

**PREDICTORS OF COMPUTERIZED FINANCIAL FRAUD AMONG  
COMMERCIAL BANKS IN KENYA**

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**A THESIS SUBMITTED TO THE SCHOOL OF BUSINESS MANAGEMENT AND  
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THE AWARD OF THE DEGREE OF MASTER OF FORENSIC SCIENCE AND  
SECURITY MANAGEMENT (CORPORATE FORENSIC OPTION) OF DEDAN  
KIMATHI UNIVERSITY OF TECHNOLOGY.**

**DECEMBER, 2018**

DECLARATION

This thesis is my original work and has not been submitted to any other university

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## DEDICATION

This work is dedicated to my family who gave me invaluable moral support throughout the period.

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## LIST OF ABBREVIATIONS

|              |   |   |
|--------------|---|---|
| <b>A.T.M</b> | - | Automatic Teller Machine                              |
| <b>ACFE</b>  | - | Association of Certified Fraud Examiner               |
| <b>AMFSD</b> | - | Alteration of master file standing data               |
| <b>BFID</b>  | - | Bank fraud investigation department                   |
| <b>CBK</b>   | - | Central Bank of Kenya                                 |
| <b>CBK</b>   | - | Commercial Bank of Kenya                              |
| <b>CBN</b>   | - | Central Bank of Nigeria                               |
| <b>CID</b>   | - | Criminal Investigation Directorate                    |
| <b>CIPFA</b> | - | Chartered Institute of Public Finance and Accountancy |
| <b>CPU</b>   | - | Central Processing Unit                               |
| <b>DDOS</b>  | - | Denial of services                                    |
| <b>DOJ</b>   | - | department of Justice                                 |
| <b>EA</b>    | - | East Africa   |
| <b>FBI</b>   | - | Federal Bureau of Investigation                       |
| <b>FSF</b>   | - | False financial statement                             |
| <b>GDP</b>   | - | Gross Domestic Report                                 |
| <b>GSR</b>   | - | Global survey report                                  |
| <b>HC</b>    | - | Hyper –connected                                      |
| <b>IAPC</b>  | - | International Auditing Practices Committee            |
| <b>ISA</b>   | - | International Standard on Auditing                    |
| <b>KBA</b>   | - | Kenya Banker Association                              |
| <b>MLFF</b>  | - | Multilayer feed forward neural network                |
| <b>MSI</b>   | - | Market share index                                    |
| <b>PNN</b>   | - | probabilistic Neural Network                          |
| <b>PwC</b>   | - | Price water coopers                                   |

|             |   |                            |
|-------------|---|----------------------------|
| <b>RBI</b>  | - | Reserve Bank of India      |
| <b>ROK</b>  | - | Republic of Kenya          |
| <b>SARs</b> | - | Suspicious Activity Report |
| <b>SVM</b>  | - | support vector machine     |
| <b>U.S</b>  | - | United state of America    |
| <b>UK</b>   | - | United Kingdom             |

## ABSTRACT

The main objective of this study was to evaluate predictors of computerized fraud among commercial banks in Kenya. The specific objectives were; to explore the effect of Quality Management, employee's behavior anomalies and operational red flags on computerized financial fraud in commercial bank in Kenya. The study was anchored on two theories namely theory of mindset and fraud triangle theory. The study employed a descriptive design. The study used Primary data. A target population was 172 managers in the banking sector in Kenya. A stratified sample of 72 bank managers was used in the study. Primary data was collected using self-administered semi-structured questionnaires. SPSS software version 21 was used. Data analysis results were presented in form of descriptive statistics, that is, mean and standard deviation in tables, charts and figures. In order to answer each of the research questions, linear regressions at 5% level of significance was used. Model fitness ( $R^2$ ), ANOVA statistics and regression coefficients were generated and interpreted. Conclusions were drawn for each of the specific research objectives. Results of the study revealed that the influence of Quality Management, Employees Behavior Anomalies and operational red flags as predictors for computerized financial fraud in commercial banks in Kenya had a positive correlation and significant. The study recommends that the management of commercial banks in Kenya to ensure there is a higher level of policy compliance. The study further recommends that the management of Kenya commercial banks to conduct frequent internal auditing erase the possibility of a fraud. There is also need for the management of commercial banks in Kenya should boost the confidence and integrity level of staff so as to prevent financial fraud. The study further recommends that the management of commercial banks should ensure there is job rotation so as to prevent the staff from getting too familiar with the system thereby avoiding the possibility of a computer fraud. Moreover, the management of commercial banks should regularly audit their staff lifestyle so as to monitor fraud. There is also a need to frequently monitor high number of false overtime claims so as to prevent financial fraud. Finally, the study recommends the management of commercial banks to ensure they provide effective training for customers and employees. There is also a need to ensure there are no failures of security controls so as to prevent anticipated computerized financial fraud in commercial banks. The study further recommends the management of commercial banks to ensure there is an effective management team so as to reduce computerized financial fraud. In addition, the study recommends the management of commercial banks in Kenya to ensure there are no voluminous cash transfers as this reduces the vulnerability of staff to commit financial fraud.

## CHAPTER ONE

### INTRODUCTION

#### **1.1 Background**

The world has changed in a dynamic way and everyone must change with it in all sphere of human existence to survive. Creech (2013) notes that as much as the law holds to its traditional tenets seeking, there to maintain its own logics, the revolution caused by information and communication technology cannot be wished away. Creech (2013) further notes that we are living in a hyper-connected world where machines have taken over most of the mathematical queries the modern time has been at pain to resolve. Technological advances have revolutionized business associations making business transactions simpler, faster, easier, and comfortable than ever before in human history. Paradoxically, the same electronic or digital revolution is revealing some serious legal challenges in the sector of security, privacy and freedom of expression, especially in the emerging economies including Kenya, (Fatima 2011).

According to Chartered Institute of Public Finance and Accountancy (CIPFA 2016) computer financial fraud is any intentional act meant to distort financial statement for financial gain while Auditing Guidelines define fraud as any irregularities involving use of deceit to obtain an illegal or unjust advantage that include manipulation, falsification or alteration of records , document or figures alteration, misappropriation of assets records, omitting transactions from records or document, misstatement of facts, recording without substance fact and misapplication of accounting policies.

Malmi, Zainol, & Nelson (2012) Stipulated that Computerized financial fraud is more conducive where quality management systems are weak and are integrated with information technology. The growth use of internet by IT based institution has increased threat of computer fraud that can lead to substantial financial loss. Their study result indicated that rapid adoption of technology by bank has increased technological threats which are inevitable. The results demonstrated that 26% of the respondents reported that they are likely hood of technological threat. The result therefore suggest that banks should upgrade their internal controls system which include both physical and software infrastructures with latest technology facilitation.

Oreku (2013) study reveals that E-commerce has evolved the procurement procedures and financial presentation. Managing computer technology in the banking sector is a pressing issue due to demand for and concern about sharing of confidential personal information such as account details.

Technology in the banking sector provides efficient, resilient, mobility and ability for testing new services. However, digitization leads to true ubiquity with profound implications

According to Gasairo (2016) the essence bank management team in the bank is to ensure that fraud or manipulation or error did not occur or is reduced to a manageable level. However Computer fraud may occur in the following forms: Manipulation of Input where input data may be altered or corrupted with a view to altering computer records and may be with an intention to defraud the organization, Fraudulent data also known as Data diddling may be introduced into the computer system or processing. It involves changing data before or during their input to the computer. Manipulation of input data may be averted by ensuring that there are effective administrative and general controls, Manipulation of Computer time/Assess for instance by working late where computer time is manipulated with the intention to use the computer for personal advantage at the expense of the organization.

Gasairo (2016) emphasize that data in the system memory may be altered or certain unauthorized operations may be carried out. Alteration of Master File Standing Data this is where data in master file is altered to help the unauthorized person to achieve his purpose. This is mainly done on the standing data (i.e. data that is not in constant use). To curb this type of fraud, there should be an effective back-up routine which ensures that a copy of master file is kept, Program Patching, this is where an attachment is made to the computer program so that it can jump function or perform unauthorized functions which the unauthorized person wants it to perform to his own advantage. Interception of Transaction: This is normally seen where on-line system is in operation and can be intercepted between the terminal and the central processing unit. One of the noticed computer fraud, is when a person intercept computer operation in a bank and to transfer millions of pounds to his/her account by connecting his computer line to that of the bank and operate on the CPU of the bank's computer from his house. This study sought to focus on employee behavior anomalies and quality management and operational red flags as predictors for detecting electronic fraud in commercial financial institutions such as banks.

### **1.1.1 Global Perspective of Computerized Fraud**

Owabi (2010) noted that fraud in the banking industry is not limited to any economy, nation, continent or environment. A global economic survey that was conducted in 2015/ 2016 revealed that all companies that exited investments in Africa, Brazil, China, and India cited fraud ,bribery and corruption as a risk factor to financial market. According to the survey fraud and corruption activities has risen to 38% this year. Fraud and corruption have worsened more in developed market with no



prosecutions. Global survey indicated that governments in Africa, Brazil and East Africa are willing to prosecute with no effective conviction. The survey also found that 2, 825 bank executive justify unethical behaviors when they are under financial pressure. The finance team would make illegal cash payment and prepare to misstate financial performance to win and retain business. It is therefore referred as crime of choice of organized criminal gangs worldwide. Also finance institution lack awareness of cyber crime with only 41% viewing cybercrime as concern.

In the global scene computerized cyber-crime is notable (U.S. Department of Justice (DOJ 2002), notes within six year period, the Federal Bureau of Investigation (FBI) received 207,051 Suspicious Activity Reports (SARs) for criminal activities related to forgery, identity theft, counterfeit checks, and counterfeit A.T.M cards. These fraudulent activities accounted for 47 percent of the 436,655 SARs filed by U.S. financial institutions and equaled approximately \$7 billion in expected losses. The Association of Certified Fraud Examiners' (ACFE) global fraud survey 2014 revealed that the typical organization such as bank loses a median of 5% of revenues each year due to fraud. On a global scale, this translates to losses of approximately \$3.7 billion, according to anti-fraud experts. In addition to lost revenue, there are also indirect costs, such as low employee morale, decreased productivity, ruined reputations and tarnished brand images, all resulting from employee and employer fraud. Nevertheless, the ACFE study found that 77% of fraud were committed by employees working in accounting, operations, sales, executive management, customer service, purchasing or finance in the banking and financial services.

The Association of Certified Fraud Examiners (ACFE) Global survey report (2016) indicated that the total loss was 150,000 with assets misappropriation as the most common form of occupation fraud. The survey shows that organization loss 6.3 billion to fraud where in small organization loss was the same as in larger organizations. United States reported 1038 fraud cases followed by Sub-Saharan Africa with 285 cases, Asia pacific with 221, Latin America with 112, west Europe 110, Central Asia and Southern Asia each with 98, Canada with 86 and Middle East with 79 fraud cases.

According to this report asset misappropriation involved billing schemes and check tampering schemes posing greatest risk based on their relative frequency and median loss. Wilhem (2004) estimated annual losses due to fraud for various industries in the US to include \$67b (Insurance), \$150b (Telecommunication), \$1.2b (Bank), \$40b (money laundering), \$5.7b (Internet) and \$1b (Credit card). These losses pose a significant threat to banks considering their role in the economy. Owolabi (2010) noted that the problem of fraud in the banking industry is not limited to any economy, nation, continent or environment where Fraud and fraudulent activities can ultimately result to bank failure. According to Indian banking sector fraud range from financial

misrepresentation, identity theft, forgery, A.T.M theft /internet fraud and stealing from dormant account Deloitte (2015).

Indian banking sector discovered that fraud in the banking sector was growing at an average rate of 18% in comparison to 7% GDP growth rate. Common types of fraud in India included identity theft, bank fraud, credit card fraud, and government documents or benefit fraud. The growing rate of fraud is devastating where ranking has gone up to 9 and ranked of 94 out of 177 in 2013 with cyber fraud amounting to 527 million INR reported Reserve bank of India RBI (2012).

According to the cabinet Office and information intelligence expert Detica, in 2011 the UK government overall cost to their economy due to cybercrime was 27 billion per year. The UK current cybercrime strategy estimate the cost from credit card fraud was 328m in 2008-9 which was an increase of 13% from the previous year. Kroll Global fraud and risk report 2016 revealed that United States was the only country where IP theft was most common type of fraud recording 80% fraud followed by information theft.

### **1.1.2 Regional Perspective of Computerized Fraud**

According to Kroll Global fraud and risk report (2016) sub-Saharan Africa experienced highest fraud incidences of all regions. From the research there is increase of fraud cited compared with one cited in 2015. They include; theft of physical assets or stock, vendor , supplier or procurement fraud, information theft, management conflict of interest, breach of regulation, money laundering and misappropriation of assets and funds where the survey was conducted where 89% of respondent experiencing one type of fraud. The report cited perpetrators of fraud as senior or middle management employees of company with Executive in the region reported highest cases of internal financial fraud which was 31% which was 11% high than the global average of 20%. junior employees, Ex-employee and freelance / temporary employee as also perpetrators of fraud in the banking industry.

