraud Vulnerability Reviews***

This techniques examines the organization's vulnerability to fraud. An assessment of asset and how they could be embezzled is done. The review may assist in directing an internal audit plan and specifically highlighting the greatest properties in fraud risk. Considering every class of asset, evaluation of exposure to loss aids the auditor to discover what the thieves may be seeing. Actions should then be taken to eradicate, minimalize, or at least reduce the exposure. A study by Zamzami et al., (2015) showed that the respondents' perception on fraud vulnerability

reviews was neither considered effective nor ineffective technique to help curb fraud in Indonesian Universities.

### ***Internal Control Systems***

The control structure in a business enterprise involves rules and measures proven to offer practical guarantee that the organization's intentions shall be realized. Different organizations apply different control systems, however each worker must be familiar with the system in the organization. A study carried out by Agathee and Ramen (2017), established that among the most effective procedure for fraud prevention and detection was internal control review. In addition, the Practice Guide prepared by the Australian National Audit Office and KPMG (2012) recognized internal control as one of the most effective and efficient fraud prevention tactics. Similarly, the results of Rae and Subramaniam (2008) recommends that organizations which encourage a highly ethical environment, and those that actively conduct risk management training of staff and internal audit activities, are expected to have solid internal control processes.

### ***Filtering Software***

An internet filtering software when deployed on-site, is managed through a centralized web-based administration portal to give a complete access control over the internet content network users. It is a popular online security mechanism for businesses of all sizes because of its ease of use and low maintenance overheads. While on use, the software blocks unsafe internet. It checks the request to visit the website against databases of websites known to be harboring malware or ransom ware created for the purpose of executing an attack. These databases are kept up-to-date to provide maximum network protection.

## **2.3.2 Fraud Detection Techniques**

This section discusses some of the techniques that are commonly used by various organizations to detect fraud.

### ***Continuous Auditing***

Continuous auditing may be carried out after computer queries written, (Albrecht & Albrecht, 2009). They are institutions' standard tests which are set into live corporate systems, so as to give way for continuous checking of transactions instead of waiting to audit past data during regular audit process. Zamzami et al., (2015) on the effectiveness of fraud prevention and detection techniques on the universities in Indonesia ranked continuous auditing among the least effective fraud prevention and detection technique. This fact was accredited to the inadequate use of information technology about fraud prevention and detection in the universities of Indonesia.

### ***Analytical Review***

Fraud shakes the movement of financial statement and percentages. The manipulated accounts used to cover fraud may results into abnormal relationships with other accounts that are not. Professional financial analysis can reveal existing relationships that are not expected. It may benefit such professionals to examine numerous years of financial statement performance by use of different techniques to get a clear image of the financial impression of any fraud scheme. Several analytical review techniques to be employed may comprise of budgetary controls, ratio analysis, general ledger reviews, and journal entries among others. Similarly, a study by Kyalo et al., (2012) while studying the role of fraud prevention on effective financial reporting in Nakuru County, reported that effective financial reporting steered the decrease of fraud cases in the County and recommended that this should be applied in various counties. In another examination, Okoye (2011) found that financial reporting through budgets and reconciliation was effective in prevention of fraud prevention and can significantly reduce the occurrence of fraud cases in the County Government.

### ***Maintain a Fraud Policy***

Organizations ought to generate and keep a policies of fraud to control employees. A business fraud policy ought to be different from the business code of conduct. An ideal fraud policy is obtainable from the office of the Association of Certified Fraud Examiners (ACFE). Various

opportunities of sharing such a document include employees' orientation, employee training, and annual appraisals among others. According to Kyalo, Kalio and Ngahu (2016 (Adams, Bessant , & Phelps, 2006)) county governments should formalize the policies and procedures in order to observe the requirement of financial reporting and to exhibit greater accountability to the county's stakeholders, including members of the public. Ledger-wood and White (2006) believed that the fraud policy ought to be clearly and repeatedly documented, upgraded shared with the workers. It is argued that a fraud policy must apply to everyone in the organization (Wright, 2007).

### ***Dealers' Contract Reviews***

Contract fraud may happen while a contractor dishonestly taking advantage of an arrangement to create unlawful earnings. The fraud might involve a scheme among institution's staff and the dealer or a plot between two or more sellers. Examining contract records of a contractor regularly can help to detect this type of fraud. Approved deals may as well be analysed for proof of one regular supplier who is being given contracts without an indication of genuine purpose for continuously receiving such awards. A review of this kind may disclose if enticements and/or rewards and the reason for such awards. Agathee and Ramen (2017) on the usage and perception of fraud detection and prevention techniques in Mauritius revealed that seller contract reviews ranked least of the used fraud prevention and detection techniques. The Best Practice Guide organised by KPMG (2012) acknowledged internal control as a prerequisite to ensuring effective dealer contract review which ensures prevention and detection of fraudulent acts.

### ***Discovery Sampling***

This technique is founded on an expected error rate of zero and used while the financial experts desire to establish when a population has any error suggestive fraud existence. When a situation of substantial error or fraud is discovered in a sample, the process of sampling is stopped until that error or fraud is scrutinized. However, according to Agathee and Ramen (2017) discovery sampling is one of the techniques which are less often used. In

addition, a study carried out in Indonesian universities revealed that discovery sampling was deemed to be quite expensive and thus was rarely employed (Zamzami et al., 2015).

### ***Audit Committee***

Existence of an audit committee in an institute contribute to a limited extent in preventing or detecting fraud. The committees' responsibility is to offer supervisory role to both internal and external audit and ensures that the institutions' system and structures are followed. The audit committee helps the Board of Directors in fulfilling its mandate, an oversight responsibility with respect to the entity's financial processes and the internal control system. In executing this responsibility, the audit committee evaluates management's identification of fraud risks and application of fraud prevention measures (SAS 99 .86). In contrast, James (2003) carried out a survey on internal audit arrangement and did not find any difference in the implementers' perception of financial statement fraud prevention between outsourced internal audit team and that of in-house internal audit departments when both of them report to the audit committee.

### ***Data Mining***

Although data mining software only processes small volumes of information and does not allow programmers to pay attention to suspicion on a specific type of fraud, the technique can help in reducing erroneous generalizations based on incomplete information. The technique is user-friendly and is suitable to be used in a small institution. Jans, Lybaert and Vanhoof (2010) carried out a study on internal fraud risk reduction whose findings revealed that data mining technique facilitated the assessment of current risk of internal fraud. Despite receiving high ratings on effectiveness, data mining was among the key techniques that were less implemented by accountants to reduce fraud related (Bierstaker et al., 2006).

### ***Internal Audit Unit***

The unit of internal audit in any organization implements an approved audit plan and does its tasks according to the overall strategies which includes verifying, evaluating, recommending, assessing, reviewing and investigating related activities of an organization. The report of

internal audit directs the organization's overall performance. Coram et al. (2004) established that organizations with an active internal audit unit are more likely to discover fraud early enough. In contrast, James (2003) carried out a survey on internal audit structure did not find a difference in implementers' perception of financial statement fraud prevention between outsourced internal audit teams and in house internal audit departments.

### ***Inventory Observations***

Inventory is one of the main single asset of an organization that is mostly targeted by majority of fraudsters (Wells, 2000). Inventory observations technique should be prudently applied since a careless observation during audit may cost great loss to the institution. The auditor should not depend exclusively on the employees for the inventory recording process in order to establish the actual quantity, the employees might escalate the inventory amount without the auditor's realization. Zamzami et al., (2015) and Agathee and Ramen (2017) concluded that inventory observation was among the effective fraud prevention technique.

It is important to know the extent of the implementation of fraud prevention and detection techniques and their perceived level of efficacy. This gives knowledge on perceived most effective fraud prevention and detection techniques in the context of Kenya County governments and if the perceived most effective fraud prevention and detection techniques are used to curb fraud. A policy framework can be instituted for Kenya County governments to employ the most effective fraud prevention and detection techniques in order to realistically control the fraud menace the country currently experiences.

### **2.3.3 Perception of the Effectiveness of Fraud Prevention Techniques**

Firms which are yet to experience fraud incidences and losses have always exclusively relied on intangible fraud prevention techniques such as fraud reporting policies or codes of conduct whereas those which have experienced fraud losses employs more concrete techniques such as fraud prevention training programs and whistle-blowing policies (Bierstaker, Brody & Pacini, 2006). Bierstaker et al., (2006) go ahead and state that firms equally need to employ both tangible and intangible fraud prevention techniques in order to minimize fraud incidences.

Unfortunately most studies (Omar & Abu Bakar, 2012; Rahman, 2014; Othman et al., 2015; Efiang, Inyang & Joshua, 2016) have revealed the most perceived effective prevention techniques as fraud hotlines, whistle blowing policy, use of forensic accountants but are rarely implemented to curb fraud stating that they are expensive.

Digital analysis which is an efficient technique that uses Benford's Law to assess fraudulent transactions is rarely used by the Malaysian banks to prevent or detect fraud because accounting practitioners are still unfamiliar with the technique (Rahman, 2014). Additionally a study conducted in the Malaysian government sector by Othman et al., (2015) established that whistle blowing policy, fraud hotlines and forensic accountants are rarely employed by the government institution because the Malaysian government is yet to enhance whistle blowing policies, deliver more fraud hotlines and introduce forensic accounting departments. Considering the fact that whistle blowing policies that safeguards the identity of the fraud reporter can motivate individuals to report incidences of fraud without fear of reprisals hence effective in unravelling fraud schemes that could have gone unchecked.

In addition, Haron et al (2014) revealed that forensic accountants are perceived to be important for an institution with an intention of diminishing fraud occurrences in a public sector. These research outcomes concurred with the conclusions of Othman et al, (2015) which established that forensic accountants were perceived as most effective in deterring and detecting fraud in the Malaysian public sector, the reason being that forensic accountants are professionals who comprehensively investigate financial activities to identify financial misconducts and the perpetrators behind it. Additionally they gather sufficient evidence to testify against the identified perpetrators in the court of law. Moreover the forensic accountants mitigates fraud losses by ensuring that it does not happen by collecting financial and non-financial information for the purposes of developing frameworks on how fraud can be prevented based on the information obtained about that organization.

On the other hand, Shore (2018) established that fraud hotlines was assumed to be more effective in detecting fraud compared to internal controls and routine checks. The findings concurred with the research outcomes of Othman et al. (2015) carried out a similar study in Malaysian public sector and established that the accounting professionals perceived that fraud

hotlines was very effective in fraud prevention and detection. Sofia (2016) also revealed that internal control system is greatly effective in mitigating fraud in the Big 4 Public Accounting firms in Indonesia. Additionally, it was revealed that staff rotation is an internal control mechanism and is effective in fraud deterrence (Othman et al., 2015). The Malaysian public sector conversely, Bierstaker, Brody and Pacini (2006) revealed that the technique is ineffective on mitigating fraud in American private sector. In regards to internal control systems Olaoye (2009) revealed that internal control was perceived to be highly effective in fraud prevention and detection in Nigerian banking sector. The findings agreed with Siyanbola (2013) who contended that adherence to internal control system in any institution would mitigate the fraud menace

Conversely, a study conducted by Efiong, Inyang and Joshua (2016) established that fraud hotlines were perceived to be ineffective in detecting and deterring fraud in the Nigerian public sector. The possible reason for the ineffectiveness could be because Nigeria is a unique environment whereby whistle-blowers are not adequately protected or there is no policy of anonymity which could safeguard the whistle-blower's identity when reporting a fraud incidence. The findings of Shore (2010) and Othman et al., (2015) that fraud hotlines are perceived to be effective in deterring and detecting fraud could be linked to fraud hotlines that provides anonymity which does not disclose the identity of whistleblowers.

A study carried out in Kakamega discovered that there was a significant and positive relationship between the appropriateness of internal control systems and fraud prevention and detection in the Kakamega County District treasury (Oguda et al., 2015). Given the above literature reviewed, this study seeks to address the gap by establishing if these techniques are employed and if they are perceived to be effective in curbing fraud in the in Kenyan county governments.

