BASEL II OPERATIONAL RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

IRENE NJERI ESTHER

DOCTOR OF PHILOSOPHY

(Business Administration)

JOMO KENYATTA UNIVERSITY

OF

AGRICULTURE AND TECHNOLOGY

2022

Basel II Operational Risk Management and Financial Performance of Commercial Banks in Kenya

Irene Njeri Esther

A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Business Administration of Jomo Kenyatta University of Agriculture and Technology

2022

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Signature…… Date……

Irene Njeri Esther

This thesis has been submitted for examination with our approval as the University Supervisors.

Signature…… Date……

Prof. Gregory Simiyu Namusonge, PhD

JKUAT, Kenya

Signature…… Date……

Dr. Tobias Olweny, PhD

JKUAT, Kenya

DEDICATION

I dedicate this thesis to my dear sons Jeff and Bob for their forbearance as I went to class despite their tender age. Special dedication also goes to my dear husband Ngugi and my dear mother Esther for their encouragement. May Almighty God bless you all.

ACKNOWLEDGEMENT

I take immense pleasure to thank my supervisors Professor Gregory Simiyu Namusonge and Dr. Tobias Olweny for their tireless guidance, availability, input, support and reviewing my work which has jointly enabled me write this thesis. I will always remember your guidance and useful suggestions, which helped me in making this document worthwhile. Much appreciation also goes to other lecturers at Jomo Kenyatta University of Agriculture and Technology who have been a source of inspiration especially during the coursework period. I also extend my gratitude to Mr. Joseph Gatimu, Mr. Leonard Muriithi and Mr. Naftali Kinyua of Central Bank of Kenya- Mombasa for their much needed assistance without which this research could not have been possible. I cannot forget to thank the entire training committee of Taita Taveta University for coming to my rescue at a point when I almost missed a defense due to financial constraint. I am also grateful to my classmates for their help and mutual aid in the course of successful completion of this work. Finally, I thank the Almighty God for granting me good health, peace of mind and the breakthrough that has enabled me complete this thesis.

TABLE OF CONTENTS

DECLARATION ..... **ii**

DEDICATION ..... **iii**

ACKNOWLEDGEMENT ..... **iv**

TABLE OF CONTENTS ..... **v**

LIST OF TABLES ..... **xiii**

LIST OF FIGURES ..... **xvi**

LIST OF APPENDICES ..... **xvii**

OPERATIONAL DEFINITION OF TERMS ..... **xx**

ABSTRACT ..... **xxi**

CHAPTER ONE **1**

INTRODUCTION **1**

1.1 Background of the Study 1

1.1.1 Global Perspective of Basel II Operational Risk Management and Financial Performance 2

1.1.2 Regional Perspective of Basel II Operational Risk Management and Financial Performance 7

1.1.3 Kenyan Perspective of Basel II Operational Risk Management and Financial Performance 7

1.2 Statement of Problem 10

1.3 Objectives of the Study 12

1.3.1 General Objective 12

1.3.2 Specific Objectives 12

1.4 Research Hypotheses 13

1.5 Significance of the Study 13

1.6 Scope of the Study 15

1.7 Limitations of the Study 16

CHAPTER TWO 17

LITERATURE REVIEW 17

2.1 Introduction 17

2.2 Theoretical Framework 17

2.2.1 The Fraud Triangle Theory 17

2.2.2 Utility Theory of Crime and Punishment 20

2.2.3 Creative Destruction Theory 23

2.3 Conceptual Framework 25

2.4 Review of Variables 29

2.4.1 Effect of Bank Fraud on Financial Performance of Banks 29

2.4.2 Regulatory Non-Compliance Costs 32

2.4.3 Business Disruption and Utility Outages 34

2.4.4 Costs of Operational Risks Legal Liability 36

2.4.5 Employment Practices and Workplace Safety Non-compliance Costs 38

2.5 Empirical Review 39

2.5.1 Effect of Fraud on Financial Performance of Commercial Banks 40

2.5.2 Effects of Regulatory Non-compliance costs on Financial Performance 42

2.5.3 Effects of Business Disruption and Utility Outages on Financial Performance of Commercial Banks 47

2.5.4 Effects of Operational Risk Legal Liability Cost on Banks Financial Performance 49

2.5.5 Effects of Employment Practices and Workplace Safety Non-compliance Cost on Financial Performance of Commercial Banks 52