The increasing rate of globalization with computerization has led to increased rate fraud and new fraud activities Zagaris (2010). The economic cost of frauds can be huge in terms of likely disruption in the working of the markets, financial institutions and payment system and may damage the integrity and stability of the economy especially for the developing countries. The Central Bank of Nigeria (CBN) reported that cases of attempted fraud and forgery in banks, as at half year 2012 exceeded what was recorded in the whole of 2011. The report further notes Fraudulent practices in Nigeria included unethical behavior in the banking business which include defrauding government , forgery, identity theft, excess charges, fraudulent transfer /withdraws from customers account,

fictitious credit check suppression and cash defalcation bribery of public officials insider trading ,bribery of private citizens discrimination socially questionable activities, bad judgment in management decision unfair trade practices ,industrial espionage and invasion of privacy.CBN half year report for 2007 indicated that 741 fraud cases were reported involving N5.4 billion(US\$ 34.8 )

According to Transparency International perception Index, South Africa is ranked 74 out of 177 countries commercial crimes Card Fraud .Perpetrators use a variety of Card Fraud methods and keep changing their approach to trick their victims. The most common Card Fraud types in South Africa at present include Counterfeit Card Fraud, Lost and Stolen Card Fraud, False Application Fraud and Card Not Present Fraud. Card Fraud is difficult for the banking industry because perpetrators prey on the vulnerabilities of bank customers and do not target banking systems (Mcintyre, 2014).

### **1.1.3 Kenyan Perspective of Computerized Fraud**

The banking industry in Kenya is governed by the companies Act, the banking Act ,the Central Bank of Kenya Act and the various prudential guidelines issued by the central bank of Kenya (CBK 2012). Commercial banks are financial institutions that are intermediary, they provide current accounts, saving accounts, and accept deposits. The CBK fall under the ministry for finance docket and it is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. There are forty three banks that are classified by Central bank and members of clearing house. The banks have come together under the Kenya Banker Association (KBA) which serve as lobby for the banking sector's interest. According to Kenya Bankers Association Annual Report (2008) the commercial banks and non – banking financial institutions offer corporate and retail services compromising investment in banking Banking industry is an important prerequisite for saving and investment decision needed for rapid economic growth due to channeling of funds needed by business and house hold sectors from surplus spending to deficit spending units in the economy.

According to data from the Bank fraud investigations Department (BFID, 2012), fraudsters have stolen at least ksh1.5 billion from Kenyan banks in the past one year in organized crime by technology-savvy banks employees. However investigator managed to recover mere Ksh 30 million with several cases pending in court. According to BFID (2015) computer aided fraud has been on increase despite policies formulated in the Kenyan banking sector where amount of fraud loss in the banking industry is estimated to Kenya shillings 3.3 billion in 2015 which is an increase from shillings 2.2 billion reported 2014.The typologies of this computer aided fraud include false financial

statements, falsification of documents, identity theft, manipulation of dormant account and forgeries of cheques.

Bagala (2016) notes that the Criminal Investigations Directorate (CID) is investigating more than 20 cases in which seven banks lost about KShs 7 billion in what has been termed as fraud engineered by bank employees. The cases were registered between January 2015 and January 2016. He further notes that Police investigations detected connivances between bank employees and clients in most of the cases where banks have lost money. Bank fraud cases are still high and involve huge amounts of money. Financial institutions should do more to fix loopholes that their staff are exploiting to defraud the banks and the client. According to Global Economic crime survey 2016 The rising of economic crime is devastating, it account for 46% of economic where two third of economic crime were committed by the internet fraudsters as result of opportunity and the inability of organization to detect and prevent crime.

According to 2016 Global Economic crime survey, most form of economic crime in Kenya commercial banks involved financial misrepresentation, asset misappropriation, bribery and corruption, procurement and cybercrime which is increasing becoming a threat to organizations trying to adapt to the new digital world. The 2016 survey reveals an increase in the incidence of economic crime from the last survey from 52% of respondents experiencing economic crime in 2014 compared to 61% in 2016, which is 25% higher than the global average. According to (PWC, 2011), Kenya has the highest prevalence and fast growing exposure to fraud with 66% victims being commercial banks due to weakness in Quality Management structures and lack of integrity of employees with Kenya having the highest number of incidences of fraud. Price Water house coopers (2016) Kenya is ranked third with 61% cases of fraud South Africa with 69% and France 68%, Zambia tied with Kenya while Nigeria was ranked fourth. PWC (2016) also revealed that economic crime has risen to 17% in just one year. ACFE (2016) reveal that perpetrators of banking sector fraud are employees of the bank who collude with the employees especially the owners/ executives, the survey also that 75% of fraud is from accounting department.

Onyango (2014) notes that the Republic of Kenya (RK) is one of the East African countries whose economy is rapidly revamping itself in order to suit the new requirements of digital technology. Onyango continues to argue that as much as Kenyan consumer behavior is rapidly tending towards post modernity and deploying digital machines to control transfer of money, any reasonable person must admit that internet offenses are there to stay unless the Government designs reticent financial

legal frameworks to proactively counter fraudulent behavior in the financial sector. Commercial bank fraud threaten its intermediation role within Kenyan economy where the banking sector maintains more than 16 million deposits amounting to gross Ksh 1.5 trillion and more than 2 million accounts worth Ksh 950 billion (CBK 2011)

## **1.2 Statement of the problem**

The Republic of Kenya under Vision 2030 posits that commercial banks as financial intermediaries play a vital role in economic development, financial sector offers a wide range of products for risk mitigation. It allows mobilization and allocation of financial resources for investment and wealth; it enhances financial stability, efficient transformation and accessibility to all Kenyans. However, financial fraud poses a great threat to banking industry, it erodes investor and customers' confidence and trust toward banks leading to low productive economic activities and also affects its position in competitive market. The banking sector in Kenya is ranked as one of the fastest growing sectors in East Africa, however, financial fraud remains the teething problem to the sector where Kenya's commercial banks were the most vulnerable in Africa ranked position 1 in a list of 22 industries.

Scholars are of different opinions on computerized fraud. Maimi, Zainal & Nelson (2012) agreed that computerized fraud is more conducive where internal controls are weak and are integrated with IT, Oreku (2013) posits that managing fraud in the banking sector is a teething problem due to concern about sharing confidential personal information such as bank accounts. Kenyan banks have not been spared as theft in banks has shifted from burglary and robbery to use of computerized related fraud.

Gasaioro (2016) conducted a study on fraud management in the banking sector while Zagaris (2010) established the effect of computerization on rise of fraud globally. Onyango carried a study that shed more light on challenges of post modernity and computerized transactions in the banking sector.

No study has been done on predictors of computerized financial fraud among commercial banks in Kenya, hence local literature on predictors of computerized financial fraud in commercial banks in Kenya is thinly available. This study therefore seeks to evaluate the predictors of computer related financial fraud in the banking industry in Kenya. The study therefore sought to investigate whether Quality Management, employee behavior and bank operational red flags can predict computer related fraud among commercial banks in Kenya.

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

#### **1.3.1 General objective**

The general objective of this study was to investigate the influence of computerized financial fraud in the commercial banks in Kenya

#### **1.3.2 Specific Objectives**

The study was guided by the following specific objectives:

- i. To explore the effect of Quality Management on computerized financial fraud occurrence in commercial banks in Kenya.
- ii. To assess the impact of employee behavior anomalies on computerized financial fraud occurrence in commercial banks in Kenya.
- iii. To analyze the effect of bank operational red flags on computerized fraud occurrence in commercial banks in Kenya.

### **1.4 Research Questions**

The following research questions were used to guide this to research.

- i. How does Quality Management affect computerized fraud in commercial bank in Kenya?
- ii. How do employee's behaviors influence computerized fraud in commercial banks in Kenya?
- iii. How do operations red flags influence computerized fraud occurrence in commercial bank in Kenya?

### **1.5 Scope of the Study**

This study concentrated on predictors of computerized financial fraud in commercial banks in Kenya. The study was conducted in Nairobi County specifically on all licensed commercial bank headquarters located in the central business district. There are 43 licensed commercial banks in Kenya as at December 31, 2016. All commercial banks are headquartered in Nairobi Central Business District. Many factors can be used to predict fraud; this study however concentrated on three such factors and excludes all other factors found in theory and empirical literature.

### **1.6 Limitation of the Study**

The challenges foreseen are getting sincere and informed responses from respondents as the current situation is bank fraud information is sensitive. The researcher anticipated to overcome the problem

by assuring respondents that the information they were going to provide in the study was going to be purely used for academic purposes and in confidentiality. There exists no direct measures linking probability of fraud and therefore this study used Likert scale to measure relationships in the selected study variables.

### **1.7 Significance of the Study**

Past studies carried out on bank fraud concentrated on developed countries and more on fraud management and effects of fraud, therefore the findings of this studies will contribute information about predictors of fraud in the developing countries like Kenya and red flags of fraud in commercial banks by understanding the indicators of financial fraud hence formulation of policies to reduce indicators of fraud within banking commercial banks.

The study can also shed more light to the potential investors on the possible types of bank frauds and will help them in understanding and therefore enlighten them on the susceptibility to bank fraud. This ensures that they do not face huge losses. To the government this study can help put in place regulations to either protect customers or control the banking sector by ensuring strict buffer. Banking is one of the major supports of most economies and as such when the field is changing so do the rules that govern this sector to keep up with the changes. The study can also serve the new researchers and students who want to know more about fraud, its red flags, cause, effect and possible strategies to manage fraud.

### **1.8 Assumption of the study**

The study assumed that respondents were going to provide sincere and informed information that was targeted by the researcher.

### **1.9 Definition of Terms**

**Bank Fraud** refers to activities undertaken by an individual or company that are done in a dishonest or illegal manner, and are designed to give an advantage to the perpetrating individual or company (Chapman, 2012)

#### **Commercial Bank-**

**Computerized Financial Fraud:** Computer fraud is the act of using a computer to take or alter electronic data, or to gain unlawful use of a computer or system, (Seetharaman, Senthilvelmurugan, & Periyanyagam, 2004)

**Financial Fraud** is an intentional act by one or more individuals among management, employees, or third parties, which results in a misrepresentation of financial statement (Mcintyre *et al* , 2014).

**Forgery** refers to the crime of falsely making or altering a writing by which the legal rights or obligations of another person are apparently affected; simulated signing of another person name to any such writing whether or not it is also the forger's name, (Apekhade, 2015)

**Fraudulent** refers to an act of unjustifiably claiming or being credited with particular accomplishments or inequalities (Mcintyre *et al* , 2014)

**Quality Management:** Is defined in as the process for assuring achievement of an organization's objectives in operational effectiveness and efficiency, reliable financial reporting, and compliance with laws, regulations and policies (CFA Institute, 2009)

**Employees Behavior:** Refers to the way in which employees respond to specific circumstances or situations in the workplace

**Operational Redflags:** Is a warning or an indicator of a potential problem or threat, such as any undesirable characteristic that stands out to an analyst as it pertains to a company's stock, financial statements.

**Predictor:**An event or action will happen in the future, especially as a result of knowledge or experience.



## CHAPTER TWO

### LITERATURE REVIEW

#### **2.1 Introduction**

This chapter provides the review of the past studies and theories concerning the research topics. Empirical reviews have been provided according to the objectives of the study while the theoretical framework brings out the possible elements that must be present for computerized fraud to occur. The chapter also provides the conceptual and operational framework and brings out the research gaps as they emerge from the literature.

#### **2.2 Theoretical literature Review**

Theoretical review explains phenomena on which a particular study is based on, by stating constructs and laws that inter-relate these constructs to each other (Mugenda & Mugenda, 2003). There are various explains factors that contribute to likelihood of fraud occurrence in commercial banks (ACFE 2016). This study was guided by the theory of mindset and problem presentation and fraud triangle theory.

##### **2.2.1 Theory of Mindset and Problem Representation**

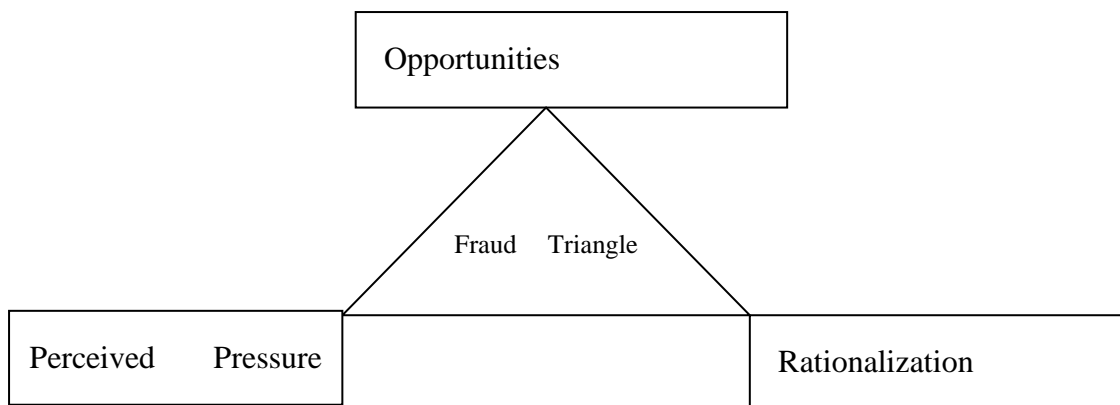
Mindset is a general cognitive orientation with distinct features that guide individuals in the collection and interpretation of information (Gollwitzer, 1996). It influences how individuals process information and shapes their thought production and way of thinking. Mindset impacts decision making through its effects on the way in which individuals process task-related information (Beckmann and Gollwitzer, 1987).