### **2.3.4 Perception of the Effectiveness of Fraud Detection Techniques**

Different fraud detection approaches can be applied to lessen possibilities of fraud occurring. Fraud is complicated and challenging to discover, thus the techniques to handle it must also be complex. Studies conducted by (Efiong, Inyang and Joshua, 2016; Zamzami, Nusa and Timur,

2016) confirmed that discovery sampling and data mining are rarely implemented by organizations in both public and private sectors because the firms find it difficult to invest on these techniques because they are expensive. Bierstaker, Brody & Pacini (2006) argued that by being concerned on the costs of fraud detection techniques, they undervalue the prospective benefits with respect to cost savings from reduced losses resulting from fraud.

Internal control, data mining and operational audits have proven to be effective in detecting fraud (Olaoye, 2009; Siyanbola, 2013; Jans, Lybaert and Vanhoof, 2010; Zamzami, Nusa and Timur, 2016). These techniques are believed to ensure that no individual has powers over all parts of financial transactions and can easily detect the irregularities linked to fraud incidences. In addition, audit committee and the internal audit are perceived to be accountable for ensuring that organizations have in place effective fraud prevention and detection programs (Munteanu, Zuca & Zuca, 2010). On the other hand, the audit committee is tasked with the role of detecting and monitoring the management of fraud risks (Petrascu & Tieanu, 2014).

Similarly, Coram et al. (2008) revealed that institutions having internal audit unit are very likely to detect fraud and self-report them compared to those that do not. Alleyne and Howard (2005) established that organizations which have active audit committees and in-house auditors are well equipped to deter and/or detect fraud. John (2010) established that the participants placed a high expectations on auditors' duties on fraud prevention and detection. Othman et al. (2015) established that enhanced audit committees were perceived to be highly effective in fraud detection by accounting professionals in Malaysian Public sector.

Conversely, a study conducted by Okunbor and Obaretin (2010) earlier on in the Nigerian corporate firms established that the technique is not effective in mitigating fraud cases in the private sector. The study that employed both interviews and structured questionnaires on a sample of ten firms listed in Nigerian Stock Exchange, the findings conflicted with that of Efiang, Inyang and Joshua (2016) conducted in the same country but in the public sector that only used questionnaires to obtain primary data. The possible reason that could explain the findings of Okunbor and Obaretin (2010) can be attributed to the problems facing forensic accountants in developing countries that includes; interference by the management, lack of

technical knowledge, limited resources or unclear recognition of the forensic accounting profession. On the other hand in regard to continuous auditing most studies (Bierstaker, Brody & Pacini, 2006; Efiang, Inyang & Joshua, 2016; Othman et al., 2015; Met et al. 2013) established that it is perceived as an effective technique in curbing fraud in both the private and public sector in different countries. In addition, there has been limited research conducted to establish the perception of the effectiveness of fraud detection techniques in Kenyan county governments. This study seeks to address the gap by establishing if these techniques are perceived to be effective in curbing corruption and if they have been employed to mitigate corruption.

#### **2.4 The summary of Literature Review and Research Gap**

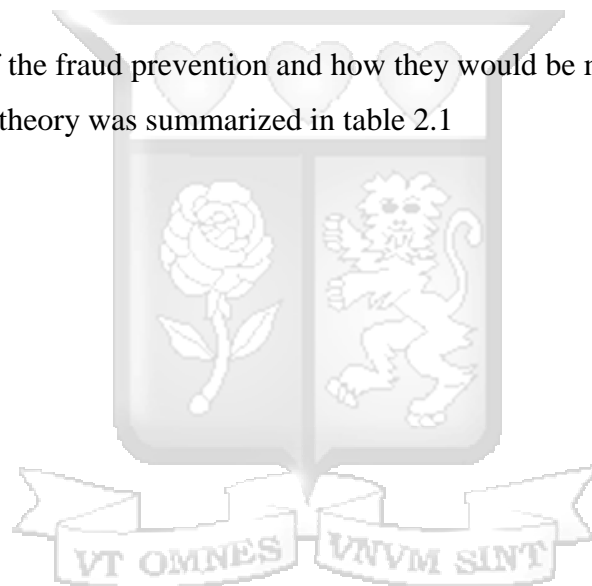
This chapter talked about the theories that were relevant to this study which were; the fraud triangle theory and the fraud management life cycle theory. It presented the studies conducted that were connected to the objectives of this study. Empirical review was able to present the comparisons and contrasts on the research outcomes of the previous studies and the research techniques employed. In the context of Kenyan County governments the chapter established that limited study has been carried out to find out the existence and perceived effectiveness of fraud prevention and detection techniques. Fraud at its best is seen as a serious threat to the institutions and is linked to the rising of economic crimes and regulatory drawbacks. The problem worse in a developing economy like Kenya where the checks and balances may still be weak or none existence (PwC) Global Economic Crime Survey 2016. The study did not develop a conceptual framework since it sought to test the effectiveness of fraud prevention and detection techniques without linking it to fraud indicators as it was done by the previous studies such as (Bierstaker, Brody & Pacini, 2006; Efiang, Inyang & Joshua, 2016; Othman et al., 2015; Met et al. 2013; Zamzami, Nusa & Timur, 2016 ; AKI, 2013; Rahman, 2014; Agathee & Ramen, 2017; Omar & Abu Bakar, 2012; Sengur, 2012).

With regards to the methodological approach employed, most of the studies reviewed (Bierstaker, et al., 2006; Omar & Abu-Bakar, 2012; Efiang, et al., 2016; Zamzami, et al., 2016 AKI, 2013; Rahman, 2014; Agathee & Ramen, 2017) relied on descriptive research design

based on a survey methodology. Primary data was retrieved from the participants and were quantified on a rating Likert scale used to measure the perceived effectiveness. The studies used descriptive statistics which comprised of mean, mode, median, standard deviation and ranking techniques to measure and rank the level of fraud prevention and detection techniques. On the other hand, Sengur (2012) employed Friedman's test model to establish if there was significant variation in perception of auditors on the effectiveness of fraud prevention and detection techniques on mitigation of corruption, asset misappropriation and financial statement fraud.

## **2.5 Operationalization of the Fraud Prevention and Detection Techniques**

The operationalization of the fraud prevention and how they would be measured based on the supporting literature and theory was summarized in table 2.1



**Table 2.01: Operationalization of Fraud Prevention Techniques**

<b>Fraud Prevention Technique/Construct</b>	<b>Operational Construct</b>	<b>Measurement</b>	<b>Supporting Literature</b>	<b>Supporting Theory</b>
Filtering software	The level of implementation and perceived effectiveness of filtering software	A 5-point Likert scale of the level of implementation and effectiveness	Met et al (2013); Efiang, et al., (2016); AKI (2013); Rahman, 2014; Agathee and Ramen (2017) Othman et al	Theory of fraud management lifecycle
Firewalls	The level of implementation and perceived effectiveness of firewalls	A 5-point Likert scale of the level of implementation and effectiveness	(2015); Met et al (2013); AKI (2013); Rahman, 2014; Agathee and Ramen (2017) Bierstaker, Brody and Pacini (2006); Okunbor and Obaretin (2010); Efiang, Inyang and Joshua (2016) Efiang, et al., (2016); Othman et al	Theory of fraud management lifecycle
Forensic accounting services	The level of implementation and perceived effectiveness of forensic accounting services	A 5-point Likert scale of the level of implementation and effectiveness	(2015); Met et al (2013); Bierstaker, Brody and Pacini (2006)	Theory of fraud management lifecycle
Fraud hotline	The level of implementation and perceived effectiveness of fraud hotline	A 5-point Likert scale of the level of implementation and effectiveness	Zamzami, Nusa and Timur (2016)	Theory of fraud management lifecycle
Fraud vulnerability reviews	The level of implementation and perceived effectiveness of fraud vulnerability reviews	A 5-point Likert scale of the level of implementation and effectiveness	Coram et al. (2008); (Petrascu, 2012) Sofia (2016); Olaoye (2009); Siyanbola	Theory of fraud management lifecycle
Internal audit unit	The level of implementation and perceived effectiveness of internal audit unit	A 5-point Likert scale of the level of implementation and perceived		Theory of fraud management lifecycle
Internal control systems	The level of implementation and perceived	A 5-point Likert scale of the level of		Theory of fraud management lifecycle

	effectiveness of internal control systems	implementation and effectiveness	(2013); Zamzami, Nusa and Timur (2016)	
Inventory observations	The level of implementation and perceived effectiveness of inventory observations	A 5-point Likert scale of the level of implementation and effectiveness	Zamzami, Nusa and Timur (2016) and Agathee and Ramen (2017)	Theory of fraud management lifecycle
Maintain a fraud policy	The level of implementation and perceived effectiveness of maintain a fraud policy	A 5-point Likert scale of the level of implementation and effectiveness	Kyalo, Kalio and Ngahu (2016) and Ledgerwood and White (2006)	Theory of fraud management lifecycle
Morals teaching	The level of implementation and perceived effectiveness of morals teaching	A 5-point Likert scale of the level of implementation and effectiveness	Sabo (2003) and Pearson (2009)	Theory of fraud management lifecycle
Password protection	The level of implementation and perceived effectiveness of password protection	A 5-point Likert scale of the level of implementation and effectiveness	Bierstaker, Brody and Pacini (2006); Othman et al., (2015); Efiang, Inyang and Joshua, (2016); AKI (2013); Rahman (2014)	Theory of fraud management lifecycle
Reference check on employees	The level of implementation and perceived effectiveness of reference check on employees	A 5-point Likert scale of the level of implementation and effectiveness	Agathee and Ramen (2017)	Theory of fraud management lifecycle

Source: Researcher (2019)

The operationalization of the fraud detection and how they would be measured based on the supporting literature and theory was summarized in table 2.2

**Table 2.02: Operationalization of Fraud Detection Techniques**

<b>Fraud Detection Technique/Construct</b>	<b>Operational Construct</b>	<b>Measurement</b>	<b>Supporting Literature</b>	<b>Supporting Theory</b>
Analytical review	The level of implementation and perceived effectiveness of analytical review	A 5-point Likert scale of the level of implementation and effectiveness	Okoye (2011); Kyalo, et al.,(2012)	Theory of fraud management lifecycle
Audit committee	The level of implementation and perceived effectiveness of audit committee	A 5-point Likert scale of the level of implementation and effectiveness	Munteanu, et al., (2010); (Petrascu, 2012)	Theory of fraud management lifecycle
Continuous auditing	The level of implementation and perceived effectiveness of continuous auditing	A 5-point Likert scale of the level of implementation and effectiveness	Bierstaker,et al., (2006); Efiang, et al., (2016); Othman et al., (2015); Met et al. (2013)	Theory of fraud management lifecycle
Data mining	The level of implementation and perceived effectiveness of data mining	A 5-point Likert scale of the level of implementation and effectiveness	Rahman (2014); Omar and Abu Bakar (2012); Efiang, et al., (2016) Zamzami, et al., (2016)	Theory of fraud management lifecycle
Dealers' contract reviews	The level of implementation and perceived effectiveness of dealers' contract reviews	A 5-point Likert scale of the level of implementation and effectiveness	Agathee and Ramen (2017)	Theory of fraud management lifecycle
Discovery sampling	The level of implementation and perceived effectiveness of discovery sampling	A 5-point Likert scale of the level of implementation and effectiveness	Rahman (2014); Omar and Abu Bakar (2012); Zamzami, et al., (2016); Bierstaker, et al., (2006)	Theory of fraud management lifecycle

**Source: Researcher (2019)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the research methodological approaches that the study engaged as illustrated in the subsequent sections below while addressing its set objectives. This study focused on the effectiveness of fraud prevention and detection techniques in Kenyan County government as perceived by the accounting practitioners. The chapter further expounds on the techniques and mechanisms used in answering the research problems. It is distributed into research philosophy which categorically highlights the viewpoint on which the study was grounded. The study jointly used both positivist and interpretive philosophy to draw conclusions on the objectives. The study design was quantitative and descriptive. Population of the study, data collection procedure, data analysis; various research issues including reliability and validity and lastly the ethical considerations were adhered to.