2.6 Critique of Existing Literature 54

2.7 Research Gaps 57

2.8 Summary 59

CHAPTER THREE 61

RESEARCH METHODOLOGY 61

3.1 Introduction 61

3.2 Research Philosophy 61

3.3 Research Design 62

3.4 Target Population 62

3.5 Sampling Frame 63

3.6 Sample and Sampling Technique 64

3.6.1 Sampling Technique 64

3.6.2 Sample Size 64

3.7 Data Collection Methods and Instruments 66

3.8 Data Collection Procedures 67

3.9 Pilot Study 67

3.9.1 Reliability of the Study 68

3.9.2 Validity 69

3.10 Data Analysis and Presentation 70

3.10.1 Panel Regression Model 70

3.10.2 Paired T-Test Model 72

3.11 Diagnostic Tests 73

3.11.1 Test for Linearity 73

3.11.2 Normality Testing 74

3.11.3 Homogeneity of Variance 74

3.11.4 Heteroskedasticity 74

3.11.5 Hypothesis Testing 75

3.12 Measurement of Variables 77

3.12.1 Measures of Fraud Cost 77

3.12.2 Regulatory Non-compliance Cost 77

3.12.3 Measures of Legal costs 77

3.12.4 Business Disruption and System Failure costs 77

3.12.5 Measures of Employment practices and Workplace Safety Cost 78

3.12.6 Measures of Financial Performance 78

3.13 Ethical Considerations 79

CHAPTER FOUR **80**

RESEARCH FINDINGS AND DISCUSSION **80**

4.1 Introduction 80

4.2 Response Rate 80

4.3 Background Information 81

4.3.1 Respondent's Gender 81

4.3.2 Respondent's Age Group 81

4.3.3 Respondent's Level of Education 82

4.4 Descriptive Statistics 83

4.4.1 Descriptive Statistics on Effects of Fraud 83

4.4.2 Types of Fraud Risks Experienced by the Bank in Kenya 85

4.4.3 Effects of Fraud on the Financial Performance of the Bank 87

4.4.4 Fraud Related Losses Experienced by Commercial Banks 88

4.4.5 Change in Fraud after Basel II Implementation 90

4.4.6 Causes of Decrease in Frauds 91

4.4.7 Causes of Increase in Fraud 92

4.5 Descriptive on Regulatory Non-Compliance Costs 93

4.5.1 Types of Regulatory Non-compliance in the Commercial Banks 93

4.5.2 Causes of Regulatory Non-compliance in Commercial Bank 95

4.5.3 Effects of Regulatory Non-compliance Penalties on Commercial Bank 96

4.5.4 Regulatory Non-compliance Cost Experienced by Commercial Bank 98

4.6 Descriptive Results of Business Disruptions and Utility Outages 100

4.6.1 Causes of Business Disruptions and Utility Outages in Commercial Bank ... 100

4.6.2 Effects of Business Disruptions and Utility outages on Commercial Banks .. 101

4.6.3 Cost of Business Disruptions and Utility Outages Experienced by Commercial Bank 104

4.7 Descriptive Results of Operational Risks Legal Liability..... 105

4.7.1 Causes of Operational Risks Legal Liability 105

4.7.2 Types of Operational Risks Legal Liability Costs 106

4.7.3 Operational Risks Legal Liability Costs 107

4.8 Descriptive Results of Employment Practices and Workplace Safety Non-compliance 108

4.8.1 Causes of Employment Practices and Workplace Safety Non-compliance.... 108

4.8.2 Effects of Employment Practices and Workplace Safety Non-compliance.... 109

4.8.3 Cost of Employment Practices and Workplace Safety Non-compliance..... 110

4.9 Descriptive Results on Financial Performance 112

4.9.1 Respondents' Profit before Tax 112

4.9.2 Respondents' Return on Assets..... 114

4.9.3 Respondents' Return on Equity (ROE)..... 115

4.10. Requisite Tests 116

4.10.1 Sampling Adequacy Results on Fraud Costs 116

4.10.2 Component Matrix Results for the Five Independent Variables Costs..... 117

4.10.3 Factor Analysis 119

4.11 Panel Regression Diagnostic Tests (Mixed Effect Modelling) of Financial Performance 122

4.11.1 Test for Linearity for Profit before Tax 122

4.11.2 Test for Normality Testing for Profit before Tax..... 123

4.11.3 Test for Homogeneity of Variance for Profit before Tax 123

4.11.4 Test for Linearity for Returns on Assets 124

4.11.5 Normality Test for Return on Assets 124

4.11.6 Test for Homogeneity of Variance for Return on Assets..... 125

4.11.7 Test for Linearity for Returns on Equity..... 126

4.11.8 Normality Testing for Return on Equity 126

4.11.9 Test for Homogeneity of Variance for Return on Asset 127

4.12 Inferential Analysis 127

4.12.1 Correlation Analysis Results of the Variables 127

4.12.2 Panel Regression Analysis 132

4.12.3 Paired T-Test for the Effect of Basel II Operational Risk Management on Financial Performance 138

4.13 Test of Hypotheses..... 142

4.13.1 Summary of the Hypotheses Tested..... 143

CHAPTER FIVE..... 144

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 144

5.1 Introduction..... 144

5.2 Summary of Findings..... 144

5.2.1 Effect of Financial Fraud on Financial Performance of Commercial Banks .. 144

5.2.2 Effect of Regulatory Non-Compliance Costs on Financial Performance of Commercial Banks 145

5.2.3 Effect of Business Disruption and Utility Outages on Financial Performance of Commercial Banks 145

5.2.4 Effect of Operational Risks Legal Liability Costs on Financial Performance of Commercial Banks 146

5.2.5 Effect of Employment Practices and Workplace Safety Non-compliance Costs on Financial Performance of Commercial Banks 146

5.2.6 Effect of Basel II Operational Risk Management on Financial Performance of Commercial Banks 147

5.3 Conclusions 147

5.4 Recommendations 149

5.4. 1 Managerial Recommendations 150

5.4.2 Policy Recommendations 151

5.5 Contribution of the Study to Knowledge 151

5.6 Areas for Further Research 152

REFERENCES 154

APPENDICES 174

LIST OF TABLES

Table 3.1: Target Population 63

Table 3.2: Sample Size 66

Table 3.3: Summary of Reliability Test 69

Table 3.4: Summary of Hypothesis Testing 76

Table 4.1: Response Rate 81

Table 4.2: Respondents' Gender 81

Table 4.3: Respondents' Age Group 82

Table 4.4: Respondent's Level of Education 82

Table 4.5: Causes of Fraud in Banks 83

Table 4.6: Types of Fraud Risks Experienced by the Bank in Kenya 85

Table 4.7: Effects of Fraud on the Financial Performance of the Bank 87

Table 4.8: Fraud Related Losses Experienced by Commercial Banks 89

Table 4.9: Change in Fraud after Basel II Implementation 90

Table 4.10: Causes of Decrease in Frauds 91

Table 4.11: Causes of Increase in Frauds 93

Table 4.12: Types of Regulatory Non-compliance in Commercial Banks 94

Table 4.13: Causes of Regulatory Non-compliance in Commercial Bank 95

Table 4.14: Effects of Regulatory Non-compliance on Commercial Bank 96

Table 4.15: Regulatory Non-compliance Cost Experienced by Commercial Bank. 98

Table 4.16: Causes of Business Disruptions and Utility Outages in Commercial Bank 100

Table 4.17: Effects of Business Disruptions and Utility outages on Commercial Banks 102

Table 4.18: Cost of Business Disruption and Utility Outage Experienced by Banks 104

Table 4.19: Causes of Operational Risk Legal Liability 105

Table 4.20: Types of Operational Risks Legal Liability Costs 106

Table 4.21: Operational Risks Legal Liability Cost 107

Table 4.22: Causes of Employment Practices and Workplace Safety Non-compliance Cost 108

Table 4.23: Effects of Employment Practices and Workplace Safety Non-compliance Cost 109

Table 4.24: Cost of Employment Practices and Workplace Safety Non-compliance 111

Table 4.25: Respondents' Profit before Tax 112

Table 4.26: Respondents' Returns on Asset 114

Table 4.27: Returns on Equity 115

Table 4.28: KMO and Bartlett's Test for the Independent Variables 117

Table 4.29: Component Matrix for Independent Variables' Costs 117

Table 4.30: Total Variance for Fraud cost Explained 120

Table 4.31: Total Variance for Regulatory Non-compliance Explained 120

Table 4.32: Total Variance for Business Disruption and Utility outage Explained121

Table 4.33: Total Variance for Operational Risk Legal Liability Cost Explained 121

Table 4.34: Total Variance for Employment Practices and Work-Place Safety Non-compliance Explained 122