Preliminary individuals with a particular way of thinking can cognitively evoke in them a focus on information consistent with the mindset and subsequently lead them to search for pertinent information (Gollwitzer, 1990). It is believed that the mindset of an audit specialist has a direct influence on fraud related task performance. Given that fraud specialists (Forensic Accountants) are more likely than auditors to suspect wrongdoings in the company's reported financial statements, it is anticipated that they will tend to evaluate these statements as less reliable and at a higher risk level. The contention that mindset guides and influences the creation of a problem representation because individuals are likely to focus on, remember, and even seek out an information that conforms to their mindset (Pichart and Anderson, 1977). Prior accounting literature has provided empirical evidence to support the relationship between mindset and problem representation as well as the problem representation's influence on task performance (Armor & Taylor, 2003).

Therefore, fraud specialists were expected to have a higher propensity than auditors to take further investigative actions into company's financial statements to determine the occurrence of fraud. Armor and Taylor (2003) manipulated participants into different mindset groups by varying the manner in which they were to consider a particular performance task. The authors found out that differing mindsets led to different performance outcome which was consistent with their theoretical predictions.

### 2.2.2 Fraud Triangle Theory

American criminologist Donald Cressey developed a theory – known as the Fraud Triangle (1953-1973) – that explains the factors that lead to fraud and other unethical behavior. When businesses and organizations understand the Fraud Triangle, they can more effectively combat criminal behavior that negatively impacts their operations. Elements of Cressey's Fraud Triangle are: perceived need/pressure, perceived opportunity and rationalization. In order for there to be fraud all three elements must be present. According to Albrecht, "nearly every fraud involves the element of rationalization. This study is premised on The Fraud Triangle Theory. Cressey (1971) described classical fraud theory and designated the propensities for fraud as a triangle of perceived opportunity, perceived pressure and perceived rationalization as shown in figure below.



**Figure 2.1 Classical Fraud motivational model**

According to Chiezey (2013), every fraud executor is confronted with some kind of pressure or need that motivate individuals to commit fraud. Financial pressures due to poor performance or frustration with the nature of work or even challenge to beat the system. Opportunities are provided by poor Quality Management that includes procedures, failures, other factors such as apathy, ignorance, lack of punishment and inadequate infrastructure. Access to systems, information and assets must therefore be limited to only those who are required by firm policies.

Rationalization is the manner in which people think about theory work, performance, and contribution within workplace. In every organization there should be limitation or processes that test the integrity of the financial information or processes. The absence of the integrity process includes an absence or ineffective role of internal auditors, external auditors, and board of directors and reporting requirement – banks, regulators and appropriate management review. The study adopted the Fraud triangle theory as its framework because it explains the factors that cause individuals to commit fraud and best describe fraud in the context of the banking industry. However the theory does not demonstrate how fraud can be assessed, detected and resolved.

## **2.3 Empirical Literature Review**

This section presents the literature review for each of the independent variables.

### **2.3.1 Quality Management and Computerized Financial Fraud**

Burnaby, Howe, & Muehlmann( 2011) sought to ascertain whether effective fraud managemnet rely on effective Quality Management and efficient internal controls. The findings of the study indicated that banking sector, operation are intergrated with IT had significant higher cases of fraud for appropriatness of reerves for sales returns/ discounts with a mean of 4.3 and 4.2. The study also confirm Quality Management that do not mitigate the potential fraud may lead to asset misappropriation hence financial material losses. Auditors are limited to look beyond manual of internal controls and find lope holes in information system as an internal control.The study confirm that assessment of IT risk areas is of concern to all banks, where such security include security over employees access to the system or data, security of systems and data in terms of inappropriatness, physical security of hardware and security over employees access to system or data.

Tunji (2013) in his study on effective Quality Management system revealed that effective Quality Management can reduce or totally eliminate distress in the banking sector. This calls for upgrading of Quality Management system to more effective controls. The finding of their study was with aid of efficient and effective internal controls system has positive effect on fraud reduction in banking sector since fraud cannot fully be eliminated and also it has greater impact on accuracy and reliability of financial statements.

Sitienei, (2012) in a study on factors influencing credit card fraud in the banking sector established that the risk assessment factors that were considered important in influencing credit card fraud risk management in the banking sector included credit card skimming, system security, proper card management and systems integration.

### **2.3.2 Employees Behaviors and Computerized Financial Fraud**

Global Fraud Report (2015/2016) revealed that fraud has continued to increase with three quarters of companies falling victim to fraud. There is an increase of 14% cases of fraud with number of businesses suffering financial loss has also increased from 64% in previous survey to 69% last year per the Global fraud report. The report revealed that companies and business biggest fraud threats are perpetrated by employees of that company where four in five 81% suffer fraud from employee, 36% of victims suffer fraud from senior and middle level management and 23% result from conducts of an agent or intermediary.

Balogun, Selemogwe, & Akinfala (2013) indicate that fraud committed within corporations is usually contrary to the usual assumption of societal pressures for consumption, as many if not most of the actors are paid well enough to meet their personal and societal-induced demands for consumption. Factors such as industry culture, investment horizons and payback periods, industry concentration, and environmental factors are likely to influence internal fraud (Wells, 2017).

Wanjohi (2014) found out that employee related frauds were the most common in banks indicating weak risk assessment practices and that employee fraud was perpetrated through the use of forged documents, card fraud, computer fraud and diversion of funds to suspense accounts, misappropriation of assets and claiming of unearned benefits.

Njenga and Osiemo (2013) concluded that in the process of making the operation and realization of the goals to be effective, organization are prone to risk leading to stagnant achievement of the targeted objective. This enhanced attention of the manager on the ways of controlling fraud risk within their organization in all level of the organization by formulating and implementing fraud risk management strategies.

### **2.3.3 Operation Red Flags and Computerized Financial Fraud**

In a study to determine the factors influencing electronic fraud in the banking industry Mwabu (2013) found out that level of awareness of the customer had the greatest effect on the electronic fraud in the banking industry, followed by security controls; then quality management while level of salaries and remuneration had the least effect to the electronic fraud in the banking industry. Computer technicians may be able to divert money from customer accounts to dummy accounts, or commit identify theft by accessing customers' or employees' personal information. Anomaly detection is the process of detecting something unusual relative to something expected. In the world of online banking this typically means detecting unusual (or suspicious) online banking behavior in order to identify account takeover and fraudulent transactions.

Moyes (2011) analyzed the different perceptions between internal and external auditors on fraud detection level of 42 red flags. The results indicate that there is no difference in the perception of internal and external auditors concerning red flags. In addition, the study found evidence that 17 red flags have differences in efficacy for fraud detection. For external auditors the use extension and exposure to red flags were predictors of the perception of efficacy. For internal auditors the effectiveness in detecting frauds was due to experience. Finally, female auditors rated the effectiveness of red flags in greater proportion, attributing a higher value to such indicators to fraud warning.

Young and Mohamed (2013) sought to determine the impact of operational red flags on the perception of internal and external auditors of Malaysia. The study used 99 red flags to detect fraud. The results showed that the external and internal auditors perceive different levels of effectiveness of red flags and differences were found between the perceptions of internal and external auditors on the effectiveness of 12 red flags.

Wanjiru (2011) in a study on the strategic responses red flags to increasing fraud related risks among banks in Kenya found that fraud is very sensitive and that it greatly impact on performance of firms. Wanemba (2010) in a study on challenges of fraud faced by commercial banks in Kenya concluded that it's necessary for a bank to have an anti-fraud unit that employs various strategies to curb fraud.

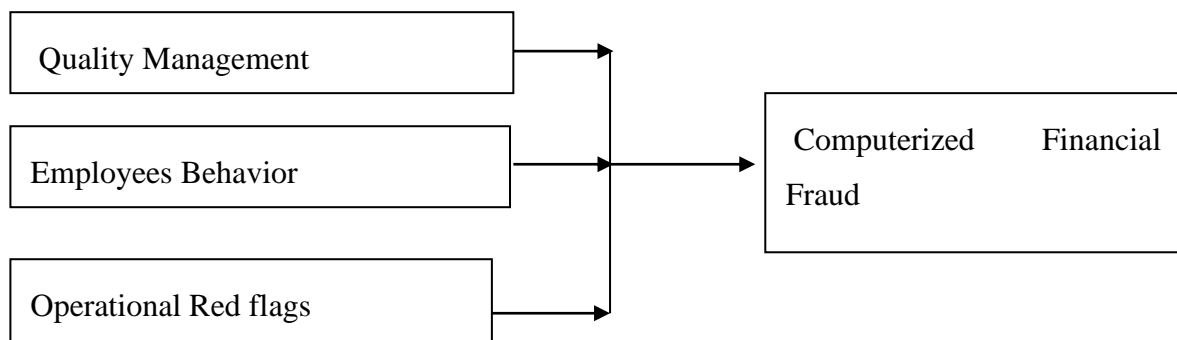
## **2.4 Conceptual Framework**

Conceptual framework is a set of concepts, assumptions, expectation and belief that inform a research. It highlights descriptive categories which were systematically placed in spectrum structure of explicit proposition, statements of relationships between two or more empirical properties (Nachamias & Nachamias, 2009). It explains the main phenomena to be studied, it is primarily a conception or model of what is planned to be studied. Also a conceptual framework lays out crucial elements, constructs or variables and presumes relationship among them.

The conceptual framework is based on quality management, employee's behavior and operation red flags as independent variables and computerized financial fraud as dependent variables. It explains how independent variable (Quality Management, employees behavior and operation reflags) influence the dependent variable which is computerized fraud. Quality Management influence computerized financial fraud by providing opportunities for fraud. Weak Quality Management provide chances for complicated transaction which result to material misstatement due to fraud because of susceptible to manipulation by management who fail to formulate policies and rule governing commercial banks operations. Employees behavior also predict computerized financial

fraud, common behavior include corruption safety, pilferage false overtime and sick time abuses. Employees behaviour may also routinely provide goods and services to friends and family without authority. An even more serious problem is the theft of confidential information, intellectual property and customer data including pricing or tendering figures.

Finally operation redflag influence computerized financial fraud in commercial bank due to inadequate and ineffective clear policies and procedures to reduces incidences of fraud in commercial banks



**Independent Variables**

**Dependent Variable**

**Figure 2.2 Conceptual Framework**

**2.4.1 Quality Management**

COSO defined Quality Management as an integrated framework with direct involvement of board of director, a management with personel provided to work for achievement of company’s objectives.Effective Quality Management give management oversight and control, risk recognition and assesment, control activities and segregation of duties, effective information and monitoring activities and correcting deficiencies in financial statements.

The study result revealed that outside directors on audit committee indirectly affects board composition hence financial statement that can be relied too. Result also suggested that board composition is significantly likely to reduce the likelihood of financial statement fraud. In additional board of Quality Management postulate that audit committee are more effective in carrying out their duties if they are composed of outside directors. (Luo, et al., 2009) attest that opportunities for fraud are fuelled by weak Quality Management that provide chances for complicated transaction which result to material misstatement due to fraud because of susceptible to manipulation by management. In Enron case weak Quality Management defrauded shareholders where they transacted off- the books, partnerships making the company look more profitable than it was.

Effective management can maintain reliability of firm's financial statements and prevent fraud. Weak Quality Management may increase the likely hood of material financial misstatements. Poor management provide an environment with more opportunities to false financial statements. The study attests that firms with weak Quality Management attribute to weak internal audit function that lead to fraud.

#### **2.4.2 Employees Behaviour Anomalies**

Despite the huge investment in fighting it, economic crime is increasing becoming persistent and a serious issue in both developed and developing countries. Globally more than one in three organization report crime with cybercrime being the 2nd most reported form of economic crime. Many of such computer fraud cases come from insiders who are employees (Wells, 2017). Wells (2017) defines an employee as any person who receives regular and periodic compensation from an organization for his or her labour. They include and not limited to senior managers, corporate executives, company president, contract employees. The term employee behaviour refers to the way in which employees respond to specific circumstances or situations in the workplace. While many elements determine an individual's behaviour in the workplace, employees are shaped by their culture and by the organization's culture employees may deliberately misuses organization resources or assets for their own personal enrichment.