#### **3.2 Research Philosophy**

Positivism was the first approach of the research adopted in this study. Based on an ontological perspective, the reality is perceived as external and autonomous of the social actors (Neuman, 2011). To assert the existence of reality, the ontological notion of realism which assumes that reality exists outside the mind implying that everything on earth exists independently of the human awareness of their existence. This implies with regards to this study that fraud occurs whether people are aware of it or not and that the techniques for preventing and detecting of fraud need to be adopted in order to control fraud. Positivism maintains that in the physical world perception can objectively be measured, the effect be defined and acknowledged with certainty (Schutt, 2003). The specific approach selected is serious realism, which theorizes that it is not likely that human research is to be completely free of bias; instead, the potential sources of bias must be carefully scrutinized and secluded, as well as controlled in as much detail as possible (Fleetwood, 1999). Even though the use of quantitative tools, like questionnaire,

controls participants to only what has been asked, its one benefit is that it measures the reaction of many people to a restricted set of questions enabling comparisons and allowing for findings to be generalized (Patton, 1990). The goal of the researcher in this study is to consider what these relationships means in the context of the Kenyan county governments.

The research enquiry of interpretive stresses an effort to understand social phenomena by constructing meaning from actual lived experiences of participants in the research. Therefore an individual's practice is best explained and understood from their own perspective or world view. According to Denzin and Lincoln (2003) interpretivists strive to appreciate how people attribute meaning to their circumstances. In this study the researcher sought opinions and views of the respondents on the perceived effectiveness of fraud prevention and detection techniques, letting their views to give priority over those of the researcher. By listening to their perception on fraud techniques the researcher was able to pick out the important arguments in the comments and responses made by the participants. In qualitative inquiry, the researcher explores the experiences and perception of participants drawn from a small sample size and goes in-depth about their experiences reducing their experiences into textual data, identify patterns in those experiences and generate conclusions (Selvam, 2017). Brannen (1994) also maintains that in qualitative inquiry, the researcher is the instrument and must use themselves as the instrument. This made the interpretivist inquiry suitable for this research.

### **3.3 Research Design**

According to Rajendra (2008) the design of a research is a way of organizing conditions and linkages in the collection of data and analysis by deploying techniques with aim of showing the reliance of the research. Research design provides a framework upon which the research is carried.

The study employed a mixed method research design. This is because the design incorporates procedures of gathering and analysing data from the quantitative and qualitative research approaches in one research study (Creswell, 2013). The investigator collected not only numerical facts, which is for quantifiable, but also narrative data, which is the model for qualitative research in order to address the research questions defined in the study. Conducting

a mixed research design and analysing both quantitative and qualitative research, the researcher distributed a questionnaires that contained closed-ended questions to collect the quantitative data and also conducted an interview using open-ended questions to collect the qualitative data. The approach of mixed methods in research is an extension rather than a replacement for the quantitative and qualitative approaches to research, as the latter two research approaches will continue to be useful and important. The reason of using the mixed methods approach is to draw from the strengths and minimize the weaknesses of the quantitative and qualitative research approaches (Johnson & Onwuegbuzie, 2004).

Mixed methods research process model in this study incorporated seven-stage conceptualization of the mixed methods data analysis process which included data reduction, data display, data conversion, data correlation, data consolidation, data comparison and data Integration. Data reduction involved reducing the dimensionality of the both qualitative and quantitative data. Data display, involved describing graphs and tables of both qualitative and quantitative data followed by data transformation, where in quantitative data were changed to description and could be analysed qualitatively (Johnson & Onwuegbuzie, 2004).

The interest of this study therefore is on perception and how fraud prevention and detection techniques implemented in county government of Kenya are effective based on the world views of the accounting practitioners both at the county government which is quantitative and Auditor General's Office which is qualitative

### **3.4 Population and Sampling Methodology**

According to the County Governments Act (2012) there are a total of 47 counties in Kenya. The population of the study comprised of all the 47 counties in Kenya and the Auditor General's Office in Nairobi City. A population target may refer to the whole lot that one intends to explore (Sekaran & Bougie, 2010). The unit of analysis is the accounting practitioners at the county government which includes the accountants, the internal auditors and the external auditors. This is because the accountants, auditors both internal and external are responsible for all accounting and forensic procedures employed to curb fraud in the county government and are thus best suited to participate in this study. In regard to the Auditor General Office,

forensic investigator, an accountant and internal auditor responsible for county government audits were identified through purposive sampling to partake an in-depth interview. This is because Auditor General Office in Kenya is responsible for county government audits.

Out of the 47 counties (County Governments Act, 2012) 3 respondents (internal auditor, accountant and external auditor) were requested to fill in the questionnaire. The trio were selected since they were perceived to be knowledgeable enough on fraud detection and prevention techniques adopted by County government in Kenya. Similarly 3 respondents (An accountant, senior internal auditor and senior forensic investigator) responsible for county audits drawn from the Auditor General's Office partook an in-depth interview. Thus a total of 144 respondents. Since the target population was small, sampling of the counties was not done.

### **3.5 Data Collection Techniques and Procedure**

Primary sources were deployed to collect data directly from the respondents in various counties and Auditor General's Office. Questionnaires were used to collect the quantitative data. Three respondents from each county were requested to fill in the questionnaires, whereas qualitative data was collected through an in-depth interviews with the officers drawn from the Auditor Generals' office who were responsible for county audits.

While Cooper and Schindler (2010) maintains that questionnaires are easier to administer, analyze and saves both time and money, the questionnaires of the study were both closed and open ended. They contained structured questions with options for "other" to capture any new or unique information. The questionnaire was adopted from the work of Brody and Pacini (2006). Some modifications were made for the questionnaire to suit the purpose of the study. The questionnaire were divided into basically four sections: Section A solicited for personal background information of the County governments and that of the respondents who represented the views of these institutions. The information was used to assess whether the perception on the degree of effectiveness and usage of the prevention and detection techniques were dependent on the different profile of the respondents.

Section B and C sought to respond to the first objectives of this study that sought to establish the prevention of fraud prevention and detection techniques implemented in Kenyan county governments. The questions were rated on a five-point Likert scale based on frequency of usage (“always” = 5, “often” = 4, “not sure” = 3, “rarely” = 2 and “never” = 1). A five point Likert scale was employed (Sekaran & Roger, 2009). The frequency scale is best suited for this study as it describes the periodic use or not of the various fraud prevention and detection techniques.

Section D and E sought to address the second objective of the study that sought to establish the perceived effectiveness of fraud prevention and detection techniques in Kenyan county governments. The questions were rated on a five-point Likert scale based on the level of perceived effectiveness (“very effective” = 5, “effective” = 4, “not sure” = 3, “ineffective” = 2 and “very ineffective” = 1).

Section F comprised of the interview questions for the respondents drawn from the Auditor General’s office the interview questions were semi-structured in nature. For the quantitative part of the survey, respondents from the office of the County government across the country. The study employed a concurrent triangulation design, where the qualitative and quantitative data were collected simultaneously in one phase. The data was analyzed separately and later compared (Saunders, Lewis, & Thornhill, 2016).

### **3.6 Research Quality**

Research quality is addressed in terms of dependability, reliability, validity, credibility and external transferability, authenticity criteria as well as triangulation and participants or member validation. According to Saunders et al., (2016) validity is the extent to which questions in an instrument correctly measure the variables there in. Validity entails checking the questionnaire appropriateness (Cooper & Schindler, 2010) while reliability is the consistency of a measuring instrument (Kabiru & Njenga, 2009). Authentic criteria are criteria that are specifically designed for the nature of constructivism/interpretive research. It aims at objectively representing all views in the research. Triangulation encompasses use of more than one data source to confirm the validity, credibility and authenticity such data.

To achieve the above, this study paid attention to ensuring that there were relevant sequence of events from the background through the research objectives, research question, literature review, through procedures, data analysis and finding and recommendations of the study.

### **3.7 Data Analysis Techniques**

To assess the techniques of fraud prevention and detection that exist in Kenyan County governments and the level of their effectiveness when preventing and detecting fraud, descriptive statistics was employed. Previous studies (Bierstaker, et al., 2006; Sengur, 2012; Rahman, 2014; Efiog, et al., 2016; Zamzami, et al., 2016; Agathee & Ramen, 2017) used similar techniques logical approach to analyse their data. Mugenda and Mugenda (2010) define descriptive statistics as procedures used by the researcher to enable the summarization and organization of data in an elaborate manner while describing and analysing that data. Thus, descriptive statistics is useful as it ensures the use of tools like percentages, frequency tables and tables, to reduce information obtained to an understandable form.

The first objective was to establish fraud prevention and detection techniques in Kenyan county governments. The mean and standard deviation were employed to establish the average rating of the existence and effectiveness of these techniques. Ranking was employed to ascertain the level of existence and effectiveness from the highest rating to the lowest rating. The descriptive analysis was justified by analysis that assessed the construct validity of the questionnaire items for the descriptive results to be relied on.

The second objective was to analyze the perceived effectiveness of fraud prevention and detection techniques in Kenyan county governments. The mean and standard deviation was employed to establish the average rating of the existence and effectiveness of these techniques. Ranking was employed to ascertain the level of existence and effectiveness from the highest rating to the lowest rating with regards to perception of efficacy.

Kruskal Wallis-test model for comparative analysis was used to assess the difference between the perception of the accounting practitioners (accountants, internal auditors and forensic investigators) drawn from the Auditor General's Office and accounting practitioners

(accountants, external auditors and internal auditors) drawn from Kenya County governments. The choice was anchored on the arguments that the data was not parametric hence parametric analysis techniques would not be adopted (Saunders et al., 2016). Moreover, the approach was deemed appropriate for this study since the data was used to address the objectives which were in an ordinal scale, measured by a 5 point-Likert scale. A ( $P < 0.05$ ) shows that there is a significant statistical difference in perception on a specific anti-fraud technique (Sekaran & Bougie, 2010). On the contrary, a ( $P > 0.05$ ) may mean that there is no significant statistical difference in perception on a specific anti-fraud technique. SPSS statistical software was used for the data analysis exercise.

### **3.8 Ethical Considerations**

As is the requirement that permission was sought from Strathmore University before the survey, a letter of introduction was obtained from Strathmore business school introducing the researcher to the county governments, this would eliminate any suspicion by the respondents. In addition, ethics approval and authorization from National Commission for Science, Technology and Innovation (NACOSTI) gotten. Respondents who gave their consent orally were interviewed. The researcher also preserved utmost respect to the respondents in any case the respondent were not free to respond to specific question, the researcher did not insist. Confidentiality and privacy of respondents was highly considered and the data collected was exclusively used for the study purposes only. No personal details was obtained ensuring both quality and integrity in the study. Any published and unpublished material used were fully acknowledged to avoid plagiarism.

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

#### 4.1 Introduction

This chapter records presentation and analysis of findings. The main objective of the study was to analyze the perception of the effectiveness of fraud prevention and detection techniques in Kenyan county governments. To simplify the discussions, tables and figures were provided

#### 4.2 Response Rate

This study had projected a sample size of 144 respondents, 141 coming from the County governments while 3 from the Auditor General's Office. Of these, 93 responded, making a response rate of 64.6%. Mugenda and Mugenda, (2010) puts it that, a response rate below 0.40 is not reliable, that rate between rate of 0.40 to 0.5 is deemed poor, a rate between 0.5 to 0.6 can be satisfactory for analysis and reporting, while a response rate between 0.6 to 0.7 is good enough and that of 0.7 to 0.8 is very good, finally a response rate above 0.8 is viewed as excellent. In the study a response rate of 0.64.6 was categorized as good, and could satisfactorily be representative to make the study.