Table 4.35: ANOVA for Residuals of Profit before Tax 123

Table 4.36: ANOVA for Residuals of Returns on Assets..... 125

Table 4.37: ANOVA for Residuals of Returns on Equity..... 127

Table 4.38: Correlation Results between Variables 128

Table 4.39: Type III Tests of Mixed Effects on Profit Before Tax..... 132

Table 4.40: Estimates of Mixed Effects in Profit Before Tax Modelling 133

Table 4.41: Type III Tests of Mixed Effects on Returns on Assets 134

Table 4.42: Estimates of Mixed Effects in Returns on Assets Modeling 135

Table 4.43: Type III Tests of Mixed Effects on Returns on Equity..... 136

Table 4.44: Estimates of Mixed Effects in Returns on Equity Modelling 137

Table 4.45: Paired Samples Statistics 138

Table 4.46: Paired Samples Correlations 139

Table 4.47: Paired Samples Test 140

Table 4.48: Decision of the Hypotheses Test..... 143

LIST OF FIGURES

Figure 2.1: Conceptual Framework 28

Figure 4.1: Average PBT (in Million Kenya shillings) from 2011 to 2016.....112

Figure 4.2: ROA and ROE Compared 116

Figure 4.3: Linearity Test for Residuals of Profit Before Tax.....122

Figure 4.4: Normality Test for Residuals of Profit before Tax.....123

Figure 4.5: Linearity Test for Residuals of Returns on Assets 124

Figure 4.6: Normality Test for Residuals of Returns on Assets 125

Figure 4.7: Linearity Test for Residuals of Returns on Equity.....126

Figure 4.8: Normality Test for Residuals of Returns on Assets 127

LIST OF APPENDICES

Appendix I: Research Questionnaire 174

Appendix II: Secondary Data Collection Schedule 185

Appendix III: List of Commercial Banks in Kenya 186

Appendix IV: Basel Member Countries, Observers and Supervisory Group ... 189

Appendix V: Types of Basel II Operational Risk Events 190

Appendix VI: Frequencies Variables Analysis 193

ACCRONYMS AND ABBREVIATIONS

AMA	Advanced Measurement Approaches
ASA	Alternative Standardized Approach
BCBS	Basel Committee on Banking Supervision
BFID	Banking Fraud Investigation Department
BIA	Basic Indicator Approach
BIS	Bank for International Settlement
CBK	Central Bank of Kenya
CFI	Corporate Finance Institute
DPFB	Deposit Protection Fund Board
FISD	Financial Institutions Supervision Department
ICAAP	Internal Capital Adequacy Assessment Processes
KCB	Kenya Commercial Bank
KPMG	Klynveld Peat Marwick Goerdeler
KYC	Know Your Customer
NIM	Net Interest Margin
NSFR	Net Stable Funding Ratio
PBT	Profit Before Tax
PWC	Price Waterhouse Coopers

RBS	Risk Based Supervisory
ROA	Return on Assets
ROE	Return on Equity
RTGS	Real Time Gross Settlement
RWA	Risk-Weighted Assets
SACCOs	Savings and credit cooperatives

OPERATIONAL DEFINITION OF TERMS

Basel II Accord	The set of agreements set by the Basel Committee on Bank Supervision which provides recommendations on banking regulations in regard to capital risk, market risk and operational risk (Corporate Finance Institute [CFI], 2020).
Basel II Operational Risk	The risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events (Higginbotham, 2021).
Business Disruption and Utility outage cost	Losses arising from disruption of business or system failures (Hull, 2018).
Employment practices & work place safety cost	Losses arising from acts inconsistent with employment, health and safety laws or agreements for payment of personal injury claims or from discrimination events (Hull, 2018).
Financial Performance	Measuring the results of a firm's policies and operations in monetary terms to disclose the firm's profit before tax, return on investment, return on assets, value added, net interest margin among others (Hull, 2018).
Fraud cost	Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy (Hull, 2018).
Legal liability cost	Fines, penalties or punitive damages resulting from supervisory actions (Bank for International Settlement [BIS], 2019).
Regulatory Non-Compliance cost	Legal penalties, financial forfeiture and material loss that a bank faces when it fails to operate in accordance with banking laws and regulations, internal policies or prescribed best practices (Central Bank of Kenya [CBK], 2013).

ABSTRACT

Today's banking business is faced with many operational risks. This makes their management to adopt various modalities among them Basel II Accord to minimise them. The purpose of this study was to establish the effects of Basel II operational risk management on financial performance of commercial banks in Kenya. This was achieved through testing the effect of five variables on financial performance; financial fraud, regulatory non-compliance penalties, business disruption & utility outage, operational risk legal liability cost and employment practices & workplace safety non-compliance costs. The population of the study comprised of all the 42 commercial banks in Kenya as at 31st June 2017. A sample of 38 commercial banks was obtained through stratified random sampling to ensure that all the differential features of tier I, tier II and tier III commercial banks were captured in this survey. The study utilized both primary and secondary data, where primary data was obtained through self-administered questionnaires which were completed by either banks' security officers in charge of fraud investigations, or internal auditors or operations managers depending on the tier of the bank. Secondary data was obtained from Central Bank of Kenya annual reports. The study adopted descriptive research design while data was analysed using Statistical Package for Social Sciences (SPSS) version 22 and STATA version 15 to obtain statistics like averages, percentages, standard deviation, correlation coefficients and significance among others. The study adopted profits before tax, return on assets and return on equity to measure financial performance. The findings from the study were presented using frequency distribution tables and line graphs to give visual impression. Paired t-test analysis was performed to examine the weight of each operational risk variable against the financial performance variable before and after Basel II implementation while Pearson correlation analysis was performed to establish the relationship between the independent variables and dependent variables. The hypothesis testing was conducted at 5% level of significance. The correlation results indicated that out of the five variables only financial fraud cost had a significant (p value = 0.041) negative (r = - 0.168) on financial performance of commercial banks. The negative correlation among all the five variables and financial performance means that a significant increase in any of these variables would result to decrease in financial performance and vice versa. The paired t-test findings indicated that the average profit before tax increased by KES 457M but could not entirely be attributed to Basel II implementation as explained by the p value of 0.791 > 0.05. While decrease in return on assets by 0.96% and return on equity by 5.02% could be attributed to Basel II implementation (p value of 0.000 and 0.013 respectively). This study recommends that commercial banks' management invests in enhanced ICT related fraud controls which should be entrenched in the commercial banks' ICT processes relating to mobile banking and internet banking in order to reduce system hacking frauds by external computer fraudsters as this was the major cause of fraud which consequently reduces profitability of a bank.