According to ACFE (2015) the average occupational fraud scheme goes on for 18 months before being detected. Unfortunately, it is most often the long-time employees and top performers who abuse their positions of trust and exploit their access to multiple areas and systems of the bank, (Balogun, Selemogwe, & Akinfala, 2013). Global Economic Crime Survey (2016 ) noted that there was 14% increase cases of fraud in Africa which was an increase of 7% compared to 2014. It was reflected that fraud in any organization damage morale of honest employees, reputation, business relations and share price. Some other common include corruption safety, pilferage false overtime and sick time abuses. In view of the above, organizations have come to recognize the importance of managing all risks and their interactions, not just the familiar risks or the ones that are easy to quantify. However, the problem of today's managers in the financial institutions is competition and dynamism of environment and unknowns outside and inside of the organization each affecting the operations of the organization, (Wells, 2017).

Staff fraud does not just cover theft of cash or property. Employees may also routinely provide goods and services to friends and family without authority. An even more serious problem is the theft of confidential information, intellectual property and customer data including pricing or tendering

figures. There is clear evidence that, in some instances, organised criminals will attempt to place individuals inside an organisation. Their aim is to obtain confidential information or commit fraud, now or at some time in the future. Call centres, IT departments and warehouses are all popular targets. Existing staff may also be tempted or coerced into providing information to a criminal third party. The business need to have effective controls to safeguard all company assets, including customer data and intellectual property.

### **2.4.3 Operational Red Flags**

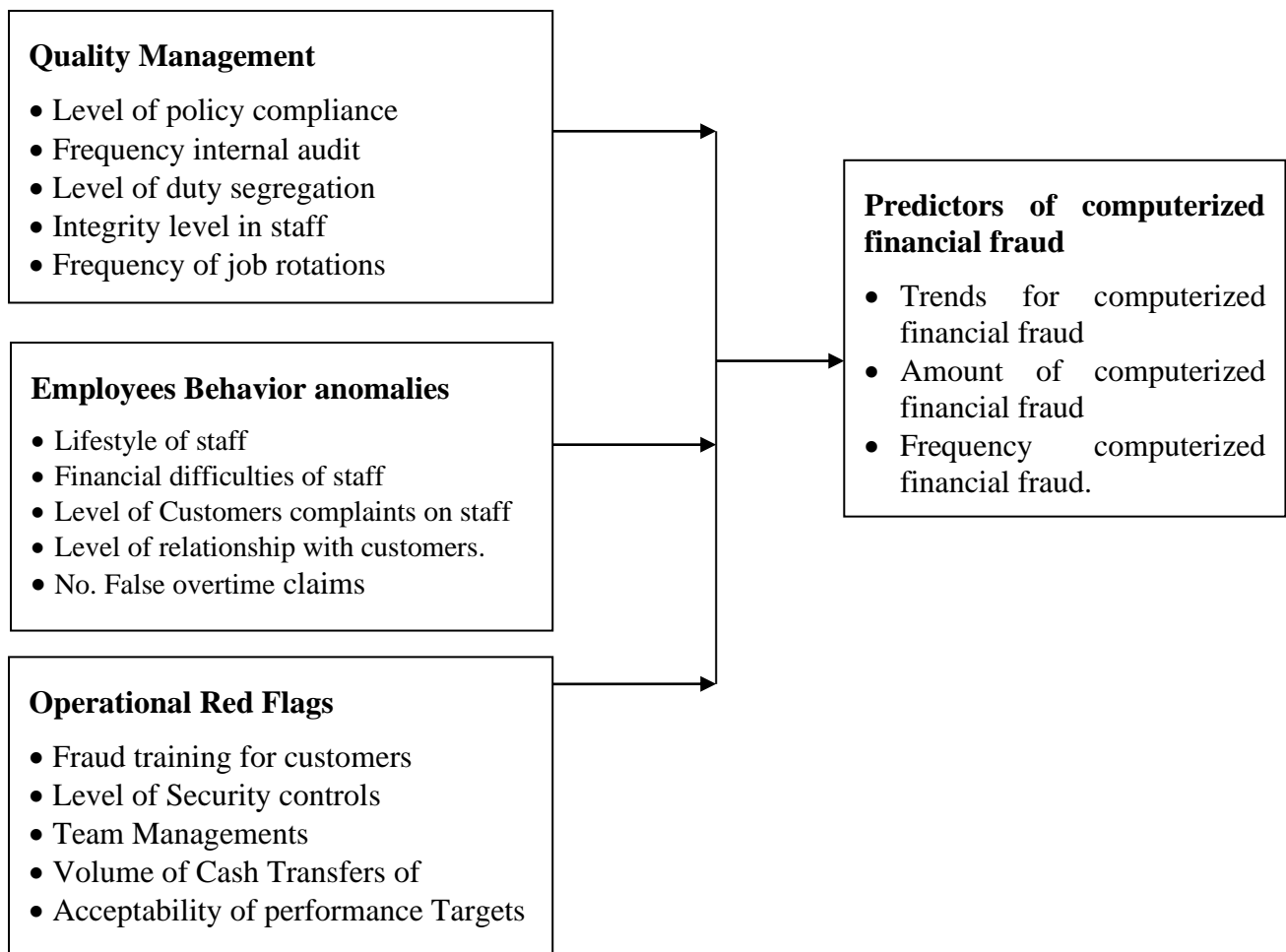
According to (Nelson 2012) quality Management in the form of clear policies and procedures reduces incidences of white collar crime within corporations. Commercial banks should enforce, practice and maintain high ethical standards in performance of the duties as well as ensure that fraud Quality Management is tight. In the context of fraud triangle theory, bank growth therefore does not necessarily in overall increase the “opportunity” for staff to commit fraud. However, management should conduct intensive integrity checks on staff to reduce the exposure level to occupational frauds. These measures are necessary to bank resources and reduce of occupational frauds in the bank at tolerable levels if not eliminate them.

### **2.5 Operational Framework**

The researcher developed operational framework that looked at each of the gaps to be filled and their parameters. The operational framework filtered through the independent variables and provides their dimensions to be addressed by the study. Quality management was viewed in the dimensions of number of policies frequency audit level of duty segregation and board of directors. Employee’s behaviors variables was indicated by financial difficulties, customer complaint, and level of relationship with customer’s lifestyle. Finally, operational red flags encompass level of security controls, volume cash transfer, fraud training awareness to customers and untimely managements. On the other hand the dependent variable computerized fraud is discussed in terms of number of computerized financial fraud, amount of fraud and frequency of computerized financial fraud.

The operational framework provides the measurable parameters of the variable as indicated by the conceptual framework.





**Independent variable**

**Dependent Variable**

**Figure 2.3 Operational framework**

## 2.6 Research Gaps

It is evident from the reviewed literature that future of commercial Kenya banks is determined by how all predictors of fraud are addressed. Inability to identifying predictors of fraud which include: Quality Management, employees behaviors and operational red flags has all lead to computer fraud such as identity theft, forgery, ATM card theft and manipulation of dormant accounts in the commercial bank.

Commercial banks are entrusted with confidentiality of information even for decade but the current increase of fraud is a worrisome to customers and potential customers, it decrease public perception toward the bank. Any negative publicity regarding bank leads to a decline in customers' confidence, public perception and the performance of the bank. The literature review is mostly based on the findings from the general view of any financial institutions. Studies on commercial banks in regard to

predictors of fraud is scanty and mostly based on studies done elsewhere with different titles. My study therefore sought to combine financial statement analysis, internal controls, employees behavior and operation red flag as predictors of fraud in commercial banks with objective of investigating cradle of fraud.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### **3.1 Introduction**

This section outlines a chronological of the methodology intended for this research; it begins with a highlight of the research design, followed by a look on the study population. Next, the sample design and the data collection method used are discussed. The chapter closes with the description of data analysis techniques employed.

#### **3.2 Research Design**

Based on the listed objectives, a descriptive survey design was used for the purposes of the study. According to Mugenda and Mugenda (2003) descriptive survey design is used to obtain information concerning the current state to describe variables or condition in a situation. Survey design answer the questions with who, what, how much and how many. It also allow large amount of data to be obtained by use of questionnaire. Finally it allows collection of quantitative data which is analyzed quantitatively by use of descriptive and inferential statistics Descriptive research result may often lead to formulation of important principles of knowledge and solution to a problem as pointed Kombo and Tromp (2006).

#### **3.3 Target and Accessible Population**

Mugenda & Mugenda (1999) define target population as set of individual or objects with common characteristics of a particular nature and which researchers want to generalize the results of the study. It is the aggregate of all cases that conform to some sort of specifications and results generated can be used to generalize phenomena, (Nachamias & Nachamias, 2009). Also target population is the total collection of elements about which the study wishes to make some inferences (Cooper & Schinder, 2011).

In this case, the study target population consist of 43 commercial banks as identified from the sample framed provide by Central Bank of Kenya. These banks are classified by Central Bank of Kenya using Market Share Index (MSI) as 6 large banks with 546 branches, 15 medium banks with 310 branches and 22 small banks with 199 branches. The accessible population of bank was thirty(30) in number.

**Table 3.1 Target Population**

| <b>Bank Size</b> | <b>Target Number</b> | <b>No. of Managers</b> |
|------------------|----------------------|------------------------|
| Large            | 6                    | 24                     |
| Medium           | 15                   | 60                     |
| Small            | 22                   | 88                     |
| Total            | 43                   | 172                    |

### **3.4 Sampling Technique and Sample Size**

Sampling is a process that is strategic and involve mathematical that is most practical and have procedures possible for gathering a sample that represents a larger population. It is used to simplify the research, save time and cut cost, (Brynard & Hanekom, 2005). The study focused on head offices of selected bank located within Nairobi capital city which reflect computerized financial fraud in all commercial banks.

Although fraud surveillance is the responsibility of every staff in the bank, certain managers by their natures of tasks and position are likely to have more information than all other staff. This category of managers therefore formed the sample for this study. The list of all registered commercial bank is attached. In these entire selected banks, the study used the Krejcie and Morgan (1970) formula to select risk and compliance managers, bank operation managers, head of credit and branch managers in each of the 43 banks. Krejcie and Morgan (1970) formula was used because the population is finite. The sample was determined as shown below;

$$S = \frac{X^2NP(1-P)}{d^2 (N-1) + X^2P(1-P)}$$

Where:

S = Required Sample size

X = Z value (1.96 for 95% confidence level)

N = Population Size

P = Population proportion (expressed as decimal) (assumed to be 0.5 (50%))

d = Degree of accuracy (10%), expressed as a proportion (0.1); It is margin of error

Substituting the values in the formula gives,

$$= \frac{(1.96)^2(172) (0.5) (0.5)}{(0.1)^2(171) + (1.96)^2(0.5) (0.5)}$$

$$= 62$$

The sample size for this study hence was 62 respondents. This represents 36% of the target population. Gall, Gall & Borg (2013) indicates that a sample of between 10-30% is suitable for a study descriptive study. A sample size of 36% of the total population was therefore satisfactory for the study. Proportionate random sampling was then used to stratify the 172 respondents as per the banking institutions.

**Table 3.1 Sample Size**

| <b>Bank Size</b> | <b>Target Population</b> | <b>Sample Size</b> | <b>Percentage</b> |
|------------------|--------------------------|--------------------|-------------------|
| Large            | 24                       | 8                  | 13                |
| Medium           | 60                       | 22                 | 35                |
| Small            | 88                       | 32                 | 52                |
| <b>Total</b>     | <b>172</b>               | <b>62</b>          | <b>100</b>        |

### 3.5 Data Collection

The study used primary data. According to Kothari (2012) primary data was collected directly from the target population by the researcher through field work. Primary data was collected using structured and semi structured questionnaires. Data collection instrument with open ended and closed ended questions was distributed to respondent purposively. Questionnaire address specific objective and research question of the study. They also allow greater depth of response and allow respondents to think deeper hence give more information (Mugenda & Mugenda, 2003). The structured questionnaire was used to collect data from respondents. One advantage of a questionnaire is that it is more objective than an interview and it gathers information in a standard way (Kothari, 2008). The targeted respondents were the risk compliance manager, general manager and operation manager. In order to cultivate high response rate, the questionnaire was self administered. Data collected was for

the years between 2012-2016. The period was chosen because it has had the highest level of fraud in financial institutions.

### **3.6 Pilot Study**

Robson *et al* (2010) defines a pilot study as a small study helping to design a further confirmatory study. A pilot study was conducted before questionnaire was administered in the field on respondents to test validity and reliability of the questionnaire, (Teijlingen & Hundley, 2012). The aim of the pilot survey was to test whether the design of questions was logical, if the questions were clear and easily understood, whether the stated responses were exhaustive, vague, ambiguous or difficult to the respondents. The main aim of piloting was help in identifying misunderstanding, ambiguities, and inadequate items in the instrument. The responses from the pilot study guided the researcher in making improvements in the questionnaire and question administration. Pilot study was conducted on 6% (10 respondents) of the target population which selected randomly from the 10 banks in Nairobi County.