**Table 4.01: Response Rate**

Questionnaires	Frequency	Percent (%)
Response	93	64.6%
Non-response	51	35.4%
<b>Total</b>	<b>144</b>	<b>100.0%</b>

Source: Research data, (2019)

### 4.3 Reliability Test

Cooper and Schindler (2010) puts it that the degree to which a research instrument yields consistent results after repeated trials is called reliability test. Cronbach's alpha was applied in this study to establish the internal consistency of the questionnaire used.

According to Creswell (2013), legitimacy and consistency of findings on instruments lead to significant explanations of data. A higher value demonstrates a robust connection of the items tested whereas, a lower value denotes a weaker relationship between the items tested. This research Cronbach's alpha to conclude consistency within the range of 0 to 1. Values close to 1 mean that the factors investigated can easily be measured. The reliability item can be accepted if the alpha is within 0.7 to 0.99 (Fraenkel & Wallen, 1996). In the Table 4.02 below, the reliability tests shows a value of 0.799 from Cronbach's alpha confirming that the data collection instrument was very reliable

**Table 4.02: Reliability Test**

Variables	Cronbach's Alpha	N of Items
The tool	0.799	62

**Source: Research data, (2019)**

### 4.4 Demographic Information

From the general information, the study hoped to establish the profile of respondents. The general information required included gender, government body, job occupation, level of education, current certification and years of professional experience, results were as bellow;

#### 4.4.1 Gender

The table shows the information about the respondent's gender.

**Table 4.03: Gender**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Female	35	37.6
Male	58	62.4
<b>Total</b>	<b>93</b>	<b>100</b>

**Source: Research data, (2019)**

The findings showed that most of the respondents were male giving a frequency of 58 out of 93 which constituted to 62.4% on the other hand the female respondents were 35 out of 93 implying a frequency of 37.6%. It was evident from the result that a good number of the respondents in the study were male hence an assumption that the 47 Counties and the Auditor General's office in the persons of Internal auditor, Accountants, External auditor and Forensic investigator are dominated by male workers.

#### **4.4.2 Government Body**

The study while establishing the body in which the respondents were deployed, the results were as displayed bellow;

**Table 4.04: Government Body**

	<b>Frequency</b>	<b>Percent</b>
47 County Governments of Kenya	66	70.97
Auditor General's Office (National and County level)	27	29.03
<b>Total</b>	<b>93</b>	<b>100</b>

**Source: Research data, (2019)**

The study also found out that a delicate balance of respondents was achieved with about 66 respondents constituting about 70.97% were drawn from the County Governments of Kenya while about 27 respondents constituting about 29.03% were drawn from the Auditor General's office which exists in the counties.

#### **4.4.3 Job Occupation**

Furthermore, the study recognized that the job occupation of the respondents was as shown in Table 4.05 bellow;

**Table 4.05: Job Occupation**

<b>Job Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Internal auditor	28	30.1
Forensic investigator	19	20.4
External auditor	21	22.6
Accountant	25	26.9
<b>Total</b>	<b>93</b>	<b>100</b>

**Source: Research data, (2019)**

The study established that, out of the 93 respondents about 28 constituting about 30.1% were accountants, followed by Accountants who were about 25 respondents 26.9%, then external auditor who were 21 respondents in frequency constituting 22.6% and finally, forensic investigator who were 19 in frequency constituting about 20.4% of the total respondents. A fair distribution of respondents was achieved, within the population sample which the researcher believed would provide the most accurate information.

#### **4.4.4 Highest Level of Education**

In establishing the level of education, the study found the academic qualifications of the respondent as below

**Table 4.06: Highest Level of Education**

<b>Highest Level of Education</b>	<b>Frequency</b>	<b>Percent</b>
Bachelor Degree	48	51.6
Higher Diploma	23	24.7
Master Degree	21	22.6
Doctorate Degree	1	1.1
<b>Total</b>	<b>93</b>	<b>100</b>

**Source: Research data, (2019)**

The findings discovered that majority had bachelors' degree of 48 respondents making about 51.6% of the total, followed by the respondents who had Higher Diploma to be 23 constituting 24.7%. Those of Master's Degree ranked third with 21 respondent giving 22.6% and lastly Doctorate Degree 1.1% being only 1 in frequency. From the data, it could be concluded that most of the respondents had qualification of a degree level making them suitable for the target population which helped to achieve the study objectives.

#### 4.4.5 Current Certification

The study also sought to establish the profile of current certification held by the respondents and the results were as follows;

**Table 4.07: Current Certification**

<b>Current Certification</b>	<b>Frequency</b>	<b>Percent</b>
CPA	33	35.5
ACCA	17	18.3
CISA	13	14
CFE	16	17.2
CFA	13	14
Any Other	1	1.1
<b>Total</b>	<b>93</b>	<b>100</b>

**Source: Research data, (2019)**

About the professional certification, the demographic information revealed that, majority of the respondents had CPA certifications with 33 persons making 35.5% of the total respondents, followed by ACCA certified respondents who were about 17 in frequency, then CFE certified respondents who were 16 in frequency constituting about 17.2% in frequency. CFA certified respondents were 13 in frequency constituting about 14.0% of the total respondents and lastly CISA certified respondents were 13 respondents only constituting about 14.0% of the total respondents. The results assisted in coming up with the conclusion that majority of the respondents were at least certified in their areas of specialization in addition to academic qualification.

#### 4.4.6 Years of Professional Experience

Finally the study, needed to make a profile the respondents about the number of years of professional knowledge in order to gain insight into the professional experience in their various institutions. The results shown were as follows;

**Table 4.08: Years of professional Experience**

<b>Years of Professional Experience</b>	<b>Frequency</b>	<b>Percent</b>
0-2 years	15	16.1
3-5 years	34	36.6
6-9 years	24	25.8
10-15 years	16	17.2
More than 16 years	4	4.3
<b>Total</b>	<b>93</b>	<b>100</b>

Source: Research data, (2019)

The findings discovered that most of the respondents had 3-5 years of professional experience and were 34 respondents making the declaration constituting about 36.6% of the total respondents. Coming in second were those who had 6-9 years of experience making about 24 in frequency constituting about 25.8% of the total population. Those respondents who had 10-15 years of professional experience were 16 in frequency constituting about 17.2% out of the total respondents followed closely by those respondents having 0-2 years of professional experience who were 15 in frequency and finally, those respondents who had more than 16 years making about 4.3% of the total respondents. The researcher therefore deduced that, majority of the respondents were still young going by the fact that about 70% had less 10 years of professional experience.

#### **4.5 Descriptive Statistics**

This analyses data that helps in describing and summarizing data in a meaningfully. Mugenda and Mugenda, (2010) puts it that descriptive statistics is useful to condense a collection of data by combination of arranged description.

##### **4.5.1 Fraud Prevention Techniques Implemented in Kenyan County Governments**

The study sought to establish the extent of fraud prevention techniques implemented in Kenyan county governments. A Likert scale of 1-5 was used. The rating scale was as follows; (“Always” = 5, “Often” = 4, “Not Sure” = 3, “Rarely” = 2 And “Never” = 1)

**Table 4.09: Fraud Prevention Techniques Implemented In Kenyan County Governments**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Dev.</b>
Filtering software	93	3	5	4.4	0.6
Firewalls protection	93	2	5	4.3	0.7
Forensic accounting services	93	3	5	4.6	0.6
Fraud hotline	93	1	5	3.8	1.0
Fraud vulnerability reviews	93	1	5	4.0	1.0
Internal audit unit	93	3	5	4.4	0.7
Internal control systems	93	2	5	4.5	0.6
Inventory observations	93	3	5	4.5	0.6
Maintain a fraud policy	93	1	5	4.2	0.9
Morals teaching	93	2	5	4.1	0.8
Password protection	93	2	5	4.2	0.9
Reference check on employees	93	1	5	4.2	1.0
Bank reconciliations	93	1	5	4.3	0.9
Staff rotation policy	93	1	5	3.8	1.2
Financial ratios	93	1	5	3.7	1.2
Increased attention of senior management	93	1	5	3.6	1.2
Employment contracts	93	1	5	4.1	1.5
<b>Grand mean</b>				<b>4.2</b>	<b>0.9</b>

**Source: Research data, (2019)**

The summary of findings can be seen from a grand mean of 4.2. A Likert scale of 1-5 was used where a grand mean of >3 implies that fraud prevention techniques are always implemented and effective, while a mean of <2.9 implies that the fraud prevention techniques are never implemented. It can therefore be concluded that most of the respondents accepted that fraud prevention techniques are often implemented in Kenyan county governments. This position is in harmony with that of Othman et al. (2015) study in the Malaysian public sector who also established that the accounting professionals perceived that fraud hotlines and other fraud prevention techniques is very effective in preventing and detecting fraud. Another deduction from the results in this case was the ranking of fraud prevention techniques implemented in Kenyan county governments. According to the study findings; Employment contracts, internal control systems, forensic accounting services, internal audit unit, and inventory observations ranked highest as the top fraud prevention techniques implemented in Kenyan county governments. While, moral teachings, increased attention of senior management, financial

ratios, and fraud vulnerability reviews were ranked as the lowest with regards to the mean of the parameters.

#### 4.5.2 Fraud Detection Techniques Implemented in Kenyan County Governments

Table 4.09 shows the results of the level at which respondents agreed with statements on the extent of fraud detection techniques implemented in Kenyan county governments: A Likert scale of 1-5 was used. The rating scale is as follows; (“Always” = 5, “Often” = 4, “Not Sure” = 3, “Rarely” = 2 And “Never” = 1)

**Table 4.10: Fraud Detection Techniques Implemented in Kenyan County Governments**

	N	Minimum	Maximum	Mean	Std. Dev.
Audit committee	93	2	5	4.0	1.0
Continuous auditing	93	1	5	3.5	1.1
Data mining	93	1	5	4.2	1.0
Dealers’ contract reviews	93	1	5	3.5	1.2
Discovery sampling	93	1	5	3.5	1.3
Fraud reporting policy	93	1	5	3.2	1.2
Cash reviews	93	1	5	4.0	1.7
Virus protection	93	2	5	3.8	0.8
Fraud prevention and detection training	93	2	5	4.4	0.7
Surveillance of electronic correspondence	93	3	5	4.5	0.6
<b>Grand mean</b>				<b>3.9</b>	<b>1.1</b>

**Source: Research data, (2019)**

From the table Table 4.09, the respondents ranked the degree of fraud detection techniques implemented in Kenyan county governments using a Likert scale of 1-5 where a grand mean of >3 implied that fraud detection techniques are implemented, while a mean of <2.9 imply the fraud detection techniques are rarely implemented. Accordingly, with the mean of 3.9, it is incidental that the respondents have acknowledged to the parameters of fraud detection techniques that those measures are always implemented. This position is backed by Zamzami et al., (2015) who established that institutions standard tests are set into live corporate systems in order to allow for a constant observation of transactions rather than waiting to audit on historical data during normal audit process. The researcher also took notice of the top fraud

detection techniques implemented in Kenyan county governments as ranked by the respondents with audit committee, data mining, cash reviews and fraud prevention and detection training being ranked with majority approval. Additionally, dealers' contract reviews, discovery sampling and fraud reporting policy ranked lowest according to the respondents.

#### 4.5.3 Perceived Effectiveness of Fraud Prevention Techniques on Fraud in County Governments

This section sought to find out about the perceived effectiveness of fraud prevention techniques on fraud in Kenyan county governments. A Likert scale of 1-5 was used. The rating scale is as follows; ("Very Effective" = 5, "Effective" = 4, "Not Sure" = 3, "Ineffective" = 2 and "Very Ineffective" = 1) and their replies are summarized in table 4.11 below.