CHAPTER ONE

INTRODUCTION

This chapter covers the background of the study, statement of the problem, study objectives, hypotheses of the study, significance of the study, the scope of the study and the limitations of the study.

1.1 Background of the Study

Risk management has become a concern for all business communities in the recent times. Most importantly, in today's banking business, banks have realized that their risk management programs need to go beyond traditional focus on liquidity, credit, and market risk to encompass a wider variety of risk types such as operational risk among others. As such, operational risk management has gained enormous emphasis today with banks recruiting stronger board of directors who intensely understand emerging operational risks. Before the 1980s operational risk losses were suffered in the thousands of shillings but in the recent past, financial institutions, especially the commercial banks, have experienced significant operational risk losses amounting to millions of shillings hence regulators, banks' managers as well as the general public cannot afford to ignore commercial banks' operational risk management. As a result, financial institutions such as commercial banks, insurers, hedge-funds, credit unions among others must lay down modalities of managing operational risks regardless of whether it is a regulatory mandate or not. This study concentrated on the effect of Basel II operational risk management on financial performance of commercial banks in Kenya. The study variables that were of specific concern were; financial fraud, regulatory non-compliance costs, operational risk legal liability costs, employment practices non-compliance costs and business disruption costs and their effect on financial performance of commercial banks.

1.1.1 Global Perspective of Basel II Operational Risk Management and Financial Performance

There is no doubt that globally the financial institutions are taking overall risk management very seriously. In this regard, Deloitte (2014) survey in 86 financial institutions from across the globe revealed that, in 2014, 72% of the institutions were much effective at managing risk as compared to 66% in 2010. This increase was stimulated by many years' efforts in strengthening risk management programs as well as the memory of the credit crisis. Further, the survey also disclosed that most institutions very effectively manage liquidity risk (85%), credit risk (83%), counterparty risk (83%) and market risk (72%). The institutions were however less confident in their ability to manage business continuity/Information technology (IT) security risk (52%), model risk (50%), data integrity risk (50%) and operational risk (45%) which declined from 47% in 2010. In addition, the survey shows that operational risk management has been a challenge because of absence of capacity to directly measure operational risk and due to complexity of the operational processes in most financial institutions (Deloitte, 2014). As such inclusion of operational risk management in the Basel II capital framework gave operational risk management a higher priority, making several financial institutions expanded their programs for managing operational risk.

Seuraj and Watson (2012) study on effects of compliance with Basel II prudential regulations in commercial banks Trinidad and Tobago found that there is sufficient evidence that Basel II regulations affect the financial performance of commercial banks though not always in appositive way. Deloitte (2015) survey covering 71 global financial institutions, found that 70% of respondents were very effective in managing legal, regulatory/compliance (67%) and tax operational risks (66%). While fewer respondents were very effective in third party (44%), cyber security (42%), data integrity risk (40%) and model (37%) operational risks. Further most respondents greatly (74%) prioritize clients, products and business practices operational risk management as well as business disruption & system failures (74%) and execution, delivery & process management (74%) operational risks (Deloitte, 2015).

Deloitte (2017) survey on industry's risk management practices and the challenges faced in turbulent period carried out in 2016 following Brexit involving 77 global financial institutions found out that in endeavours to manage operational risk, only 42% of respondents very effectively manages cyber security risk. Further, 36% of respondents reported that regulatory compliance risk was part of the three risk types likely to rise over the next two years. In addition, 79% of respondents reported that regulatory reform had resulted in increased cost of compliance and were very concerned about tighter standards of regulations which increases operation cost (Deloitte, 2017). This may explain why regulatory noncompliance is rampant in financial institutions. When the cost of compliance increases, some financial institutions may fail to comply with some regulations especially if the total utility derived exceeds the penalties for noncompliance as explained by theory of crime and punishment.

Klynveld Peat Marwick Goerdeler (KPMG, 2016) study on global profiles of the fraudster which sampled 750 fraudsters from 81 countries across the world showed that technology was a major facilitator for fraudster to committee frauds but on the contrary technology was not being used properly to detect and prevent fraud. Further the findings discovered that majority (69%) of the fraudsters were in the ages of 36 to 55 with most (65%) of them defrauding their own employers as a result of personal gain (60%) and greed (36%). This survey seems to support fraud triangle theory that perceived opportunity to commit fraud motivates people to commit fraud. Thus, sophistication of operations without proper internal control systems creates an opportunity for fraudsters to commit fraud. Likewise, Price Waterhouse Coopers (PWC, 2015) survey on global state of information security that sampled 75 IT professionals from financial institutions across the globe revealed that IT related risks are increasing in magnitude and cost. In addition, the study discovered that the main perpetrators of IT operational risks were insiders and suppliers.

Ernst and Young (2018) global fraud survey conducted in 55 countries involving 2550 respondents noted that changing regulations and adoption of sophisticated technologies are changing the nature of risk exposures to organizations with fraud

risk and corruption risk being the biggest risk exposures in emerging markets globally. The report further noted that 43% of the respondents had experienced changing regulatory risk, 42% macroeconomic risk, 37% cyber-attack while 36% were exposed to fraud and corruption risk. Moreover, 11% of the respondents confirmed having experienced a major fraud in the past two years. Similarly, KPMG (2010) survey on fraud and misconduct in Australia and New Zealand showed that the amounts involved in fraud are on increase with the values rising from $301.1M in 2008 to $345.4M in 2010 with the average number of frauds increasing from 530 to 813. The survey also noted that financial and insurance industries were the most vulnerable to fraud with 84% of the frauds being perpetrated by external parties and 14% being perpetrated by management. Further the survey noted that cash theft was the dominant type of fraud, followed by cheque tampering and false claims for insurance companies and that greed by fraudsters was the major (92.71%) motivator of fraud. This study seems to concur with the fraud triangle theory of fraud that perceived pressure emanating from greed fuels fraud.

The operational risks discussed above and various others financial risks that have faced the financial institutions, have forced their regulators to take risk management in commercial banks a notch higher by forming global standards for risk management known as Basel Accord. The Basel regulations have their genesis from the financial market havoc that occurred after the collapse of Breton Woods's system of managed exchange rates in 1973. By 1971 United States had very few non gold reserves plus only 22 % gold coverage of foreign reserves making the dollar become significantly overvalued in regard to gold. At the same time, the current account deficits, anti–free trade sentiments were rising in the U.S. which made President Nixon to close the gold window on August 15, 1971, thus ending the convertibility of the dollar into gold. The dollar was therefore left to float in line with its market price. This forced the Group ten (G10) to meet in December 1971, in efforts to create a new international monetary system where they also agreed to devalue the dollar from $35 to $38 per ounce of gold. Nonetheless, since U.S. expenditures and current account deficits were continuing, this devaluation never

stopped speculation against the dollar and the dollar dropped to $44 per ounce of gold in 1972.