#### **3.6.1 Test of Reliability**

Reliability is the extent to which results are consistent over time. It is concerned with the extent to which measuring procedures produce similar results when repeated several times. It is concerned with internal consistency involving whether data collected measured or generated are the same under repeated trials (Creswell, 2008). In this study Cronbach's alpha coefficient method was used to determine the reliability of the results. Cronbach's alpha coefficient was used to test reliability of the data collection instrument. A minimum coefficient value of 0.70 will be regarded by the study as acceptable since it indicates high reliability (Sekaran & Bougie, 2009). The results are presented in table 4.3 in chapter four.

#### **3.6.2 Test of Validity**

Validity is described as the ability of the instrument to measure what is presumed to measure. Validity can be examined with content, construct and criterion validity. Quality control and validity was ensured during questionnaire in the study (Wood *et al*, 2006). Instrument was presented to the supervisors to check whether it measures what it will be intended to measure. To check content validity instrument was designed according to the study variables and their respective indicators of measurements, construct validity was maintained through restricting the question to the conceptualizations of the variables and ensuring that the indicators of particular variable fall within the same construct. Content of questionnaire was enhanced by ensuring at least four questions were designed to measure variables outlined in the conceptual framework.

### 3.7 Data Analysis and Presentation of Results

Data was analyzed through a systematic process; data coding, data entry, data cleaning and data analysis. Sekaran (2010) argued that data is mostly analyzed to obtain its feeling, test its goodness and test the hypothesized hypothesis. Since the data collected was purely quantitative, descriptive measures such as frequencies, percentages, mean and standard deviation was used. Data was analyzed using the statistical packages for social scientists (SPSS) version 21. For inferential statistics; regression analysis and correlation analysis were used.

Inferential analysis was done to test 0.05 level of significance and if the p-values was less than the significance values then there was enough evidence to warrant confirmation that the independent variables do have an effect on the dependent variables. Model fitness statistics ( $R^2$ ), F values and associated p-values were generated and interpreted. Finally regression coefficients was generated and presented. For modeling the relationship between the independent variables and the dependent variables, First bi-variate linear model was used for each pair of independent and dependent variables, and then a multiple linear regression models was used. The multiple linear regression equation for this study was of the following form;

$$\text{Comp}_{\text{fraud}} = \infty + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Y=Computerized fraud

$\infty$ =Constant

$X_1$ = Quality Management

$X_2$ = Employees Behaviors

$X_3$ = Operational red flags

$\beta$ =Coefficients of each of the predictors

$\varepsilon$  = Error term

This study was able to explain the statistical nature of the relationship that exists between the selected predictors of computer fraud (individually and in a combined form) in the banking sector in Kenya. For each of the variable, a positive relationship was expected. The results was presented in form of tables, bar graphs and pie charts.

### **3.8 Ethical Considerations**

Hammersley and Traianou (2012) emphasized that some of the most important ethical principles in educational research are minimizing harm which included among others financial and reputational consequences for the people being studied. In this respect no form of self-identification was required such as names, employment number or identifications. The respondents were informed that information provided was used for academic purpose only. Though co-operation was expected the decision of the respondent to participate or not to participate was respected. Permission was sought from the relevant authority from the participating bank.



## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSION

#### 4.1 Introduction

The chapter details the descriptive and inferential analysis results for the data collected. Figures were used to present the results on demographics while tables show the results on descriptive and inferential analysis. The data analysis is presented based on each objective.

#### 4.2 Response Rate

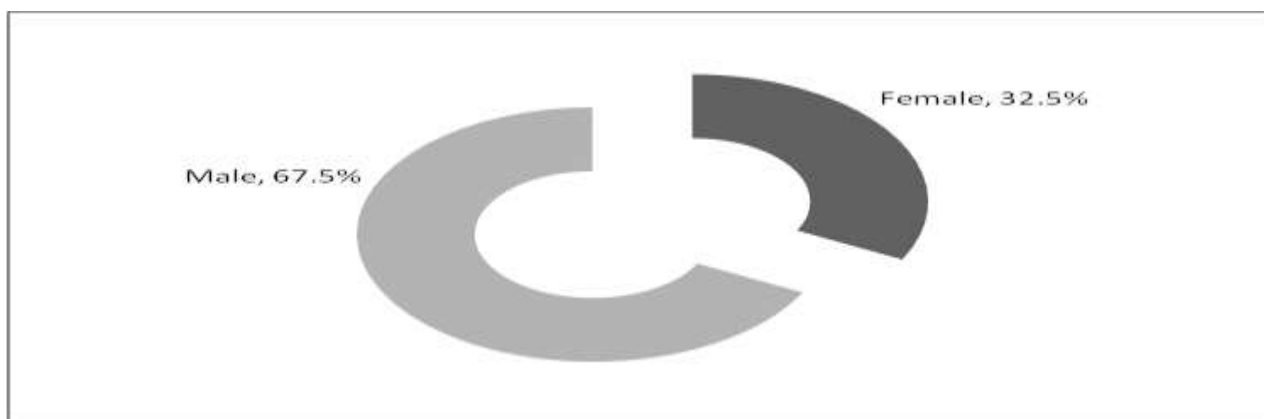
The questionnaires issued were 62 and the respondents were given ample time to fill them. A total of 58 questionnaires were properly filled and returned representing 93.5% response rate. This response rate is in line with Kothari (2011) who argued that a response rate of 50% or more is adequate for a descriptive study. The response rate for each bank category was presented in table 4.1.

**Table 4.1 Results of Response**

| Category     | Questionnaires Distributed | Questionnaires returned | Response Rate (%) |
|--------------|----------------------------|-------------------------|-------------------|
| Large Banks  | 8                          | 7                       | 11.3              |
| Medium Banks | 22                         | 21                      | 33.9              |
| Small Banks  | 32                         | 30                      | 48.4              |
| Total        | 62                         | 58                      | 93.5              |

#### 4.2.2 Distribution of Respondents' Gender

The results of the study revealed that 32.5% of the respondents were female while the majority 67.5% of them were male. The results of the study revealed that the recruitment of staff in Kenyan commercial banks meets the constitutional gender requirement of 2010. The response rate of the gender is presented in pie chart



**Figure 4.1 Distribution of Respondents' Gender**

#### 4.2.3 Distribution of Respondents' Level of education

This study sought to establish the highest level of education of the respondents. The findings of the study presented in table 4.2 showed that majority of the respondents, 28.6% had bachelor's degree and 27.3% had diploma/certificate, those who had master's degree were 26% and those who had PhDs were 18.2%. This implies that most of the employees in commercial banks are literate. High level of education is normally associated with high understanding of issues and interpretation of information, (Kasomi, 2010).

**Table 4.2 Distribution of Respondents Level education**

| Level of education   | Percentage (%) |
|----------------------|----------------|
| Diploma /Certificate | 27.3           |
| Bachelor's Degree    | 28.6           |
| Masters degree       | 26             |
| PhD                  | 18.2           |

#### 4.3.4 Distribution of Respondents' Duration in Business

The findings in **Table 4.3** reveal that majority 35.1% of the respondents have been working in commercial banks for less than 3 years, those who have been working in commercial banks for between 4 and 6 years were 26% while those who have been working in commercial banks for between 7 to 9 years were 19.5% and those who have been working in commercial banks for over 10 years were 19.5%. The findings of the study indicate that majority of the staff in commercial banks have been working for over 3 years.

**Table 4.3 Respondents Work Experience**

| <b>Work experience in years</b> | <b>Percentage (%)</b> |
|---------------------------------|-----------------------|
| Below 3 years                   | 35.1                  |
| Between 4-6 years               | 26                    |
| Between 7- 9 years              | 19.5                  |
| over 10 years                   | 19.5                  |

### 4.3 Pilot Tests Results

Cronbach’s Alpha determines the internal constancy by ascertaining whether some items are within a scale measure similar construct in which it was used. Cooper and Schindler (2003) put the Alpha value benchmark at 0.7. The results of the study are as indicated in **Table 4.4**.

**Table 4.4 Reliability Test Results**

| <b>Variable</b>             | <b>Cronbach Alpha</b> | <b>Number of items</b> | <b>Recommendation</b> |
|-----------------------------|-----------------------|------------------------|-----------------------|
| Quality Management          | 0.812                 | 5                      | Reliable              |
| Employee Behavior Anomalies | 0.818                 | 5                      | Reliable              |
| Operational Red Flags       | 0.782                 | 5                      | Reliable              |
| Computerized Fraud          | 0.834                 | 3                      | Reliable              |

From the above findings, the computerized financial fraud was the most reliable with an Alpha value of 0.834, followed by employee behavior anomalies with an Alpha value of 0.818 then Quality Management with an Alpha value of 0.812 while operational red flags was the least reliable with an Alpha value of 0.782. The results of the study indicate that all the study variables had an alpha value greater than 0.7 which is a recommended threshold according to Cooper and Schindler (2003). This therefore, implies that the research instrument was reliable and therefore required no amendments.

### 4.4 Descriptive Analysis for Computerized Financial Fraud in Commercial Banks

The study asked the respondents to indicate the extent to which they agree or disagree with the statements on computerized financial fraud in their commercial Bank based on Likert scale where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree 5 = strongly agree. The results of the study are as indicated in **Table 4.5**.

The results of the study revealed that majority of the respondents indicated that they agree with the statement that computerized financial fraud in their banks has been on the rise for the last five years (2012-2016) as shown by a mean of 3.84. Moreover, the findings of the study revealed that majority of the respondents disagreed that computerized financial fraud in their bank has been on the decrease from the years 2012 to 2016 (mean= 3.46). Finally, the results of the study showed that majority of the respondents agreed that the frequency for computerized financial fraud cases has been rising from the year 2012 to 2016 (mean=3.92).

**Table 4.5 Descriptive Analysis for Computerized Fraud in Commercial Banks**

| <b>Statement</b>  | <b>Mean</b> | <b>Std Dev</b> |
|---|-------------|----------------|
| Trends for computerized financial fraud in your bank has been on the rise from 2012 to 216                  | 3.84        | 1.13           |
| The amount of computerized financial fraud in your bank has been on the decrease from the year 2012 to 2016 | 2.17        | 0.89           |
| The frequency for computerized financial fraud cases has been rising from the year 2012 to 2016             | 3.92        | 1.14           |
| <b>Average</b>  | <b>3.31</b> | <b>1.05</b>    |

#### 4.5 Tests of Regression Analysis

The study conducted diagnostic tests to ascertain whether the information obtained are in line with the assumptions of linear regression. The tests of normality, autocorrelation and multicollinearity were carried out before running the regression model.

##### 4.5.1 Test of Normality

Since the sample size was below 100, Shapiro-Wilk test was used. The findings of the study presented in the table below shows that the Kolmogorov-Smirnov and Shapiro-Wilk statistics were 0.487 and 0.498 respectively whereas the associated p-value was 0.200 and 0.582 for Kolmogorov-Smirnov and Shapiro-Wilk statistics respectively. Since the p-values for both tests were greater than  $\alpha = 0.05$ , we fail to reject the null hypothesis. The study therefore concluded that the parametric test was appropriate for the study.

**Table 4.6 Test for Normality for Computerized Financial Fraud**

| <b>Dependent Variable</b>    | <b>Kolmogorov-Smirnova</b> |    |        | <b>Shapiro-Wilk</b> |    |       |
|------------------------------|----------------------------|----|--------|---------------------|----|-------|
|                              | Statistic                  | df | Sig.   | Statistic           | df | Sig.  |
| Computerized Financial Fraud | 0.487                      | 77 | 0.200* | 0.498               | 77 | 0.582 |

a Lilliefors Significance Correction

#### 4.5.2 Multicollinearity Test Results

Normally if the association between the independent variables has a value of more 0.8, then multicollinearity is said to be present. The presence of multicollinearity produces spurious standard errors and therefore yields a wrong forecast. This study used a variance inflation factor (VIF) method to test for multicollinearity of the study variables. The results indicated in **Table 4.7** showed that there was no presence of multicollinearity since all the values of VIF were less than 10. This means that the use of ordinary least squares in investigating the effect of computerized financial fraud in commercial banks in Kenya will not yield wrong results.

**Table 4.7 Results of Multicollinearity**

| Variable                      | Tolerance | VIF   |
|-------------------------------|-----------|-------|
| Quality Management            | 0.754     | 1.326 |
| Employees Behaviour Anomalies | 0.78      | 1.282 |
| Operational Red flags         | 0.796     | 1.256 |

#### 4.5.3 Test of Independence

The study sought to determine if the error term of the regression model is auto correlated. One of the assumptions of linear regression is that the error term should not be auto correlated over time. The study used Durbin-Watson test to ascertain whether autocorrelation exists. Durbin Watson t-test values of between 1.5 and 3 indicate the absence of autocorrelation. The findings in Table 4.8 revealed that there was no autocorrelation.