**Table 4.11: Perceived Effectiveness of Fraud Prevention Techniques in County Governments**

	N	Minimum	Maximum	Mean	Std. Dev.
Filtering software	93	1	5	4.3	0.9
Firewalls protection	93	2	5	4.0	0.9
Forensic accounting services	93	1	5	3.9	1.1
Fraud hotline	93	1	5	4.2	1.1
Fraud vulnerability reviews	93	1	5	3.4	1.3
Internal audit unit	93	1	5	3.4	1.3
Internal control systems	93	1	6	3.5	1.1
Inventory observations	93	1	6	3.8	1.5
Maintain a fraud policy	93	2	5	4.0	0.8
Morals teaching	93	2	5	4.4	0.6
Password protection	93	1	5	4.4	0.8
Reference check on employees	93	2	5	4.5	0.7
Bank reconciliations	93	2	5	4.4	0.7
Staff rotation policy	93	1	5	4.5	0.8
Financial ratios	93	1	5	4.4	0.9
Increased attention of senior management	93	1	5	4.4	0.7
Employment contracts	93	1	5	4.0	1.0
<b>Grand mean</b>				<b>4.1</b>	<b>1.0</b>

Source: Research data, (2019)

While applying a Likert scale of 1-5 where a grand mean of  $>3$  implies general agreement on efficacy of the parameters, while a mean of  $<2.9$  imply a general ineffectiveness of the parameters. From the analysis in Table 4.10 above, most of the respondents in general agreed that certainly the perceived efficacy of fraud prevention techniques on fraud in county governments were effective. It can be worked out that most respondents consented that, the perceived fraud prevention techniques on fraud in county governments were very effective as shown by the grand mean of 4.2. The findings above support the study of Inyang and Joshua, (2016) which revealed that the most perceived effective prevention techniques such as fraud hotlines, whistle blowing policy, use of forensic accountants are rarely implemented to curb fraud stating that they are expensive however very effective. Lastly, the respondents ranked; Bank reconciliations, reference check on employees, financial ratios and filtering software as top for the most perceived effective of fraud prevention techniques on fraud in county governments with Internal audit unit and fraud vulnerability reviews lowest on the list.

#### **4.5.4 Perceived Effectiveness of Fraud Detection Techniques on Fraud in County Governments**

Respondents were questioned on the perceived effectiveness of fraud detection techniques on fraud in Kenyan county governments. A Likert scale of 1-5 was used. The rating scale is shows the following; (“Very Effective” = 5, “Effective” = 4, “Not Sure” = 3, “Ineffective” = 2 and “Very Ineffective” = 1) and the findings are summarized in table 4.12 below.

**Table 4.12: Perceived Effectiveness of Fraud Detection Techniques in County Governments**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Dev.</b>
Analytical review	93	1	5	4.0	1.1
Audit committee	93	1	5	4.4	1.1
Continuous auditing	93	2	5	4.5	0.7
Data mining	93	2	5	4.3	0.7
Dealers' contract reviews	93	1	5	4.2	0.9
Discovery sampling	93	3	5	4.3	0.8
Fraud reporting policy	93	1	5	4.3	0.8
Cash reviews	93	1	5	3.8	1.0
Virus protection	93	3	5	3.7	0.7
Fraud prevention and detection training	93	2	5	4.5	0.7
Surveillance of electronic correspondence	93	3	5	4.5	0.6
<b>Grand Mean</b>				<b>4.2</b>	<b>0.8</b>

**Source: Research data, (2019)**

While using a Likert scale of 1-5 where a grand mean of >3 implies effectiveness, and <2.9 indicate overall ineffectiveness. The mean of 4.11 above indicate that majority of the respondents generally agreed that indeed the perceived effectiveness of fraud detection techniques on fraud in Kenyan county governments was very effective as shown by the grand mean of 4.2. Consequently, it can be deduced that according to the respondents, the perceived fraud detection techniques on fraud in county governments were very effective. The above study findings support those of Bierstaker, et al., (2006) study which submitted that, by being concerned on the costs of fraud detection techniques, they undervalue the prospective benefits with respect to cost savings from reduced losses resulting from fraud and if well managed could be very effective. Additionally, the study findings revealed that, continuous auditing, audit committee and fraud reporting policy were ranked top as the most perceived effective fraud detection techniques on fraud in county governments with data mining, virus protection and analytical review ranking the lowest.

## 4.6 Inferential Statistics

Mugenda and Mugenda (2010) describes the inferential Statistics as a branch of statistics that deals with conclusions, generalizations, estimates, and approximations based on data from samples. He believes that inferential statistics creates inferences about a population by the use of data drawn from the population. In this study, different understandings into the nature of the data collected were given as below;

### 4.6.1 Testing of the Model Assumptions

The Kruskal Wallis was one way analysis of variance (ANOVA) that was used to determine whether there were any statistically significant differences between the means of two or more autonomous groups however the model has assumptions namely; that the samples drawn from the population are random and assumption of independence.

### 4.6.2 Assumption of Independence

In Mugenda and Mugenda (2010), it is stated that an assumption of independence also referred to as Normality test was implemented using the Kolmogorov-Smirnov (K-S) tests which showed that the sample data was drawn from a normally-distributed population. Kolmogorov-Smirnov (K-S) rationalization was due to the fact that, the two sample Kolmogorov-Smirnov test is a nonparametric test which is used to compare the cumulative distributions of two data sets (1, 2), now the dependent and the independent variable. The Kolmogorov-Smirnov statistic also offers a speedy check to define the degree of normalcy in the data. The value runs a relative sign of normality; as the value moves away from zero, it turn out to be more certain that the data does not estimate a normal distribution. Data is normally spread if the significance value is  $<0.05$ . The study outcomes indicated that; all the variables including, Fraud Detection Techniques (FDT), Fraud Prevention Techniques (FPT), Perceived Fraud Detection Techniques (PFDT) and Perceived Fraud Prevention Techniques (PFPT) had Kolmogorov-Smirnov<sup>a</sup> Sig. of  $> 0.05$  confirming that the data was normally distributed as shown in table 4.12. This condition satisfied the Kruskal.

**Table 4.13: Assumption of Independence Test**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
FDT	.089	93	.011	.984	93	.105
FPT	.156	93	.200	.932	93	.060
PFDT	.104	93	.101	.946	93	.090
PFPT	.080	93	.136	.976	93	.116

a. Lilliefors Significance Correction

**Source: Research data, (2019)**

**Where;**

FDT : Fraud Detection Techniques

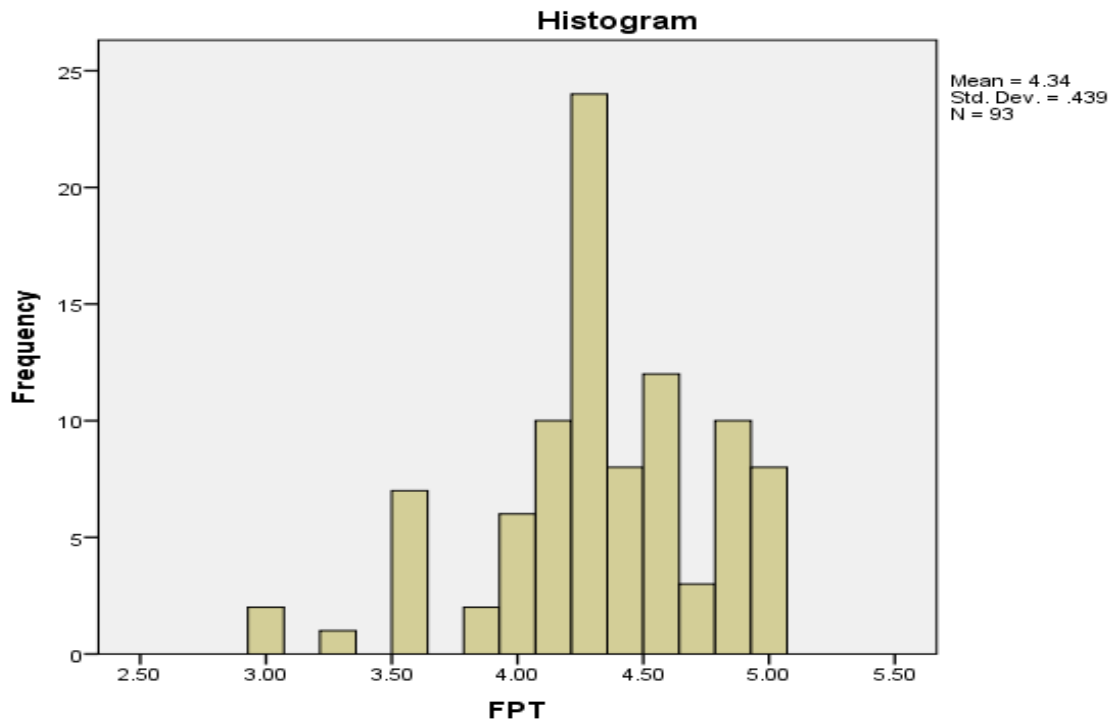
FPT : Fraud Prevention Techniques

PFDT : Perceived Fraud Detection Techniques

PFPT : Perceived Fraud Prevention Techniques

#### **4.6.3 The Kruskal Wallis Model Test**

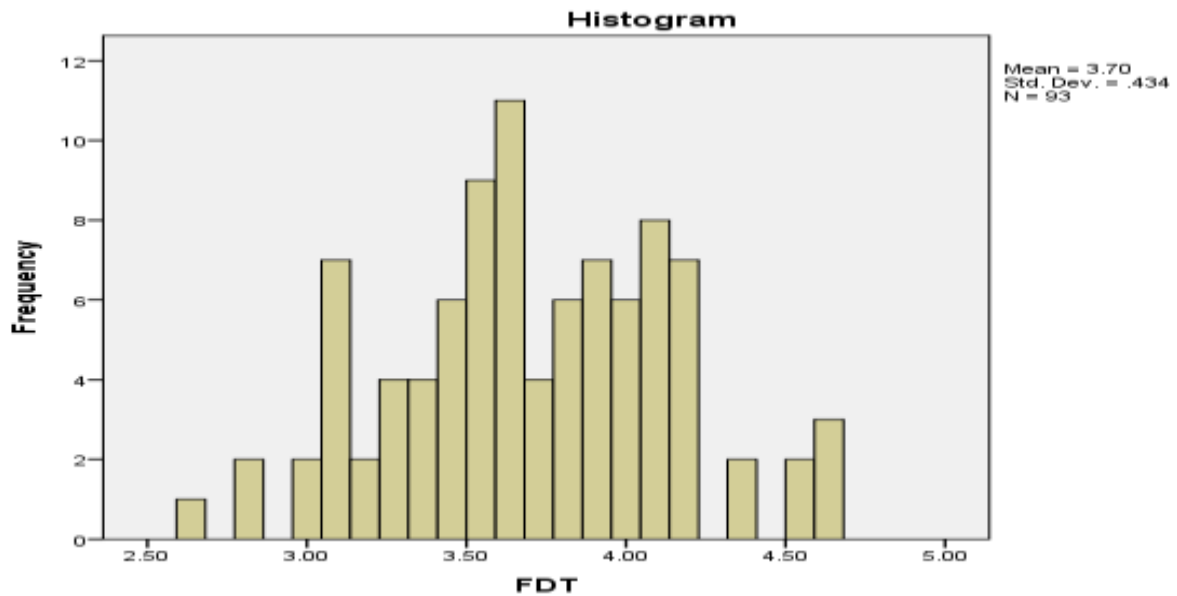
The study first tested whether the mean ranks of the levels are equal, or rather the assumption that the distribution shapes are similar. In doing this, histograms were used and the results were as follows:



**Source: Research data, (2019)**

**Figure 4.01: Histogram for Fraud Prevention Techniques**

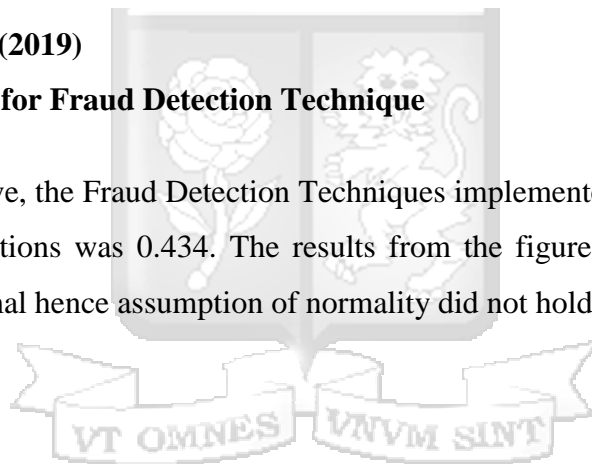
From the Histogram above, the Fraud Prevention Techniques implemented revealed a mean of 4.34 when standard deviations was 0.439. The results from the figure 4.01 shows that the distribution was not normal hence assumption of normality did not hold.