Unfortunately, the Breton Woods system by now was irrecoverable hence in February 1973, the U.S. and other developed nations allowed their currencies to float. During this mayhem, several commercial banks incurred huge foreign currency losses. Among the worst hit banks was Bankhaus Herstatt's of West Germany where its foreign exchange exposures totalled thrice its capital hence forcing its regulator in West Germany to withdraw its license and liquidize it in June 1974. The closure of this bank caused more agony because several banks outside Germany had released Deutschmarks to Herstatt bank in exchange for dollar payments deliverable in New York, but there was however time lag caused by differences in time zones which delayed dollar payment to counter party banks.

Liquidation of Herstatt bank meant that the delayed transactions could not be effected hence resulting to unsettled trade and thereby making it an international risk. During the same year 1974 in October, the Franklin National Bank of New York made severe foreign exchange losses causing its closure. It is these risk events that forced the central bank governors of the G10 nations under the patronage of the Bank for International Settlement (BIS) located in Basel Switzerland to form the Basel Committee on Banking Supervision (BCBS) at the end of 1974 to improve banking supervisory knowhow worldwide (CFI, 2020). Today the Basel regulations are adopted by both member and non-member countries. Since 1988 the Basel committee has developed three standards of bank supervision which principally focuses on commercial banks managing their risk profiles; Basel I, Basel II and Basel III as follows:

Firstly, Basel I which was released for implementation by banks in July 1988 but required full implementation by 1992 focused on managing credit risk by establishing minimum capital requirements for banks (BCBS, 2013). The major weakness of the Basel I is that its risk weights only focused on credit risk management, but failed to deal with how commercial banks should mitigate other risks such as; market risks, liquidity risk and operational risks. This loophole

resulted to formation of Basel II standards. Secondly, Basel II released by BIS in 2004 but its implementation commenced end of 2006 gives guidelines for capital adequacy and disclosure requirements with focus in market risk and operational risk management in addition to credit risk management.

Basel II comprises of three pillars where Pillar 1 stipulates the minimum capital requirements, Pillar 2 the supervisory review process while pillar 3 stipulates the market discipline. Pillar I further stipulates on managing market risks, credit risks and operational risk hence amends Basel I guidelines by tying the minimum capital requirements to each bank's actual risk of economic loss. Thus Basel II demands higher levels of capital. Unfortunately, Basel II limitations were attributed with the financial crisis of 2008/09. This saw the birth of Basel III to correct these limitations. Thirdly, Basel III released in December 2010 but its implementation commenced on January 2013 and targeted full implementation by 2019. It stipulates higher levels of capital requirements and initiated new global liquidity framework incorporating new financial products mandating banks to address risks that are yet to be identified, or were believed inconsequential in the past. It thus requires higher minimum capital, higher quality capital, enhanced disclosure requirements and interaction between LCR and the provision of central bank facilities (BCBS, 2015).

Although Basel I Accord did not stipulate laws regarding operational risk management in banks, it does not mean that the then banks were not exposed to operational risks. Actually, operational risks are as old as the establishment of the first commercial bank, however when Basel I was being formulated their effects were minimal. On the contrary, the inception of sophisticated financial systems, globalization, and financial deregulation among others paved way for severe operational risk hence the reason for its inclusion in Basel II. Some of the most common forms of operational risks includes; Internal and external fraud, employment practices and work safety, clients, products and business practices, damage to physical assets, business disruption and systems failures, execution, delivery & process and management relationship risks. In the history of commercial banking, there have been many horrible operational risks that led to devastating effects intended to defraud, misappropriate property or circumvent the law by a

third party. This will then result to frauds such as; robbery, forgery, cheque kiting, systems hacking and theft of information from the system (Hull, 2018). It is the advent of such operational risks that the Bank for International Settlement set up a committee known as Basel Committee on Banks Supervision to set guidelines on management of operational risks facing commercial banks.

1.1.2 Regional Perspective of Basel II Operational Risk Management and Financial Performance

KPMG (2018) survey on growing pains among East African countries that sampled 10 CEOs from Kenya, Uganda, Tanzania, Rwanda and Ethiopia revealed that 90% of the CEOs sees business disruptions operational risk emanating from technology as more of an opportunity rather than a threat with majority (70%) intentionally disrupting their businesses as a result of technological change. However, 35% reported that technological disruption was a threat to them as they were struggling to cope with the level of technological changes. These findings support creative destruction theory that the process of industrial mutation continuously destroys the old technology and continuously creates new ones. The survey further revealed that most of the East Africa organizations are not adequately prepared for cyber-attacks operational risk as 49% admitted that they are exposed to cyber-attack risk. In addition, 50% of the Tanzania's CEOs identified cyber security, emerging technology and terrorism as some of the operational risks that their organizations are exposed to (KPMG, 2018).

1.1.3 Kenyan Perspective of Basel II Operational Risk Management and Financial Performance

In Kenya, CBK started regulating financial institutions under Basel I in 1999 (Ndung'u, 2007). Thus, CBK has over the years implemented Basel I and Basel II resulting to gradual increase in banks minimum capital to sh350M by 31st December 2009 to sh500M by 31st December 2010 to sh700M by 31st December 2011 and currently to sh1B by 31st December 2012. Although the G10 countries started implementation of Basel II in 2007, Kenya delayed its implementation until 2014 when commercial banks fulfilled the prerequisites of Basel II which are 100%

Basel I implementation, risk-based supervision adoption and Basel Core Principles adherence. Before adopting Basel Accord, CBK used the traditional approach that focused on transaction testing to determine the correctness of statement of financial position, statement of comprehensive income, the adequacy of internal controls and ensuring compliance with the applicable laws and regulations. Unfortunately, the traditional approach was basically ineffective in large banks for it does not differentiate between high and low risk activities of the banks. Moreover, traditional approach emphasis on accuracy of figures, hence mirrors a point in time assessments hence retrogressive. Besides, this approach appeared to quantify banks' problem and suggest solutions to address signs of the problem instead of dealing with the root causes of the problem (CBK, 2013).