**Table 4.8 Durbin Watson Test Results**

| Variable Test               | Durbin Watson | Statistic |
|-----------------------------|---------------|-----------|
| Quality Management          |               | 1.914     |
| Employee Behavior Anomalies |               | 2.238     |
| Operational Red Flags       |               | 2.248     |
| Computerized Fraud          |               | 2.149     |

#### 4.5.4 Linearity Tests for the Study Variables

The study used a correlation analysis to ascertain the link between the independent and the dependent variables. Since the data was discrete, a Pearson correlation was employed. A negative Pearson correlation value indicates negative correlation while a positive Pearson correlation value indicates a positive correlation. The strength of the association increases as the value approaches either -1 or +1. The correlation findings are presented in **Table 4.9**.

**Table 4.9 Correlation Results for the Study Variables**

|                              |                     | Quality management | Employees Behaviour | Operational Redflags | Computerized Financial Fraud |
|------------------------------|---------------------|--------------------|---------------------|----------------------|------------------------------|
| Quality management           | Pearson Correlation | 1                  | .313*               | 0.193                | .407**                       |
|                              | Sig. (2-tailed)     |                    | 0.017               | 0.146                | 0.002                        |
| Employees Behaviour          | Pearson Correlation | .313*              | 1                   | .311*                | .416**                       |
|                              | Sig. (2-tailed)     | 0.017              |                     | 0.017                | 0.001                        |
| Operational Redflags         | Pearson Correlation | 0.193              | .311*               | 1                    | .558**                       |
|                              | Sig. (2-tailed)     | 0.146              | 0.017               |                      | 0.000                        |
| Computerized Financial Fraud | Pearson Correlation | .407**             | .416**              | .558**               | 1                            |
|                              | Sig. (2-tailed)     | 0.002              | 0.001               | 0.000                |                              |
|                              | N                   | 58                 | 58                  | 58                   | 58                           |

\* Correlation is significant at the 0.05 level (2-tailed).

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

The findings of the study showed that poor Quality management positively and significant influences computerized financial fraud in commercial banks in Kenya as shown by a Pearson coefficient of 0.407 and significance level of 0.002. A decrease in the level of policy compliance in Kenyan commercial banks, Lack of frequent internal auditing raises the possibility of a fraud, Lack of duty segregation makes staff vulnerable to commit fraud, Poor confidence and integrity level of staff can lead to financial fraud in commercial banks and Lack of job rotation increases the possibility of a computer fraud leads to a positive and significant increase in financial fraud in commercial banks in Kenya. The finding of the study are consistent with the findings of a study by Burnaby, Howe and Muehlmann (2011) which indicated that banking sector, operation are intergrated with IT had significant higher cases of fraud for appropriatness of reserves for sales returns/ discounts with a mean of 4.3 and 4.2. The study also confirm quality management that do not mitigate the potential

fraud may lead to asset misappropriation hence financial material losses. Similarly, Sitienei, (2012) agreed that the risk assessment redflags that were considered important in influencing credit card fraud risk management in the banking sector included credit card skimming, system security, proper card management and systems integration.

Correlation results also showed that employees behaviour anomalies positively and significant influences computerized financial fraud in commercial banks in Kenya as shown by a Pearson coefficient of 0.416 and significance level of 0.001. This means that an increase in employee behaviour anomalies such as financial difficulties of employees predisposes them to commit fraud, the need to monitor the levels of customer complaints on staff, high level of customer /employees relationship, auditing of staff lifestyle to monitor fraud and presence of a high number of false overtime claims leads to a positive and significant increase in financial fraud in commercial banks in Kenya. The study findings are consistent with the findings of a study by Global Fraud Report (2015/2016) which revealed that fraud has continued to increase with three quarters of companies falling victim to fraud. In agreement, Wanjohi (2014) found out that employee related frauds were the most common in banks indicating weak risk assessment practices and that employee fraud was perpetrated through the use of forged documents, card fraud, computer fraud and diversion of funds to suspense accounts, misappropriation of assets and claiming of unearned benefits.

Finally, the results of the study revealed that operational red flags positively and significant affects computerized financial fraud in commercial banks in Kenya as shown by a Pearson coefficient of 0.558 and significance level of 0.000. This means that ineffective training for customers and employees, Security controls failure anticipate computerized financial fraud in commercial banks, ineffective management team can lead to an increase in computerized financial fraud, voluminous cash transfers can increases the vulnerability to commit financial fraud and a lack of acceptance of performance Targets contributes to financial fraud leads to a positive and significant increase in computerized financial fraud in commercial banks in Kenya. The study findings are consistent with the findings of a study by Young and Mohamed (2013) which showed that the external and internal auditors perceive different levels of effectiveness of red flags and differences were found between the perceptions of internal and external auditors on the effectiveness of 12 red flags.

#### **4.6 Quality management and Computerized Fraud**

The study sought to explore the extent to which Quality management influences computerized financial fraud in commercial banks in Kenya. The results of the study are as presented in **table 4.10** below.

The findings of the study revealed that there is a low level of policy compliance in Kenyan commercial banks to a very high extent (mean=4.58). The results of the study further indicated that Lack of frequent internal auditing raises the possibility of a fraud to a very high extent (mean=5.00). Moreover, results indicated that lack of duty segregation makes staff vulnerable to commit fraud to a moderate extent (mean=3.42). In addition, the findings of the study showed that poor confidence and integrity level of staff can lead to financial fraud in commercial banks to a moderate extent (mean=3.36). Lastly, the results revealed that the respondents indicated that lack of job rotation increases the possibility of a computer fraud to a moderate extent. On average, Quality management practices influences computerized financial fraud to a high extent as indicated by a mean of 3.94.

**Table 4.10 Descriptive Analysis for Quality management**

| Statements   | Mean        | Std Dev     |
|--|-------------|-------------|
| There is low level of policy compliance in Kenyan commercial banks                           | 4.58        | 0.82        |
| Lack of frequent internal auditing raises the possibility of a fraud                         | 5.00        | 0.00        |
| Lack of duty segregation makes staff vulnerable to commit fraud                              | 3.42        | 1.08        |
| Poor confidence and integrity level of staff can lead to financial fraud in commercial banks | 3.27        | 1.18        |
| Lack of job rotation increases the possibility of a computer fraud                           | 3.42        | 1.08        |
| <b>Average</b>   | <b>3.94</b> | <b>0.83</b> |

The results of the study showed that Quality management account for 16.6% of the variation in computerized financial fraud in commercial banks in Kenya. This is indicated by an R-square value of 0.166. The regression results show that R was 0.407 which means that the association linking the independent variables and the dependent variable is positive. The results are as presented in table 4.11.

**Table 4.11 Model Summary for Quality Management**

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | .407a | 0.166    | 0.151             | 0.753                      |

a Predictors: (Constant), Quality management

The bivariate linear model significance was evaluated using ANOVA. The findings of the study are shown in **Table 4.12**. Regression results revealed that the linear relationship between Quality Management and computerized financial fraud has an F value of F= 11.116 which is significant with p value less than 0.05 meaning that the overall model is significant in predicting the impact of Quality management on predicting computerized financial fraud in commercial banks in Kenya.



**Table 4.12 ANOVA Results for Quality management**

| Model |            | Sum of Squares | Df | Mean Square | F      | Sig.  |
|-------|------------|----------------|----|-------------|--------|-------|
| 1     | Regression | 6.305          | 1  | 6.305       | 11.116 | .002b |
|       | Residual   | 31.764         | 56 | 0.567       |        |       |
|       | Total      | 38.069         | 57 |             |        |       |

a Dependent Variable: Computerized Financial Fraud

b Predictors: (Constant), Quality management

The regression coefficients for the model are shown in **table 4.13**. The test results showed that the beta coefficient of the resulting regression model, the constant  $\beta_0 = 3.539$  is significant with p value  $p = 0.000 < p = 0.05$ . The coefficient  $\beta = 0.615$ , has a p value,  $p = .000$  which is less than  $p = 0.05$ . This implies that Quality management is significant in predicting computerized financial fraud in commercial banks in Kenya in the regression model. The findings agree with findings of study by Tunji (2013) which revealed that good Quality management can reduce or totally eliminate distress in the banking sector. This calls for upgrading of Quality Management system to more effective. Similarly, Burnaby, Howe, & Muehlmann( 2011) indicated that banking sector, operation are intergrated with IT had significant higher cases of fraud for appropriatness of reserves for sales returns/ discounts.. Similarly, Sitienei, (2012) agreed that the risk assessment redflags that were considered important in influencing credit card fraud risk management in the banking sector included credit card skimming, system security, proper card management and systems integration.

**Table 4.13 Regression Coefficients for Quality Management**

| Model |                    | Unstandardized Coefficients |            | Standardized Coefficients |        |       |
|-------|--------------------|-----------------------------|------------|---------------------------|--------|-------|
|       |                    | B                           | Std. Error | Beta                      | t      | Sig.  |
| 1     | (Constant)         | 3.539                       | 0.329      |                           | 10.745 | 0.000 |
|       | Quality management | 0.304                       | 0.091      | 0.407                     | 3.334  | 0.002 |

a Dependent Variable: Computerized Financial Fraud

#### 4.7 Employees Behaviour Anomalies and Computerized Fraud

The study sought to assess the extent to which employee behavior anomalies can impact computerized financial fraud occurrence in commercial banks in Kenya. The study generated means of the responses based on a five point Likert scale where 1= very low extent, 2= low extent, 3= moderate extent, 4= high extent and 5= very high extent. The results of the study are as presented in table 4.14.

The findings of the study revealed that the respondents indicated that they agree that financial difficulties of employees predisposes them to commit fraud to a high extent (mean=3.86). The results of the study further indicated that the respondents agreed that there is need to monitor the levels of customer complaints on staff to a high extent (mean=3.97). Moreover, results indicated that the respondents agreed that high level of customer /employees relationship predict financial fraud to a moderate extent (mean=4.12). In addition, the findings of the study showed that lifestyle of staff should be audited often to monitor fraud to a high extent (mean=4.05). Furthermore, the results of the study showed that majority of the respondents agreed that there is a high number of false overtime claims to a high extent (mean=4.21). On average, Employees Behavior Anomalies occurrences can predict computerized financial fraud to a high extent as indicated by a mean of 4.04.

**Table 4.14 Descriptive Analysis for Employee’s Behavior Anomalies**

| Statements   | Mean        | Std Dev     |
|--|-------------|-------------|
| Financial difficulties of employees predisposes them to commit fraud   | 3.86        | 1.12        |
| There is need to monitor the levels of customer complaint on staff     | 3.97        | 0.73        |
| High level of customer /employees relationship predict financial fraud | 4.12        | 0.95        |
| Lifestyle of staff should be audited often to monitor fraud            | 4.05        | 0.74        |
| There is a high number of false overtime claims                        | 4.21        | 0.85        |
| <b>Average</b>   | <b>4.04</b> | <b>0.88</b> |

The results of the study showed that employee’s behaviour anomalies account for 17.3 % of the variation in computerized financial fraud in commercial banks in Kenya. This is indicated by an R-square value of 0.173. The regression results show that R was 0.416 which means that the association linking the independent variables and the dependent variable is positive. The results are as presented in table 4.15.

**Table 4.15 Model Summary for Employees Behaviour Anomalies**

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | .416a | 0.173    | 0.158             | 0.75                       |

a Predictors: (Constant), Employees Behaviour

The bivariate linear model significance was determined using ANOVA. The results of the study are shown in Table 4.16. Regression results revealed that the linear relationship linking employees behavior anomalies and computerized financial fraud in commercial banks has an F value of F=

11.717 which is significant with p value  $p=.000 < p=.05$  meaning that the overall model is significant in predicting the impact of Employees Behavior Anomalies as a predictor of computerized financial fraud in commercial banks in Kenya.

**Table 4.16 ANOVA Results for Employees Behaviour Anomalies**

| Model |            | Sum of Squares | df | Mean Square | F      | Sig.  |
|-------|------------|----------------|----|-------------|--------|-------|
| 1     | Regression | 6.587          | 1  | 6.587       | 11.717 | .001b |
|       | Residual   | 31.482         | 56 | 0.562       |        |       |
|       | Total      | 38.069         | 57 |             |        |       |

a Dependent Variable: Computerized Financial Fraud

b Predictors: (Constant), Employees Behaviour

The regression coefficients for the model are presented in table 4.17. The test results showed that the beta coefficient of the resulting regression model, the constant  $\beta_0 = 2.538$  is significant with p value  $p = 0.000 < p = 0.05$ . The coefficient  $\beta_1 = 0.495$ , has a p value,  $p = .001$  which is less than  $p = 0.05$ . This implies that Employees Behavior Anomalies is significant in predicting computerized financial fraud in commercial banks in Kenya in the regression model. The findings agree with the findings of a study by Balogun, Selemogwe, and Akinfala (2013) indicated that fraud committed within corporations is usually contrary to the usual assumption of societal pressures for consumption, as many if not most of the actors are paid well enough to meet their personal and societal-induced demands for consumption. In agreement, Wells (2017) concluded that factors such as industry culture, investment horizons and payback periods, industry concentration, and environmental factors are likely to influence internal fraud. Similarly, the Global Fraud Report (2015/2016) revealed that there is an increase of 14% cases of fraud with number of businesses suffering financial loss has also increased from 64% in previous survey to 69% last year.