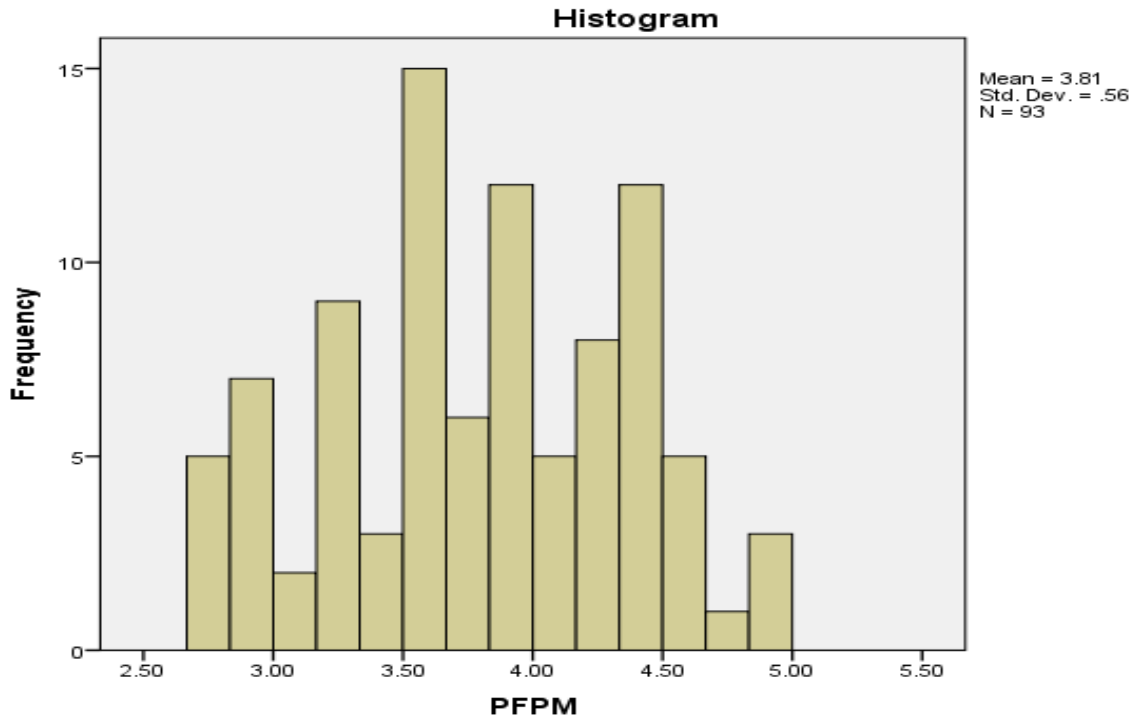


Source: Research data, (2019)

**Figure 4.02: Histogram for Fraud Detection Technique**

From the Histogram above, the Fraud Detection Techniques implemented revealed a mean of 3.7 when standard deviations was 0.434. The results from the figure 4.02, shows that the distribution was not normal hence assumption of normality did not hold.

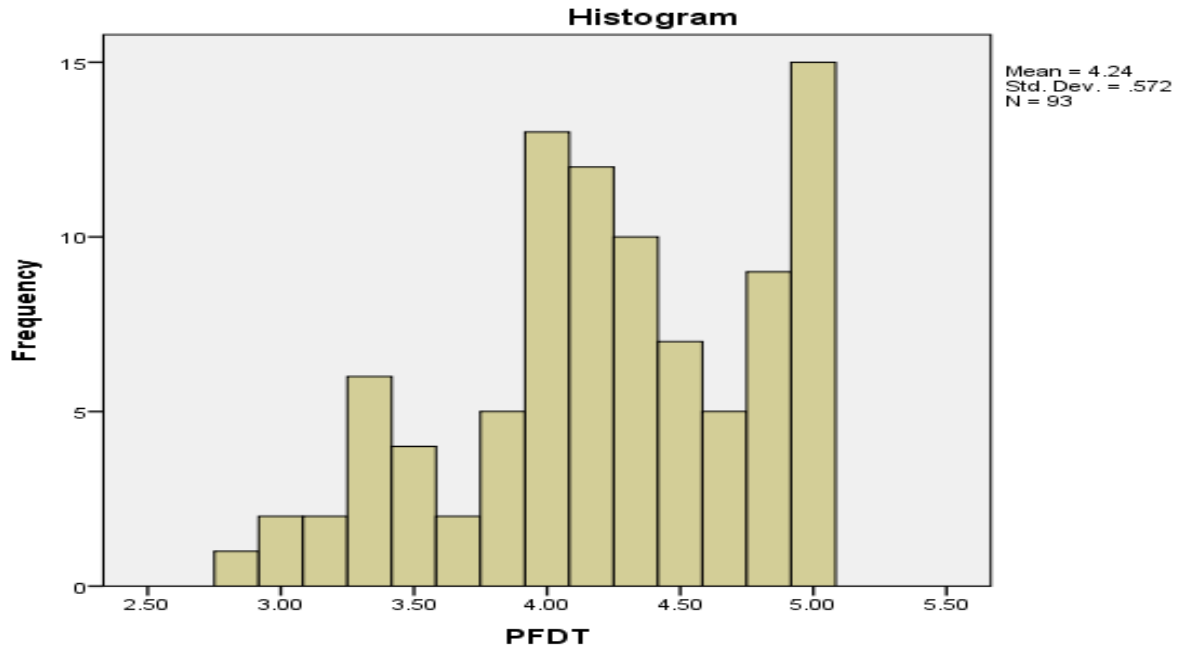




Source: Research data, (2019)

**Figure 4.03: Histogram for Perceived Effectiveness of Fraud Prevention Techniques**

From the Histogram above, the Perceived effectiveness of Fraud prevention Techniques revealed a mean of 3.81 when standard deviation was .56. These results from the figure 4.03, shows that the distribution was not normal hence assumption of normality did not hold.



Source: Research data, (2019)

**Figure 4.04: Histogram for Perceived Effectiveness of Fraud Detection Techniques**

From the Histogram above, the Perceived effectiveness of Fraud Detection Techniques revealed a mean of 4.24 when standard deviations was 0.572. The results from the figure 4.04, shows that the distribution was not normal hence assumption of normality did not hold.

**Null Hypothesis** : The mean rankings are equal

**Alternative Hypothesis:** The mean rankings are not equal

Findings from the figure 4.01 to 4.04 clearly shows that the distribution was normal implying that the fraud prevention and detection techniques were implemented and were effective. The study employed, the Kruskal Wallis-test model for comparative analysis to assess the existence of substantial variance between the perception of the accounting practitioners (external auditors, forensic investigators) drawn from the Auditor General’s Office and accounting practitioners (accountants and internal auditors) drawn from Kenya County governments.

The decision rule was; A ( $P > 0.05$ ) showing that there is a substantial statistical difference in perception on a specific anti-fraud technique in the questionnaire and on the contrary, a ( $P < 0.05$ ) may mean that there were no significant statistical difference in perception on a specific anti-fraud technique in the questionnaire. Further, if a difference in perception does exist this would be a basis for further research as to why it exists as well show that there is a difference in practice and interpretation.

**Table 4.13: Independent Samples Kruskal-Wallis for FPT & PFPT**

<b>Null Hypothesis</b>	<b>Test</b>	<b>Sig.</b>	<b>Decision</b>
1 The distribution of FPT is the same across categories of PFPT	Independent Samples Kruskal-Wallis Test	0.000	Reject the null hypothesis

Asymptotic significances are displayed. The significance level is .05

**Source: Research data, (2019)**

In the first case as to whether the distribution of Fraud Prevention Techniques (FPT) is the same across categories of Perceived Fraud Prevention Techniques (PFPT). The null hypothesis was rejected as evidenced by the significance level of ( $P < 0.000$ ). It may be established that, the perception about the fraud prevention techniques is not the same from the sample drawn the Auditor General's Office and those drawn from the county governments. The implication of the result would mean the perception about the fraud prevention techniques is not the same from the sample drawn the Auditor General's Office and those drawn from the county governments.

A common understanding was not achieved in this case; this can be attributed to both responsibility and performance, Auditor-General's Responsibility which is to carry out the audit in accordance with the international standards of Supreme Audit. These Standards needed the Auditor-General's Office to comply with ethical requirements and arrange to perform the audit to obtain realistic assurance about whether the financial statements are free from any material misappropriation. This endeavor is not however in harmony with the execution of finance employees at the county level evidenced by material misstatement of which is unearthed every year by the Auditor-General (Gok, 2017).

**Table 4.14: Independent Samples Kruskal-Wallis for FDT & PFDT**

<b>Null Hypothesis</b>	<b>Test</b>	<b>Sig.</b>	<b>Decision</b>
The distribution of FDT is the same across categories of	Independent Samples		Retain the null
1 PFDT	Kruskal-Wallis Test	0.285	hypothesis

**Asymptotic significances are displayed. The significance level is 0.05**  
**Source: Research data, (2019)**

In the second case as to whether, the distribution of Fraud Detection Techniques (FDT) is the same across categories of Perceived Fraud Detection Techniques (PFDT). The null hypothesis was retained as judged by the significance level of ( $P < 0.285$ ). It may be deduced that, the perception about the fraud detection techniques is the same from the sample drawn from the Auditor General’s Office and those drawn from the County governments.

The findings were backed by the Legal Framework for Public Audits; The Constitution 2010, for the Auditor General’s Office it’s their mandate and to the counties, management is answerable for the preparation and presentation of financial statements in accordance with International Public Sector Accounting Standards and for such controls as managing team defines its necessity to enable the preparation of financial statements that are free from substantial misappropriation, whether due to fraud or error. This situation forms a common basis of hope thus the understanding of and perception of Fraud Detection Techniques (FDT) is the same across categories of Perceived Fraud Detection Techniques (PFDT).

#### **4.7 Interview Guide Response**

This section seeks to find the impact of the Auditor General’s Office with respects to fraud prevention and detection techniques in Kenyan county governments.

##### ***4.7.1 Which anti-fraud measures have been most effective in combating fraud in the county governments?***

Each responded gave their views with regards to what they considered most effective techniques as described herein

### **Respondent 1**

The first respondent in this category observed that the most effective techniques included; Forensic accounting, internal controls, internal audits, filtering software, Continuous auditing, virus protection and reference check. He also recognized that auditor general's office should consistently oversee the performance at the county government and ensure that policies were effectively implemented

### **Respondent 2**

In the observation of responded 2 the most effective prevention and detection techniques included; Password protection, forensic accounting, fraud prevention and detection techniques, employment contracts. It was observed that forensic accounting appeared common in both observation while all the other techniques were different. Given that the respondent were reporting on the same county governments and there were varied, it can be deduced that there were no consistent techniques applied in the county government which should be there.

### **Respondent 3**

In the observation of the 3<sup>rd</sup> respondent, the most effective fraud prevention and detection techniques include the following; Forensic accounting, internal audit, continuous auditing password protection, contract review and employment contracts. In this 3<sup>rd</sup> respondent, it was recorded that the first three techniques were similar to those of respondent one. It could be encouraged that these similar techniques are truly effective and should be fully implemented

#### ***4.7.2 How does the Auditor General ensure the implementation of the set fraud prevention and detection techniques?***

The respondents believed that regular follow-ups with respective auditors in the county governments, helped to ensure the successful implementation of the set techniques. Similarly, an integrated strategy to combat and control any kind of potential risks instead of dealing with each issue separately during overall county audits as required by the government was identified as another way to ensure implementation. In addition, by ensuring that the county government

presents their revenue and expenditure reports annually was a means to an end in ensuring proper practice of the set techniques. Lastly, the Auditor General's Office offers an open door policy to county staff who has noted improper implementation of the techniques in place and this is believed to help ensure any problems or miss-ups are dealt with adequately.