The adoption of Risk Based Supervision commenced in 2004 after CBK conducted a research in September 2004 whose aim was to assess the level of implementation of risk management practices by commercial banks in Kenya. Later, a set of reviewed and new prudential guidelines among them the guidelines on capital adequacy were issued in November 2012. Capital adequacy revision was mostly motivated by global regulatory reform initiatives meant to strengthen banks' supervisory rules in order to correct flaws that were experienced during 2008/2009 global financial crisis. Among the requirements of the guidelines was that banks should calculate capital charge for operational risk. Due to less sophistication of the Kenyan banking sector, CBK advised commercial banks to use the Basic Indicator Approach to compute capital charge against operational risk. Basic Indicator Approach determines capital charge for operational risk as a fixed percentage of the average positive annual gross income of the bank over the past three years (CBK, 2013).

The implementation of these new requirements was spread from 12 to 24 months' duration. Thus, for market and operational risk requirement compliance, banks were given a twelve months' observation time to January 2014 after which they were to fully conform to the guideline. Likewise, banks were allowed twenty-four months up to 2015 to raise their capital after which they had to fully conform to 2.5% buffer beyond their then minimum statutory capital adequacy ratios. In 2013 CBK in

adherence to Basel capital buffers announcements, introduced a 2.5% capital conservation buffer beyond the minimum regulatory core of 8% bringing the core to 10.5% and also required the total capital ratio of 12% to be raised to 14.5% and must be maintain at all times by each bank with effect from 1st January 2015 (CBK, 2013).

When it comes to operational risks, Kenya has had its fair share. PWC (2018) survey on internal frauds posed to business that sampled 116 respondents reported that middle level managers were the major perpetrators of economic crime in the private sector and that customers accounted for 37% of the Kenyan companies' frauds. The finding further indicated that fraud increased from 61% in 2016 to 75% in 2017. The report also noted that external fraud was also on increase and that agents and shared service providers were the main perpetrators of this fraud. On the types of fraud, the survey noted that procurement fraud was very high (25%) in Kenya as opposed to other East Africa countries. In addition, the findings revealed that the financial sector, the insurance sector, telecommunications, fast moving consumer goods and public sector were the hardest hit by fraud in a decreasing order. The survey thus advised adoption of risk-based framework that assists them to identify and manage the fraud risk (Kinoti, 2018). This thus justifies why CBK had to make it mandatory for commercial banks to implement Basel II regulation.

CBK (2011) survey on risk management in the banking sector conducted in 2010 involving 42 commercial banks and 1 mortgage company showed that the major types of risks that faced commercial banks in Kenya in 2010 were; market risk (100%), credit risk (95%), operational risk (93%), strategic risk (81%) and regulatory risk (67%) among other risks. Further, a report by PWC (2016) on fraud risks posed by ICT in Kenya found out that Kenya as a whole lost sh15Bn to cybercrime in 2015 out of which sh5B was from public sector and sh4Bn from financial services. The report also noted that the bulk of the perpetrators of this fraud were overseas attacks mainly from US and China through creating loans and disbursing the money to organizations abroad hence making it more complicated to identify, arrest and prosecute them. The report also noted that part of this fraud was instigated internally mainly by men aged 31 to 40 years with IT related bachelor

degrees.

1.2 Statement of Problem

The trend of financial performance of commercial banks in Kenya has been erratic over the past years. For instance, the total ROA varied from 4.4% in 2011, to 4.7% in both 2012 and 2013, to 4.5% in 2014, to 3.9% in 2015 to 4% in 2016. Similarly, the total ROE changed from 30.9% in 2011 to 30% in 2012, to 29.2% in 2013, to 28.2% in 2014, to 24.4 % in 2015 to 24.7% in 2016. Likewise, the total PBT varied from KES88,478M in 2011 to KES106,996M in 2012, to KES124,547M in 2013, to KES139,861M in 2014, to KES132,280M9 in 2015 and to KES147,445M in 2016 (CBK, 2017). This erratic trend was also evidenced in the period 2017 to 2019 where profitability of commercial banks in terms of where ROA was 3.33% in 2017 increased to 3.5% in 2018 but dipped to 3.3% in 2019 while ROE changed from 20.6% in 2017 to 22.5% in 2018 and then dipped to 21.8% in 2019 (CBK 2019). One wonders whether Basel II operational risk management implementation in Kenya could be the cause of such erratic behaviour in financial performance of commercial banks.

The occurrence of operational risks in commercial banks in Kenya today has been a concern for banks management, their regulators and the public at large. In fact, most countries, Kenya included are adopting the international regulations dabbed Basel Accord to manage the risks facing commercial banks. Of late, special attention is being focused on managing operational risks because of the devastating effect they pose to a bank. Today's risk managers believe that about 30% of the risks a financial institution incurs emanates from operational risk losses (Cruz & Marcelo, 2003, as cited in Gikundi *et al.*, 2014). Examples of such operational risks that are likely to cause catastrophic losses in financial institutions include; financial fraud, regulatory non-compliance, operational risks legal liability, business disruption & utility outage and employment practices & workplace safety noncompliance among others.

Banking Fraud Investigation Department (2014) survey indicated 525 cases of bank fraud amounting to $8.5M loss by various commercial banks in Kenya in 2014 first quarter and $907,797 in the second quarter; where $6.2M was cheque fraud losses, $2.6M electronic transfer crimes losses, $13,403 via Internet scams, counterfeiting fraud $93, Card fraud $112,773, computer fraud $138,683 whereas mobile banking fraud lost $42,175. This survey showed that the top five profitable banks: Equity, Co-operative, Standard Chartered, KCB and Barclays bank were the most affected. The report also shows that most of the financial frauds in Kenya involve bank employees. In this regard Maureen Mutungu while working with The National Industrial Credit Bank, defrauded the bank by double crediting a loan of Sh.82M to the account of an applicant and then withdrew it. Standard Chartered Bank accused one of its employees of stealing Sh7.46M through cheque forgery while Equity bank accused Duncan Gacheru of stealing sh28M. Similarly, KCB in 2014 reported dismissing 94 of its staff over the past years because of fraud and professional negligence (Fraud Vigilance, 2015). Deloitte East Africa (2013) reported ATM skimming frauds resulted to annual loss of sh4.05B in Kenya.

Further in October 2015, Imperial bank was placed under statutory management due to frauds entailing misrepresentation of financial statement, irregular loans that had violated the limit on lending to a single borrower and understating its deposits by Sh38B thus making it operate with lesser capital than required. The report showed that Imperial Bank depositors lost close to Sh34B over a 13-year period in a fraudulent scheme masterminded by its chief executive, Abdulmalek Janmohammed (Ndurya, 2015). Moreover, Kimani (2013) BFID estimated that sh1.49B was stolen from customers' accounts from April 2012 and April 2013 via schemes initiated by banks' employees. The report revealed increasing trend of frauds due to cashless transactions such as internet banking, mobile money transfers, real time gross settlement (RTGS), credit card and cheque payments.