**Table 4.17 Regression Coefficients for Employees Behaviour Anomalies**

| Model |                              | B     | Std. Error | Beta  | t     | Sig.  |
|-------|------------------------------|-------|------------|-------|-------|-------|
| 1     | (Constant)                   | 2.538 | 0.606      |       | 4.187 | 0.000 |
|       | Employees Behavior Anomalies | 0.495 | 0.145      | 0.416 | 3.423 | 0.001 |

a Dependent Variable: Computerized financial Fraud

#### 4.8 Descriptive Analysis for Operational Red flags

The study analyzed the impact of bank operational red flags on computerized financial fraud occurrence in commercial banks in Kenya. The study generated means of the responses based on a

five point Likert scale where 1= very low extent, 2= low extent, 3= moderate extent, 4= high extent and 5= very high extent. The results of the study are as presented in table 4.18 below.

The findings of the study revealed that the respondents indicate that they agree that ineffective training for customers and employees contributes to financial fraud to a high extent (mean=3.94). The results of the study further indicated that ineffective management team can lead to an increase in computerized financial fraud to a high extent (mean=4.38). Moreover, results indicated that ineffective management team can lead to an increase in computerized financial fraud to a high extent (mean=3.94). In addition, the findings of the study showed that voluminous cash transfers can increase the vulnerability to commit financial fraud to a high extent (mean=4.38). Lastly, the results revealed that the respondents indicated that a lack of acceptance of performance Targets contributes to financial fraud to a high extent (mean=3.94). On average, Operational Red flags practices can influence computerized financial fraud to a high extent as indicated by a mean of 4.11.

**Table 4.18 Descriptive Analysis for Operational Red flags**

| <b>Statements</b>   | <b>Mean</b> | <b>Std Dev</b> |
|---|-------------|----------------|
| Ineffective training for customers and employees contributes to financial fraud       | 3.94        | 1.25           |
| Security controls failure anticipate computerized financial fraud in commercial banks | 4.38        | 0.99           |
| Ineffective management team can lead to an increase in computerized financial fraud   | 3.94        | 1.25           |
| Voluminous cash transfers can increase the vulnerability to commit financial fraud    | 4.38        | 0.99           |
| A lack of acceptance of performance Targets contributes to financial fraud            | 3.94        | 1.25           |
| <b>Average</b>  | <b>4.11</b> | <b>1.14</b>    |

The results of the study showed that operational red flags account for 31.2% of the variation in computerized financial fraud in commercial banks in Kenya. This is indicated by an R-square value of 0.312. The regression results show that R was 0.558 which means that the association linking the independent variables and the dependent variable is positive. The results are as presented in table 4.19 below.

**Table 4.19 Model Summary for Operational Red flags**

| <b>Model</b> | <b>R</b> | <b>R Square</b> | <b>Adjusted R Square</b> | <b>Std. Error of the Estimate</b> |
|--------------|----------|-----------------|--------------------------|-----------------------------------|
| 1            | .558a    | 0.312           | 0.3                      | 0.684                             |

a Predictors: (Constant), Operational Red flags

The bivariate linear model significance was determined using ANOVA. The results of the study are shown in Table 4.20. Regression results revealed that the linear relationship linking Operational Red

flags and computerized financial fraud in commercial banks has an F value of  $F= 25.383$  which is significant with p value  $p=.000 < p=.05$  meaning that the overall model is significant in predicting the impact of Operational Red flags as a predictor of computerized financial fraud in commercial banks in Kenya.

**Table 4.20 ANOVA Results for Operational Red flags**

| Model |            | Sum of Squares | Df | Mean Square | F      | Sig.  |
|-------|------------|----------------|----|-------------|--------|-------|
| 1     | Regression | 11.873         | 1  | 11.873      | 25.383 | .000b |
|       | Residual   | 26.195         | 56 | 0.468       |        |       |
|       | Total      | 38.069         | 57 |             |        |       |

a Dependent Variable: Computerized financial Fraud

b Predictors: (Constant), Operational Red flags

The regression coefficients for the model are presented in table 4.21. The test results showed that the beta coefficient of the resulting regression model, the constant  $\beta_0= 3.019$  is significant with p value  $p= 0.000 < p=0.05$ . The coefficient  $\beta_1 = 0.402$ , has a p value,  $p= .000$  which is less than  $p= 0.05$ . This implies that operational red flags are significant in predicting computerized financial fraud in commercial banks in Kenya in the regression model. The findings agree with the findings of a study . The findings agrees with the findings of a study conducted by Wanaemba (2010) Kenya commercial banks need to have anti-fraud unit to strategies on curbing or reducing Red flags for fraud.by Young Similarly, Mwabu (2013) found out that level of awareness of the customer had the greatest effect on the electronic fraud in the banking industry, followed by security controls; then quality management while level of salaries and remuneration had the least effect to the electronic fraud in the banking industry. In addition, the study found evidence that 17 red flags have differences in efficacy for fraud detection.

**Table 4.21 Regression Coefficients for Operational Red Flags**

| Model |                       | B     | Std. Error | Beta  | t     | Sig.  |
|-------|-----------------------|-------|------------|-------|-------|-------|
| 1     | (Constant)            | 3.019 | 0.324      |       | 9.323 | 0.000 |
|       | Operational Red flags | 0.402 | 0.08       | 0.558 | 5.038 | 0.000 |

a Dependent Variable: Computerized financial Fraud

#### 4.9 Combined Influence on Computerized Financial fraud

The study used a multiple linear regression model to investigate the effect of computerized financial fraud in commercial banks in Kenya. The overall regression model of the study was  $Y = \beta_0 + \beta_1 X_1 +$

$\beta_2 X_2 + \beta_3 X_3 + \varepsilon$  Where; Y= computerized financial fraud, X<sub>1</sub> = Quality Management, X<sub>2</sub>= Employees Behaviour Anomalies, X<sub>3</sub>= Operational Red flags and  $\varepsilon$  = Error term. The model summary results for the study variables are presented in Table 4.22.

The results of the study showed that Quality Management, Employees Behaviour Anomalies and Operational Red flags all account for 43.7% of the variation in computerized financial fraud in commercial banks in Kenya. This is indicated by an R-square value of 0.437. The regression results show that R was 0.661 which means that the association linking the independent variables and the dependent variable is positive.

**Table 4.22 Model Summary for the Study Variables**

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | .661a | 0.437    | 0.405             | 0.63                       |

a Predictors: (Constant), Operational Red flags, Employees Behavior Anomalies, Quality Management

The results of the analysis of variance for the study variables showed that the overall regression model connecting Quality Management, Employees Behavior Anomalies and Operational Red flags and their influence on computerized financial fraud in commercial banks in Kenya was significant as shown by F (3,54) statistic at 0.000 significance level. F calculated is 13.959 while f critical is 2.73. F calculated is greater than the F critical (13.959 >2.73), this showed that the overall model was statistically significant at 5% significance level. The results of the study are as shown in table 4.23.

**Table 4.23 Analysis of Variance for the Study Variables**

| Model |            | Sum of Squares | Df | Mean Square | F      | Sig.  |
|-------|------------|----------------|----|-------------|--------|-------|
| 1     | Regression | 16.628         | 3  | 5.543       | 13.959 | .000b |
|       | Residual   | 21.441         | 54 | 0.397       |        |       |
|       | Total      | 38.069         | 57 |             |        |       |

a Dependent Variable: Computerized Financial Fraud

b Predictors: (Constant), Operational Red flags, Employees Behavior Anomalies, Quality Management

To establish the relationship between the independent variables and the dependent variable, regression coefficients were generated as presented in table 4.24.

**Table 4.24 Regression coefficients for the Study Variables**

| Model | Coefficients | B | Std. Error | Beta | t | Sig. |
|-------|--------------|---|------------|------|---|------|
|-------|--------------|---|------------|------|---|------|

|   |                              |       |       |       |       |       |
|---|------------------------------|-------|-------|-------|-------|-------|
| 1 | (Constant)                   | 1.70  | 0.536 |       | 3.169 | 0.003 |
|   | Quality Management           | 0.194 | 0.081 | 0.259 | 2.398 | 0.020 |
|   | Employees Behavior anomalies | 0.233 | 0.133 | 0.196 | 1.752 | 0.086 |
|   | Operational Red flags        | 0.322 | 0.078 | 0.447 | 4.12  | 0.000 |

a Dependent Variable: Computerized financial Fraud

Thus, optimal multivariate Regression Model for the study is as presented below

**Computerized Financial Fraud = 1.70 + 0.194 Quality Management + 0.233 Employees Behaviour Anomalies + 0.322 Operational Red flags**

The summary results for the regression coefficients indicated that Quality Management had a positive and significant impact on computerized financial fraud in commercial fraud ( $\beta = 0.194$ , Sig = 0.020). This means lower level of policy compliance in Kenyan commercial banks, Lack of frequent internal auditing raises the possibility of a fraud, Lack of duty segregation makes staff vulnerable to commit fraud, Poor confidence and integrity level of staff can lead to financial fraud in commercial banks and Lack of job rotation increases the possibility of a computer fraud leads to 0.194 unit effect on computerized financial fraud in Kenya. The findings agree with the findings of a study by Tunji (2013) which revealed that effective internal controls can reduce or totally eliminate distress in the banking sector. This calls for upgrading of internal control system to more effective controls. The results are also in agreement with the findings of a study by Burnaby, Howe, & Muehlmann( 2011) indicated that banking sector, operation are intergrated with IT had significant higher cases of fraud for appropriatness of reerves for sales returns/ discounts. The study also confirm internal controls that do not mitigate the potential fraud may lead to asset misappropriation hence financial material losses. Similarly, Sitienei, (2012) agreed that the risk assessment redflags that were considered important in influencing credit card fraud risk management in the banking sector included credit card skimming, system security, proper card management and systems integration.

Moreover, the findings of the study also indicated that Employees Behaviour Anomalies had a positive and insignificant impact on computerized financial fraud in commercial fraud ( $\beta = 0.233$ , Sig = 0.086). This means that an increase in employee behaviour anomalies such as financial difficulties of employees predisposes them to commit fraud, the need to monitor the levels of customer complaints on staff, high level of customer /employees relationship, auditing of staff lifestyle to monitor fraud and presence of a high number of false overtime claims leads to 0.233 unit effect on computerized financial fraud in Kenya. The findings agree with the findings of a study by Balogun, Selemogwe, and Akinfala (2013) indicated that fraud committed within corporations is usually contrary to the usual assumption of societal pressures for consumption, as many if not most

of the actors are paid well enough to meet their personal and societal-induced demands for consumption. In agreement, Wells (2017) concluded that factors such as industry culture, investment horizons and payback periods, industry concentration, and environmental factors are likely to influence internal fraud. Similarly, the Global Fraud Report (2015/2016) revealed that there is an increase of 14% cases of fraud with number of businesses suffering financial loss has also increased from 64% in previous survey to 69% last year. Njenga and Osiemo (2013) also concluded that in the process of making the operation and realization of the goals to be effective, organization are prone to risk leading to stagnant achievement of the targeted objective. Also in agreement, Wanjohi (2014) found out that employee related frauds were the most common in banks indicating weak risk assessment practices and that employee fraud was perpetrated through the use of forged documents, card fraud, computer fraud and diversion of funds to suspense accounts, misappropriation of assets and claiming of unearned benefits.

Finally, the regression coefficients results indicated that operational red flags had a positive and significant influence on computerized financial fraud in commercial fraud ( $\beta = 0.322$ , Sig = 0.000). This means that ineffective training of customers and employees, Security controls failure anticipate computerized financial fraud in commercial banks, ineffective management team can lead to an increase in computerized financial fraud, voluminous cash transfers can increase the vulnerability to commit financial fraud and a lack of acceptance of performance Targets contributes to financial fraud leads to 0.322 unit effect on computerized financial fraud in Kenya. The findings agree with the findings of a study by Moyes (2011) which indicated that there is no difference in the perception of internal and external auditors concerning red flags. In addition, the study found evidence that 17 red flags have differences in efficacy for fraud detection. In agreement, Young and Mohamed (2013) study showed that the external and internal auditors perceive different levels of effectiveness of red flags and differences were found between the perceptions of internal and external auditors on the effectiveness of 12 red flags. Similarly, Mwabu (2013) found out that level of awareness of the customer had the greatest effect on the electronic fraud in the banking industry, followed by security controls; then quality management while level of salaries and remuneration had the least effect to the electronic fraud in the banking industry. Wanjiru (2011) in her study also concluded that it's necessary for a bank to have an anti-fraud unit that employs various strategies to curb fraud.





## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### **5.1 Introduction**

This section of the study presents a summary of the findings, recommendations, conclusions and areas for further studies that the study identified. The summary of the findings was carried out as per each study objective. The conclusions were also given per objective.

#### **5.2 Summary of Findings**

This part details a summary of findings drawn from statistical results depending on the level of significance. From the summary of the findings, conclusions were presented.