#### ***4.7.3 What are the strengths and limitations of the set fraud prevention and detection techniques in the county government?***

Some of the notable strengths as posit by the respondents of the fraud prevention and detection techniques being employed in the county governments are: The set techniques help ensure accountability in the government. The forensic accountants contribution to the governments to prevent, detect and investigate fraud cases. In addition, the fraud detection techniques in the county government are believed to be efficient as they help identify loopholes. The audits conducted in the counties lead to budget accountability by the County government. These techniques to some extent increase the public's confidence in the undertakings of the county governments.

However, limitations associated with the techniques do exist. The respondents noted that techniques like data mining which are rated as among the most effective are deemed expensive and thus implemented to a minimum degree. There is perception that the techniques implemented are too sensitive, and should in some way be amended so that the time interval between when the fraud is committed and when it is detected decreases. Likewise, implementation of the new forensic standards requires more work on the auditor's side to assess internal controls and consequently plan the audits. Despite, the effectiveness of the said fraud detection techniques, the problem is experienced when adequate measures are not taken to probe the problem. Ineffective investigation and lack of severe repercussions for the identified perpetrators causes a halt in the entire fraud prevention goal.

#### ***4.7.4 What can be done to reduce fraud in the Kenyan county governments?***

Among the recommendations given on ways to reduce fraud were included developing a suitable monitoring strategy and this will be more effective to prevent fraudulent financial reporting, preventing misappropriation of assets and corruption. The active involvement of external audit is more effective to prevent fraudulent financial reporting compared to internal county auditors. Improvement of County management's effectiveness in relation to financial reporting will go a long way in curbing fraud in the county governments.

Similarly, the Board of Director's characteristics and other governance features affect the occurrence of county fraud and thus adequate vetting should be done. Thorough, effective and efficient internal audit functions will more likely to detect fraud. Fraud can also be reduced by the introduction of sanctions to officials committing fraud. In addition, impromptu investigations should always be done in the county governments Offices in regards to resource utilization. The introduction of fraud deterrence measures that will be severe for anyone who commits fraud. Further, the county governments to contemplate the provision of fraud hotlines not only for the public, but also for the staff to report any fraud related activities. Lastly, county governments that have internal auditors, sound internal controls and effective audit committees will be well prepared to handle fraud prevention and detection.



## CHAPTER FIVE

### DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

The chapter illustrates the summary of the study making conclusion and drawing recommendations from the results found. The overall objective of the study was to establish the perception of the effectiveness of fraud prevention and detection techniques in Kenyan County Governments. These conclusion and recommendations are grounded on the objectives

#### 5.2 Discussion of Findings

This section provides the discussion of findings according to the study objectives.

##### 5.2.1 Fraud Prevention and Detection Techniques in Kenyan County Governments

The first objective sought to establish the fraud prevention and detection techniques in Kenyan county governments. Both from the interviews conducted and answers from the questionnaire established that all the elements of fraud prevention techniques analyzed in the study that is; analytical review, audit committee, continuous auditing, data mining, dealers' contract reviews, discovery sampling, fraud reporting policy, cash reviews, virus protection, training on fraud prevention and detection and surveillance of electronic correspondence were often implemented in Kenyan county governments. However, the level of implementation and preference varied from one office to the other. The findings showed that forensic accounting services, filtering software and internal audits were the most implemented prevention techniques and were considered most effective. Among the prevention techniques that were deemed to be less effective were; financial ratios, staff rotation policy and increased attention of senior management.

Similarly, these techniques were backed by the findings from the Auditor General's Office. Increased attention from senior management, financial ratio and staff rotation ranked as least effective. The finding of this study concurs with the work of (Agathe & Ramen 2017; Haron, et al., 2014) that ranked internal audit as among top performing fraud prevention techniques and staff rotation policy as the least. The Auditor General's Office believed that poor supervision of the forensic accountants and internal auditors in the counties was the main limitation of effective implementation of fraud prevention techniques. This was reinforced by Zamzami et al., (2015) who contended that forensic accountants were among the people who sabotaged fraud prevention. The respondents also advocated for the introduction of deterrence measure, policy development as well as proper and investigations to curb fraud. These recommendations agree with the theory of fraud management cycle.

The study also revealed that the top fraud detection techniques implemented in Kenyan county governments as ranked by the respondents were; audit committee, data mining, cash reviews, fraud prevention and detection training being ranked with majority approval. Additionally, dealers' contract reviews, discovery sampling and fraud reporting policy ranked lowest according to the respondents. This finding concurs with the study of Zamzami et al., (2015) that audit committee and cash reviews were among the top ranked fraud detection techniques.

However, the study findings surprisingly differs with the work of Aeistol (2012) on public institutions that discovery sampling is a top fraud detection technique. Given different objectives and methods used the two studies, the difference could be justified. In addition, the Auditor General's Office noted that the fraud detection techniques in the county government are viewed as efficient as they have helped to identify loopholes. Meanwhile, there are feelings that detection techniques are sensitive, and need to be corrected such that the period gap between committing fraud and detecting it is reduced.

### **5.2.2 Perceived Effectiveness of Fraud Prevention and Detection Techniques in Kenyan County Governments**

The second objective sort to analyse the perceived effectiveness of fraud prevention and detection techniques in Kenyan county governments. The findings discovered that most of the respondents concurred that the perceived efficacy of fraud prevention techniques on fraud in county governments were effective. Among the techniques found to be most effective were Bank reconciliations, reference check on employees, financial ratios and filtering software with Internal audit unit and fraud vulnerability reviews lowest on the list. The findings support the study of Inyang & Joshua, (2016) who revealed that the most perceived effective prevention techniques such as fraud hotlines, whistle blowing policy, use of forensic accountants are rarely implemented to curb fraud stating that they are very effective though expensive.

While the inferential statistic findings concluded that the perception about the fraud prevention techniques was not the same from the sample drawn from the Auditor General's Office and those drawn from the office of the county governments, the implication would mean that the perception about the fraud prevention techniques is not the same among the accounting practitioners from Auditor General's Office and those from the Kenyan county governments. The respondents from the Auditor General's office also believed that the use of external audit is more effective to prevent fraudulent financial reporting compared to internal county audits conducted by county employees.

Regarding the detection techniques the findings disclosed that majority of the respondents were in agreement that the techniques implemented were effective as this was reflected by the mean of 4.2411. The study findings support those of Bierstaker, et al., (2006) which submitted that, being concerned on the costs of fraud detection techniques, undervalue its prospective benefits. Additionally, the study findings revealed that, continuous auditing, audit committee and fraud reporting policy were ranked top as the most perceived effective fraud detection techniques on fraud in county governments with data mining, virus protection and analytical review ranking the lowest.

Similarly, the inferential findings revealed that, the perception about the fraud detection techniques is the same from the sample drawn from the Auditor General's Office and those drawn from the county governments which implied that both county executive who are the accounting practitioners and those from the Auditor General's office are aware of the expectations required by the constitution and financial obligations regarding the prevention of fraud in the county governments.

### **5.3 Conclusion**

On no account would an institution get used of fraud and the truth remains that majority of frauds are committed by those who work in leadership positions or employees on key responsibilities of an institution (Deloitte, 2014). In every fraud there is a presence of at least one insider (Kroll, 2015). According to ACFE (2014), fraud cases take 18 months to get to reveal the details of the incident. Fraud has turned out to be a worldwide occurrence probing a wakeup cry to the supervisory bodies, leaders and examiners for ethical regulating. The study sought the establishment of the perception of the accounting practitioners on the effectiveness of fraud prevention and detection techniques in Kenyan County Governments and engaged accountants and external auditors and internal auditor and forensic investigator responsible from both the county audits and from the Auditor General's Office.

Kruskal Wallis-test model for comparative analysis was used to assess if there is significant difference between the perception of the accounting practitioners (accountant, internal auditor and forensic investigators) drawn from the Auditor General's Office and accounting practitioners (accountants, internal and external auditors) drawn from Kenya County governments. The study revealed that fraud prevention and detection techniques are often applied. Among the most implemented and deemed effective prevention and detection techniques include; services of forensic accounting, filtering software and internal audits and audit committee, data mining, cash reviews and the training of fraud prevention and detection respectively.

This study further discovered that perceived efficiency of fraud prevention techniques is not the same across the county and the Auditor General's office. However, the perception about

the fraud detection techniques is the same from the sample drawn from the Auditor General's Office and those drawn from the county governments. Given that several research conducted previously by the Auditor General's Office and the office of the EACC has consistently revealed that there are fraud existence in Kenya County Governments, an assumption is that the respondents may have been compromised by the sensitivity of the fraud concept and did not give true picture of the situation with regards to implemented techniques and how their implementation is effective in fraud prevention and/or detection

#### **5.4 Recommendations**

Based findings shared above, the study suggests the recommendations that follow; The county government should lay emphasis on enhancing contract reviews, discovery sampling and fraud reporting policy among other techniques for fraud prevention. Accordingly, the researcher proposes that, analytical review and audit committee as techniques for fraud detection should be enhanced at the county level. The perception about the fraud detection techniques was found to be the same from the sample drawn from the Auditor General's Office and those drawn from the county governments. In view of that, the researcher proposes that, a common basis of expectation for both the auditor general and the county officials should be enhanced in order to improve the accounting integrity.

The perception about the fraud prevention techniques was found not to be the same from the sample drawn from the Auditor General's Office and those drawn from the county governments. It is for this reason that the researcher proposes that, there should be harmony with regards to the execution of finance activities by employees at the county level and those responsibilities of the Auditor General's Office in order to mitigate material misstatement which is regularly discovered by the Auditor General's report. In addition, an appropriate oversight process needs to be developed to assist in preventing fraudulent financial operations

A similar study can be repeated in other Kenya government held entities because this study only explored the county governments, in order to compare results. The study concentrated on

perception of the effectiveness of fraud prevention and detection techniques in Kenyan county governments. The researcher suggests that, another study should be conducted to analyze fraud mitigation mechanisms by both the auditor general and the county governments of Kenya. Lastly, another research to study the secondary data should be carried out to explore the authenticity of the techniques for preventing and detecting fraud implemented and their effectiveness

### **5.5 Limitations of the Study**

Foremost, this study used a sample believed to be representative and research design where the respondents were questioned once to gauge their perspectives of the variables in the study. Considering that, a sampling has basic disadvantages which may limit generalization of the findings, they are not so costly and relatively time saving and are also advantageous when secondary data is hard to obtain. In this study it was majorly applied because sampling design is more of an advantage when studying complex populations with difficulty in follow ups.

Secondly, the findings were founded on personal information including the views of the respondent, and not the values entirely extracted from source. Although the choices of each question used were from previous studies, potential alternatives could still be considered with the findings based on other secondary data and the use of absolute facts. Finally, this study included only categories of employees as respondents. Which means that the results may not be well representative to generalize the findings to be from all employees in the county governments. The sample selection limits the generalization of results to the whole population.

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## APPENDICIES

### Appendix I: Letter of Introduction

Strathmore University  
P.O. Box 59857-00200  
Nairobi, Kenya

20<sup>th</sup> April, 2019

Dear Respondent;

#### **RE: REQUEST TO COLLECT RESEARCH DATA**

I am a student at Strathmore University pursuing a Master Degree in Commerce. I am presently conducting a research on the **“Perception of the effectiveness of fraud prevention and detection techniques in Kenyan county governments”**. Data from the participants will be collected through questionnaires. The research study is in partial fulfillment of the award of Master Degree. I humbly request you to participate in this study which will surely make this research a success.

I would like to assure you that the information collected will be treated with strict confidentiality. To ensure that confidentiality is realized, you are respectfully requested not to write your name in the questionnaire. Your voluntary involvement and cooperation in this study will be extremely appreciated.