With the banks in Kenya faced by the above operational risks among other, there is no doubt that CBK had to revitalize its regulatory mechanism hence the adoption of Basel II standards in 2014. Studies carried out in Kenya by Gikundi *et al.*, (2014) looked at effects of operational risks in the lending process on profitability of

commercial banks, while Kiragu *et al.,* (2015) looked at effect of bank size on occupational risks in commercial banks whereas Olongo (2013) studied the effects of financial fraud and liquidity on financial performance of commercial banks in Kenya. These studies and others overlooked the effect of Basel II implementation on financial performance of financial institutions operating in Kenya. Question therefore arises; with Basel II implementation in place, how has commercial banks' operational risk management influenced the financial performance of commercial banks in Kenya?

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to establish the effect of Basel II operational risk management on financial performance of commercial banks in Kenya.

1.3.2 Specific Objectives

This study was guided by the following specific objectives:

1. To assess the effect of financial fraud costs on financial performance of commercial banks in Kenya.
2. To determine the effect of regulatory non-compliance costs on financial performance of commercial banks in Kenya.
3. To find out the effect of business disruption and utility outage costs on financial performance of commercial banks in Kenya.
4. To examine the effect of operational risks legal liability cost on financial performance of commercial banks in Kenya.
5. To determine the effect of employment practices and workplace safety non-compliance costs on financial performance of commercial banks in Kenya.

1.4 Research Hypotheses

The following were the null hypotheses that the study sought to test:

$H0_1$: Financial fraud costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_2$: Regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_3$: Business disruptions and utility outage costs do not have significant effect on financial performance of commercial banks in Kenya.

$H0_4$: Operational risks legal liability costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_5$: Employment Practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_6$: The true mean difference between profit before tax before and after the Basel II operational risk management implementation is equal to zero.

$H0_7$: The true mean difference between return on assets before and after the Basel II operational risk management implementation is equal to zero.

$H0_8$: The true mean difference between return on equity before and after the Basel II operational risk management implementation is equal to zero.

1.5 Significance of the Study

In the history of commercial banking business, there have been several horrible operational risks experienced by some banks some of which resulted to negative consequences to the entire banking system. One such event is the internal fraud that occurred in a UK based bank, Baring Bank Singapore branch in 1995 caused by Nick Leeson's unauthorized trading with derivatives leading to $1 billion loss hence

the bankruptcy of a bank that had operated for 223 years (Beattie, 2022a). Another hell broke loose in the same year (1995) at Daiwa Bank, a Japanese bank in US, where $1.1 Billion was lost through internal fraud and illegal trading of US treasury bonds by Toshihide Iguchi one of its vice presidents. Further, the famous September eleven (9/11) terrorism attack in US in 2001, led to massive bank assets destruction. Likewise, in 2002 John Rusnak, an employee of Allied Irish Bank of UK operating in US caused $ 691M losses through fraudulent activities in foreign exchange (Beattie, 2022b). Moreover, in 2007/2008 a rogue trader Jorome Kervie in a French bank, Soceite Generale Bank lost through unauthorized trading activities on European stock market futures $7.2B (Iskyan, 2016).

Operational risk events may have significant information spill over effects on the stocks of non-announcing banks by either affecting the prices positively or negatively. The losses emanating from operational risk spill over effects can signify the magnitude of the operational risk in non-announcing banks (Cummins *et al.*, 2012). It is in this vein that this study was conducted to benefit the following stakeholders in the light of operational risk menace:

To commercial banks regulators, the findings of this study can guide the commercial banks regulators (central banks) in gauging the effects of operational risk exposure in commercial banks hence acting as a basis for prudential guidelines amendments aimed at managing operational risks. As BCBS (2015) puts it, by integrating operational risk management in Basel II regulatory framework and rising the transparency of the banking sector, various systematic weaknesses of the 1988 Basel I regulation will be reduced.

To management of commercial banks, the results of this study will help the commercial banks management understand the impact of operational risks in their banks hence causing them to judge the effectiveness of their operational risks management techniques in managing operational risks. To potential investors, the findings of this study can be published by financial analysts in financial journals to enlighten the current and potential banks' investors and other strategic partners on effects of Basel II operational risks, the regulatory issues and the Kenyan take.

Lastly to Scholars, this study contributes immensely to the body of existing knowledge on effects of Basel II operational risk management on financial performance of commercial banks. In fact, the findings of this study sheds light on the Kenyan scenario of extent of operational risks in banks and how they affect the profitability of banks. Furthermore, the gaps highlighted in this study will challenge the future researchers on additional fields for further research. Needless to say, the study acts as a good source of literature review to future scholars.

1.6 Scope of the Study

This study concentrated on the effect of Basel II operational risk management on financial performance of commercial banks in Kenya. The commercial banks were chosen for the study because of their pivotal role that they play in the Kenyan economy at large through financing the rest of the industries and because of their international linkages they offer to international economies. This study aimed at testing the effects of financial fraud, regulatory non-compliance costs, operational risk legal liability costs, employment practices non-compliance costs and business disruption costs on financial performance of commercial banks. The study covered a population of 42 commercial banks in Kenya as at June 2017. The research was carried out from the banks' headquarters based in Nairobi as data from all the branches is usually gathered and analysed at the head office. The respondents were drawn from the bank's security officers in charge of fraud investigations, the operations managers and the internal auditors depending on the tier of the bank. Bank security officers should not be confused with bank security guard as bank security officer is responsible for monitoring complex transactions for fraud to overseeing the bank's cybersecurity and data protection initiatives while the security guard job is mostly centred on the physical safety of the bank's employees, customers, and facilities. The study period of interest was 2011 through 2016 so as to capture three years before and three years after Basel II operational risk implementation.

1.7 Limitations of the Study

This study was not without some challenges. A few of the respondents were hesitant to fill the questionnaires on the grounds that it was a tall order as their bank policies prohibits such activities while others purported to be too busy to have time to attend to unofficial assignments. These challenges were however overcome by the researcher replacing the un-cooperating respondent bank with another bank to ensure that the response rate remained high. Another key challenge was that it was difficult to find enough local empirical literature on some of the variables such as the effects of regulatory non-compliance, business disruption, legal liability and work place safety non-compliance costs. This was however mitigated by reviewing literature from other disciplines and countries with a bit distantly related areas.