##### **5.2.1 Quality Management**

The study showed that weak Quality Management had a positive and significant impact on computerized financial fraud in commercial banks in Kenya. Poor quality Management practices such as a decrease in the level of policy compliance in Kenyan commercial banks, Lack of frequent internal auditing raises the possibility of a fraud, Lack of duty segregation makes staff vulnerable to commit fraud, Poor confidence and integrity level of staff can lead to financial fraud in commercial banks and Lack of job rotation increases the possibility of a computer fraud leads to a positive influence on computerized financial fraud in commercial banks in Kenya.

Regression results also showed that in effective Quality Management had a positive and significant impact on computerized financial fraud in commercial fraud. A unit increase in the quality management practices leads to a 0.194 unit effect on computerized financial fraud in Kenya.

##### **5.2.2 Employees Behaviour Anomalies**

The study showed that Employees Behavior Anomalies had a positive and significant impact on computerized financial fraud in commercial fraud. Employees Behavior Anomalies practices like financial difficulties of employees predisposes them to commit fraud, the need to monitor the levels of customer complaints on staff, high level of customer /employees relationship, auditing of staff lifestyle to monitor fraud and presence of a high number of false overtime claims leads to a positive influence on computerized financial fraud in commercial banks in Kenya.

Regression results also showed that Employees Behavior Anomalies had a positive and significant impact on computerized financial fraud in commercial fraud. A unit increase in the Employees Behavior Anomalies practices leads to a 0.233 unit effect on computerized financial fraud in Kenya.

### **5.2.3 Operational Red flags**

The study showed that Operational Red flags had a positive and significant impact on computerized financial fraud in commercial fraud. Operational Red flags such as ineffective training for customers and employees, Security controls failure anticipate computerized financial fraud in commercial banks, ineffective management team can lead to an increase in computerized financial fraud, voluminous cash transfers can increase the vulnerability to commit financial fraud and a lack of acceptance of performance Targets contributes to financial fraud leads to a positive influence on computerized financial fraud in commercial banks in Kenya.

Regression results also showed that Operational Red flags had a positive and significant impact on computerized financial fraud in commercial fraud. A unit increase in Operational Red flags practices leads to a 0.322 unit effect on computerized financial fraud in Kenya.

### **5.3 Conclusion of the Study**

The study made conclusions according to each study objective based on the summary results. The conclusions enabled the study to come up with the recommendations to the study.

#### **5.3.1 Quality Management**

The study concluded that the influence of Quality Management as a predictor for computerized financial fraud in commercial banks in Kenya was positive and significant. The study concluded that poor quality Management practices such as the low level of policy compliance in Kenyan commercial banks, Lack of frequent internal auditing raises the possibility of a fraud, Lack of duty segregation makes staff vulnerable to commit fraud, Poor confidence and integrity level of staff can and lack of job rotation positively and significantly increases the computerized financial fraud in commercial banks in Kenya.

#### **5.3.2 Employees Behaviour Anomalies**

The study established that Employees Behavior Anomalies influenced computerized financial fraud in commercial banks in Kenya positively and significantly. The study concluded that financial difficulties of employees, the need to monitor the levels of customer complaints on staff, high level of customer /employees relationship, auditing of staff lifestyle to monitor fraud and presence of a high number of false overtime claims positively and significantly contributes to the computerized financial fraud in commercial banks in Kenya.

### **5.3.3 Operational Red flags**

The study concluded that operational red flags influenced computerized financial fraud in commercial banks in Kenya positively and significantly. The study concluded that ineffective training for customers and employees, failure of Security controls; ineffective management team, voluminous cash transfers and a lack of acceptance of performance targets positively and significantly contributes to the computerized financial fraud in commercial banks in Kenya.

### **5.4 Recommendations**

The study recommends the management of commercial banks in Kenya to ensure there is a higher level of policy compliance. The study further recommends the management of Kenya commercial banks to conduct frequent internal auditing erase the possibility of a fraud. Moreover, the study recommends the management of Kenya commercial banks in Kenya to segregate staff duties so as to avoid making them vulnerable to committing fraud. There is also need for the management of commercial banks in Kenya to boost the confidence and integrity level of staff so as to prevent financial fraud. The study further recommends the management of commercial banks to ensure there is job rotation so as to prevent the staff from getting too familiar with the system hereby avoiding the possibility of a computer fraud

The study also recommends the management of commercial banks to identify employees with financial difficulties as they are more vulnerable to commit fraud. There is also a need for the management to closely monitor the levels of customer complaints on staff as that will help in curbing the possibility of staff engaging in financial fraud. Moreover, the management of commercial banks should regularly audit their staff lifestyle so as to monitor fraud. There is also a need to frequently monitor high number of false overtime claims so as to prevent financial fraud.

Finally, the study recommends the management of commercial banks to ensure they provide effective training for customers and employees. There is also a need to ensure there are no failures of security controls so as to prevent anticipated computerized financial fraud in commercial banks. The study further recommends the management of commercial banks to ensure there is an effective management team so as to reduce computerized financial fraud. In addition, the study recommends the management of commercial banks in Kenya to ensure there are no voluminous cash transfers as this reduces the vulnerability of staff to commit financial fraud.

### **5.5 Areas for Further Research**

The study recommends future researchers to carry out more studies to determine other predisposing factors of computerized financial fraud in commercial banks since Quality Management, employee

behaviour anomalies and operational red flags all account for 43.7% of the variation in computerized financial fraud in commercial banks in Kenya. Other studies should also be carried out to determine the effect of Quality Management, employee behaviour anomalies as well as operational red flags on other sectors apart the banking sector.

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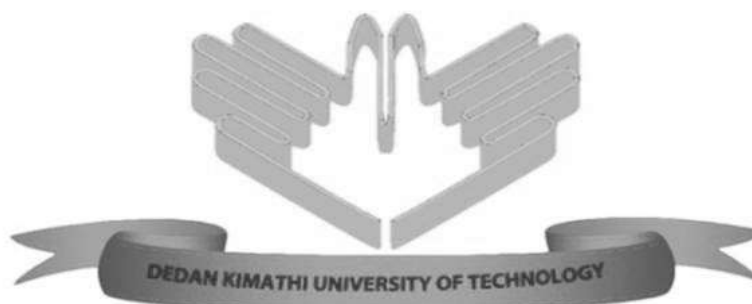
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## APPENDIX 1: INTRODUCTION LETTER



### DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

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*Office of the Dean- School of Graduate Studies and Research*

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Ref: DeKUT/SGSR/SM/1111

19th December, 2017

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: INTRODUCTORY LETTER FOR RESEARCH

The bearer of this letter; Kamande, Regina Wairimu of Registration number B214-003-00 16/2017 is abonafide student in the School of Graduate Studies and Research at Dedan Kimathi University of Technology. In fulfilling part of the requirements for a Master of Degree of Forensic Science and Security Management, she intends to collect some data from your esteemed organization.

The university requests for your assistance to the student with the necessary data which forms an integral part of the academic research. The information provided will be used only for this purpose and will be treated with utmost confidentiality.



Copy to Student file: B214-003-0016/2017

## APPENDIX 11: QUESTIONNAIRE

Kindly, provide answers to these questions as precisely as possible. Response to the questions will be treated with confidentiality.

### SECTION A: Background information

Please tick [√] where appropriate or fill in the required information.

1. What is your age bracket in years?

(a) Below 30 years [ ]

(b) Between 31-40 years [ ]

(c) Between 41-50 years [ ]

(d) Above 50 years [ ]

2. What is your gender?

a) Male [ ]

b) Female [ ]

3. Kindly indicate your highest education qualification

a) (a) Diploma [ ]

b) (b) Undergraduate degree [ ]

c) (c) Masters [ ]

d) (d) PhD [ ]

4. How long have you been in your current position in the anti-fraud bank section?

e) Below 3 years [ ]

f) Between 4-6 years [ ]

g) Between 7- 9 years [ ]

h) Between over 10 years [ ]

## SECTION B: COMPUTERISED FRAUD IN COMMERCIAL BANKS

Please indicate the extent you which you agree or disagree with the following statements of computerized financial fraud in your commercial Bank.

| Statement   | Very low extent (1) | Low extent (2) | Moderate extent (3) | High extent (4) | Very high extent (5) |
|---|---------------------|----------------|---------------------|-----------------|----------------------|
| Trends for computerized financial fraud in your bank has been on the rise from 2012 to 216                  |                     |                |                     |                 |                      |
| The amount of computerized financial fraud in your bank has been on the decrease from the year 2012 to 2016 |                     |                |                     |                 |                      |
| The frequency for computerized financial fraud cases has been rising  |                     |                |                     |                 |                      |

## SECTION C: QUALITY MANAGEMENT

Please indicate the extent to which you agree with following statements on internal controls.

| Statements   | Very low extent | Low extent | Moderate extent | High extent | Very high extent |
|--|-----------------|------------|-----------------|-------------|------------------|
|  | 1               | 2          | 3               | 4           | 5                |
| There is a higher level of policy compliance in Kenyan commercial banks                      |                 |            |                 |             |                  |
| Lack of frequent internal auditing raises the possibility of a fraud                         |                 |            |                 |             |                  |
| Lack of duty segregation makes staff vulnerable to commit fraud                              |                 |            |                 |             |                  |
| Poor confidence and integrity level of staff can lead to financial fraud in commercial banks |                 |            |                 |             |                  |
| Lack of job rotation increases the possibility of a computer fraud                           |                 |            |                 |             |                  |

## SECTION D: EMPLOYEES BEHAVOIR ANOMALIES

With reference to your bank, indicate by ticking [√] the extent to which you agree with the following statements on employee's behavior anomalies.

| Statements  | Very low extent (1) | Low extent (2) | Moderate extent (3) | High extent (4) | Very high extent (5) |
|---|---------------------|----------------|---------------------|-----------------|----------------------|
| There is need to address Financial difficulties of employees as they predisposes them to commit fraud |                     |                |                     |                 |                      |
| There is need to monitor the levels of customer complaint on staff                                    |                     |                |                     |                 |                      |
| The level of customer /employees relationship need to be monitored as they predict financial fraud    |                     |                |                     |                 |                      |
| There is need to audit Lifestyle of staff   |                     |                |                     |                 |                      |
| There is a high number of false overtime claims   |                     |                |                     |                 |                      |

## SECTION E: OPERATION REDFLAGS

With reference to your bank, indicate by ticking [] the extent to which you agree with the following statements on operation red flags of computerized financial fraud occurrence.

| Statement   | Very low extent(1) | Low extent (2) | Moderate extent (3) | High extent (4) | Very high extent (5) |
|---|--------------------|----------------|---------------------|-----------------|----------------------|
| Ineffective training for customers and employees contributes to financial fraud       |                    |                |                     |                 |                      |
| Security controls failure anticipate computerized financial fraud in commercial banks |                    |                |                     |                 |                      |
| Ineffective management team can lead to an increase in computerized financial fraud   |                    |                |                     |                 |                      |
| Voluminous cash transfers can increases the vulnerability to commit financial fraud.  |                    |                |                     |                 |                      |
| A lack of acceptance of performance Targets contributes to financial fraud            |                    |                |                     |                 |                      |



APPENDIX 11I: LIST OF COMMERCIAL BANKS IN KENYA

|       | LARGE BANKS               | MEDIUM BANKS           | SMALL BANKS               |
|-------|---------------------------|------------------------|---------------------------|
| 1     | Kenya Commercial Bank     | Family Bank            | Middle East Bank Kenya    |
| 2     | Barclays Bank             | Bank Of India          | Credit Bank               |
| 3     | Commercial Bank Of Africa | Prime Bank Limited     | Consolidated Bank BOK     |
| 4     | Cooperative Bank Of Kenya | Bank Of Baroda         | Spire Bank                |
| 5     | Equity Bank               | Nic Bank               | First Bank Community      |
| 6     | Standard Chartered Kenya  | Stanbic Bank           | Habib Bank                |
| 7     |                           | Bank Of Africa         | Jamii Bora Bank           |
| 8     |                           | Citi Bank              | Guardin Bank              |
| 9     |                           | National Bank Of Kenya | Middle East Bank          |
| 10    |                           | Eco Bank               | M-Oriental Bank           |
| 11    |                           | I&M Bank               | Sidian Bank               |
| 12    |                           | Prime Bank Limited     | Victoria Commercial Bank  |
| 13    |                           | Guaranty Trust Bank    | Paramount Bank            |
| 14    |                           | National Bank Of Kenya | United Bank For Africa    |
| 15    |                           | Chase Bank             | Trans National Bank       |
| 16    |                           |                        | Habib Bank AG Zurich      |
| 17    |                           |                        | Giro Commercial Bank      |
| 18    |                           |                        | Fidelity Commercial Bank  |
| 19    |                           |                        | Gulf African Bank         |
| 20    |                           |                        | Development Bank Of Kenya |
| 21    |                           |                        | Faulu Bank                |
| 22    |                           |                        | Diamond Trust Bank        |
| Total | 6                         | 15                     | 22                        |