Thank you in advance

Yours Faithfully



**Sister Consolata A. Aloo**

**Admission no: 100580**

## Appendix II: University Authority Letter



Strathmore Business School

26<sup>th</sup> April 2019

To whom it may concern

Dear Sir/ Madam

### **RE: FACILITATION OF RESEARCH – CONSOLATA A. ALOO**

This is to introduce Consolata Aloo who is a Master of Commerce student at Strathmore University Business School, admission number MCOM/100580. As part of our MCOM Program, Consolata 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, she would like to request for appropriate data from your organization.

Consolata is undertaking a research paper on **“Perceptions of the Effectiveness of Fraud Detection and Prevention Techniques in Kenyan County Governments.”** The information obtained from your organization 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,

Caroline Tiara

Manager – Masters' Programs



Old Sangale Road, Medarata Estate  
P.O. Box 59857 00200 Nairobi, Kenya  
Cell: +254 703 414867  
Email: info@sbs.ac.ke or Vtut www.sbs.strathmore.edu  
Twitter: @SBSKenya

Strathmore Business School is a proud member of



## Appendix III: University Ethical Review Certificate



14<sup>th</sup> June 2019

Ms. Aloo, Consolata Akinyi  
consolataaloo47@gmail.com

Dear Ms. Consolata,

REF **Protocol ID:** SU-IERC0514/19 **Student Number:** 100580

**Perception of the Effectiveness of Fraud Prevention and Detection Techniques in Kenyan County Governments**

We acknowledge receipt of your application documents to the Strathmore University Institutional Ethics Review Committee (SU-IERC) which includes:

1. Study Protocol submitted 29<sup>th</sup> May 2019
2. Cover letter listing all submitted documents 29<sup>th</sup> May 2019
3. Proposal declaration page signed by supervisors 29<sup>th</sup> May 2019

The committee has reviewed your application, and your study "*Perception of the Effectiveness of Fraud Prevention and Detection Techniques in Kenyan County Governments.*" has been granted approval.

This approval is valid for one year beginning **14<sup>th</sup> June 2019** until **13<sup>th</sup> June 2020**

In case the study extends beyond one year, you are required to seek an extension of the Ethics approval prior to its expiry. You are required to submit any proposed changes to this proposal to SU-IERC for review and approval prior to implementation of any change.

SU-IERC should be notified when your study is complete.

Thank you

Sincerely,

  
for: Prof. Florence Oloo

**Secretary**  
**Strathmore University Institutional Ethics Review Committee**



## Appendix IV: Authority Letter from NACOSTI



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: dg@nacosti.go.ke  
Website: www.nacosti.go.ke  
When replying please quote

NACOSTI, Upper Kabete  
Off Waiyaki Way  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/77178/31494**

Date: **26<sup>th</sup> July, 2019**

Consolata Akinyi Aloo  
Strathmore University  
P.O. Box 59857-00200  
**NAIROBI.**

#### **RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on *“Perception of the effectiveness of fraud prevention and detection techniques in Kenyan County Governments”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **23<sup>rd</sup> July, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA MSc., MBA, MKIM  
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Nairobi County.

The County Director of Education  
Nairobi County.

## Appendix V: Questionnaire

The main purpose of this questionnaire is to retrieve responses on the perception of the effectiveness of fraud prevention and detection techniques on fraud in Kenyan county governments. You are kindly asked to answer all the questions in this questionnaire truthfully. All the information that you will provide in this questionnaire will be treated with utmost confidentiality and will be only be used for generalizations purposes.

(Please tick  inside the box  where appropriate)

### SECTION A: DEMOGRAPHIC PROFILE

1. Government body: County Government  Auditor General's Office

2. Gender: Male  Female

3. Job occupation: Internal auditor  Accountant  External auditor

4. Highest level of education: Bachelor Degree  Higher Diploma

Master Degree  Doctorate Degree

Diploma

5. Current certification: CPA

ACCA

CISA

CFE

CFA

Other.....

6. Years of professional Experience: 0-2 years

3-5 years

6-9 years

10-15 years

More than 16 years

**SECTION B: FRAUD PREVENTION TECHNIQUES IMPLEMENTED IN KENYAN COUNTY GOVERNMENTS**

7. This section seeks to establish the extent of fraud prevention techniques implemented in Kenyan county governments. Please respond to the statements in the table below by ticking in the appropriate column. The rating scale is as follows; (“always” = 5, “often” = 4, “not sure” = 3, “rarely” = 2 and “never” = 1)

No.	Fraud prevention techniques	Always	Often	Not Sure	Rarely	Never
1.	Filtering software					
2.	Firewalls protection					
3.	Forensic accounting services					
4.	Fraud hotline					
5.	Fraud vulnerability reviews					
6.	Internal audit unit					
7.	Internal control systems					
8.	Inventory observations					
9.	Maintain a fraud policy					
10.	Morals teaching					
11.	Password protection					
12.	Reference check on employees					
13.	Bank reconciliations					
14.	Staff rotation policy					
15.	Financial ratios					
16.	Increased attention of senior management					
17.	Employment contracts					

8. Any other comments (if any)

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**SECTION C: FRAUD DETECTION TECHNIQUES IMPLEMENTED IN KENYAN COUNTY GOVERNMENTS**

9. This section seeks to establish the extent of fraud detection techniques implemented in Kenyan county governments. Please respond to the statements in the table below by ticking in the appropriate column. The rating scale is as follows; (“always” = 5, “often” = 4, “not sure” = 3, “rarely” = 2 and “never” = 1)

No.	Fraud detection techniques	Always	Often	Not Sure	Rarely	Never
1.	Analytical review					
2.	Audit committee					
3.	Continuous auditing					
4.	Data mining					
5.	Dealers’ contract reviews					
6.	Discovery sampling					
7.	Fraud reporting policy					
8.	Cash reviews					
9.	Virus protection					
10.	Fraud prevention and detection training					
11.	Surveillance of electronic correspondence					

10. Any other comments (if any)

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**SECTION E: PERCEPTION OF EFFECTIVENESS OF FRAUD PREVENTION TECHNIQUES ON FRAUD IN KENYAN COUNTY GOVERNMENTS**

11. This section seeks to establish the perceived effectiveness of fraud prevention techniques on fraud in Kenyan county governments. Please respond to the statements in the table below by ticking in the appropriate column. The rating scale is as follows; (“very effective” = 5, “effective” = 4, “not sure” = 3, “ineffective” = 2 and “very ineffective” = 1) and later kindly explain your choice on the rating scale.

No.	Fraud prevention techniques	very effective	effective	Not Sure	ineffective	very ineffective
1.	Filtering software					
	Explain your answer, why?					
2.	Firewalls protection					
	Explain your answer, why?					
3.	Forensic accounting services					
	Explain your answer, why?					
4.	Fraud hotline					
	Explain your answer, why?					
5.	Fraud vulnerability reviews					
	Explain your answer, why?					
6.	Internal audit unit					
	Explain your answer, why?					
7.	Internal control systems					
	Explain your answer, why?					
8.	Inventory observations					
	Explain your answer, why?					
9.	Maintain a fraud policy					
	Explain your answer, why?					

10.	Morals teaching					
	Explain your answer, why?					
11.	Password protection					
	Explain your answer, why?					
12.	Reference check on employees					
	Explain your answer, why?					
13.	Bank reconciliations					
	Explain your answer, why?					
14.	Staff rotation policy					
	Explain your answer, why?					
15.	Financial ratios					
	Explain your answer, why?					
16.	Increased attention of senior management					
	Explain your answer, why?					
17.	Employment contracts					
	Explain your answer, why?					

12. Any other comments (if any)

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**SECTION E: PERCEPTION OF EFFECTIVENESS OF FRAUD DETECTION TECHNIQUES ON FRAUD IN KENYAN COUNTY GOVERNMENTS**

13. This section seeks to establish the perceived effectiveness of fraud detection techniques on fraud in Kenyan county governments. Please respond to the statements in the table below by ticking in the appropriate column. The rating scale is as follows; (“very effective” = 5, “effective” = 4, “not sure” = 3, “ineffective” = 2 and “very ineffective” = 1) and later kindly explain your choice on the rating scale.

No.	Fraud detection techniques	very effective	effective	Not Sure	ineffective	very ineffective
1.	Analytical review					
	Explain your answer, why?					
2.	Audit committee					
	Explain your answer, why?					
3.	Continuous auditing					
	Explain your answer, why?					
4.	Data mining					
	Explain your answer, why?					
5.	Dealers’ contract reviews					
	Explain your answer, why?					
6.	Discovery sampling					
	Explain your answer, why?					
7.	Fraud reporting policy					
	Explain your answer, why?					
8.	Cash reviews					
	Explain your answer, why?					
9.	Virus protection					
	Explain your answer, why?					
10.	Fraud prevention and detection training					

	Explain your answer, why?					
11.	Surveillance of electronic correspondence					
	Explain your answer, why?					

14. Any other comments (if any)

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**THANK YOU FOR YOUR COOPERATION**



## SECTION F: OFFICE OF THE AUDITOR GENERAL INTERVIEW GUIDE

15. This section seeks to establish the impact of the Auditor General's Office with regards to fraud prevention and detection techniques in Kenyan county governments. The interviews will be conducted to the forensic investigator, an accountant and one internal auditor who work at the Auditor General's Office

1. What is the mandate for the Auditor General's Office in relation to fraud prevention and detection in County governments in Kenya?
2. What was the objective of the Auditor General's Office with regards to fraud prevention and detection in county governments?
3. Which anti-fraud measures have been most effective in combating fraud in the county governments?
4. How does the Auditor General's Office confirm the implementation of the set fraud prevention and detection?
5. What are the strengths and limitation of the set fraud prevention and detection techniques in the county governments?
6. What can be done to reduce fraud in the Kenyan county governments?

VT OMNES VIVAM SINTE

## Appendix V: List of County Governments in Kenya per Region

Code	County	Region	Area (km <sup>2</sup> )
001	Mombasa	Coast	212.5
002	Kwale	Coast	8,270.30
003	Kilifi	Coast	12,245.90
004	Tana River	Coast	35,375.80
005	Lamu	Coast	6,497.70
006	Taita-Taveta	Coast	17,083.90
007	Garissa	North Eastern	45,720.20
008	Wajir	North Eastern	55,840.60
009	Mandera	North Eastern	25,797.70
010	Marsabit	Eastern	66,923.10
011	Isiolo	Eastern	25,336.10
012	Meru	Eastern	5,127.10
013	Tharaka-Nithi	Eastern	2,409.50
014	Embu	Eastern	2,555.90
015	Kitui	Eastern	24,385.10
016	Machakos	Eastern	5,952.90
017	Makueni	Eastern	8,008.90
018	Nyandarua	Central	3,107.70
019	Nyeri	Central	2,361.00
020	Kirinyaga	Central	1,205.40
021	Murang'a	Central	2,325.80
022	Kiambu	Central	2,449.20
023	Turkana	Rift Valley	71,597.80
024	West Pokot	Rift Valley	8,418.20
025	Samburu	Rift Valley	20,182.50

026	Trans Nzoia	Rift Valley	2,469.90
027	Uasin Gishu	Rift Valley	2,955.30
028	Elgeyo-Marakwet	Rift Valley	3,049.70
029	Nandi	Rift Valley	2,884.50
030	Baringo	Rift Valley	11,075.30
031	Laikipia	Rift Valley	8,696.10
032	Nakuru	Rift Valley	7,509.50
033	Narok	Rift Valley	17,921.20
034	Kajiado	Rift Valley	21,292.70
035	Kericho	Rift Valley	2,454.50
037	Kakamega	Western	3,033.80
038	Vihiga	Western	531.3
039	Bungoma	Western	2,206.90
040	Busia	Western	1,628.40
041	Siaya	Nyanza	2,496.10
042	Kisumu	Nyanza	2,009.50
043	Homa Bay	Nyanza	3,154.70
044	Migori	Nyanza	2,586.40
045	Kisii	Nyanza	1,317.90
046	Nyamira	Nyanza	912.5
047	Nairobi	Nairobi	694.9