Moreover, the study only concentrated on effects of only five Basel II operational risks; financial fraud risk, regulatory non-compliance risk, business disruption & utility outage risk, operational lawsuit risk and employment practices & workplace safety non-compliance risks. The study ignored other Basel II operational risks such as client's products & business practices, damage to physical assets, execution, delivery & process management and relationship risk management. Future studies should include these other types of Basel II operational risks so as to evaluate how they affect financial performance of commercial banks.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains theoretical framework and empirical review that are relevant in explaining the effects of Basel II operational risk management on financial performance of commercial banks. It thus indicates what predecessor researchers have found out in related areas, the methodologies they used and hence help to identify the missing gaps that former researchers may have left out. A conceptual framework is then depicted to show the relationship between the independent and dependent variables. Lastly a summary of literature review has been given to conclude the theories explaining Basel II operational risk management and their effects on financial performance of commercial banks.

2.2 Theoretical Framework

This study explored relevant theoretical underpinnings on operational risk management. To be able to test how Basel II operational risk management impacts on commercial banks' financial performance, the fraud triangle theory, utility theory of crime and punishment and creative destruction theory guided the study.

2.2.1 The Fraud Triangle Theory

Fraud can be seen as any premeditated act of criminal deceit, trickery or falsification by an individual or group of people to obtain undue personal monetary advantage, Boniface (1991, as cited in Haruna *et al*., 2015). Fraud Triangle theory as put forward by Donald Cressey a criminologist in 1953 gives three drivers of fraud as a triangle of perceived pressure, perceived opportunity and perceived rationalization. The proponent of the theory studied for a duration of five months 250 criminals who had previously been entrusted with responsibilities but circumstances made them breach the trust. This theory purports that fraud perpetrators are faced with some kind of financial pressure that forces them to commit fraud. Such financial pressure could be; huge medical bills, debts, betting,

alcohol, need to cover up someone's poor performance, improved performance among others. This pressure usually has a combination opportunity and rationalization that makes their actions acceptable because they attach a value which they should receive from their organization for being productive (Abdullahi & Mansor, 2015).

The opportunity to execute fraud is likely when workers have access to assets and information that lets them execute and cover up fraud. Opportunities are brought about by a weak internal control environment, missing internal control procedures, lack of internal controls enforcement, apathy, ignorance, absence of punishment and insufficient infrastructure. Cressey further observed that individuals commit fraud when they rationalize and regard themselves as having financial difficulties that are unshareable and knows that this financial difficult can be secretly fixed by breaching the financial trust (Cressey, 1953 as cited by Abdullahi & Masor 2015).

About 95% of all frauds are executed due to financial pressures (Albrecht *et al.*, 2006, as cited by Abdulahi & Monsor 2015). There are three types of pressures which triggers fraud; personal pressure, employment pressure and external pressure, (Lister 2007, as cited in Gbegi & Adebisi, 2013). Further, Chen and Elder (2007) documented five classifications of pressure; transgression of obligations, individual problems, company inversion, position achievement and association between workers. Albrecht *et al.,* (2008) classified pressure in four classes including economic, vice, work-related and other pressures. Murdock (2008) developed fraud triangle theory further arguing that pressure may be connected to financial, non-financial, political or social factors. Political and social pressure arises when one thinks and believes that they should not fail because of their political or social status. Pressure relates to workers' motivation to execute fraud propagated by greed or own financial pressure. Similarly, Vona (2008); Rasha and Andrew (2012) argue that individual and company pressures drive the desire to execute fraud.

Pressure can be either a positive or negative force, (Hooper & Pornelli, 2010). Nweze (2008 as cited in Nwankwo, 2013) added further opportunities to the fraud triangle theory and suggested that bank frauds emanate from poor communication

systems and power failure, exposure of information and money to unauthorized persons, inadequate supervision, weak security arrangement, poor remunerations and work place frustrations. The notion of perceived opportunity proposes that individuals will take advantage of existing circumstances (Kelly & Hartley, 2010). Negligence of worker's breach of rules and lack of disciplinary creates an opportunity for employees to commit fraud (Sauser, 2007 as cited in Abdullahi & Mansor, 2015). Aghghaleh, *et al*., (2014) used three proxies to measure an opportunity to execute fraud; related party transactions, CEO duality and the difference between control & cash flow rights.

The other attribute of fraud is rationalization. Rationalization means the justification and excuses that immoral conduct is not the same as criminal activity. If one fails to justify dishonest activities, they will least be involved in fraud. Rationalizations of fraudulent behaviour may involve "I was only borrowing the cash or I was entitled to the cash as my boss is cheating me or I had to steal in order to meet the needs of my family or other individuals have done it why not me?" (Cressey, 1953 cited in Hooper & Pornelli, 2010). Fraudulent persons have mind-set which enables them to defend their fraudulent activities (Hooper & Pornelli, 2010).

Cressey's fraud triangle theory has evolved over time as different scholars continue to modify it as follows: Albrecht et al. (1984 as cited in Vousinas, 2019) introduced the fraud scale in preventing fraud observing that fraud is difficult to predict as a profile of occupational fraud perpetrators does not exist hence the likelihood of a fraudulent act could be assessed by evaluating the relative forces of pressure, opportunity and personal integrity. They thus replaced rationalization with personal integrity. They then developed the fraud scale which is applicable in more observable financial frauds like financial statement fraud.

Further, Wolfe and Hermanson (2004 as cited in Vousinas, 2019) added the component of capability into Cressey's model hence changing it from a triangle into a diamond arguing that a person's traits and capability also impact the probability of fraud. Kranacher et al. (2010 as cited in Vousinas, 2019) advocate that the motivations of fraud culprits are money, ideology, coercion and ego (MICE). They

argued that ideological motivators justify the means where they can steal money or participate in a fraud act to achieve some perceived greater good that is consistent with their beliefs (ideology). Coercion occurs when individuals may be unwillingly pulled into a fraud scheme, but those individuals can turn into whistle-blowers. Ego can also be a motive for fraud, as often people don't like to lose their reputation or position of power in front of their society or families. This social pressure can be a strong motive to commit fraudulent act just to keep their ego.

The three elements of fraud in the fraud triangle are interactive in that the bigger the perceived opportunity the greater the pressure and the less the rationalization to execute a fraud. Understanding the interaction between these elements will help the managers to identify the areas likely to be defrauded and seal the loopholes before fraud occurs (Turnbull *et al.*, 2010, as cited in Njenga, 2013). Fraudsters' rationalization is derived from the imagination that their victim owes them and that they are entitle to more than they are getting (Cressey, 1953, as cited in Njenga, 2013). Hillison *et al.*, (1999, as cited in Njenga & Osiemo, 2013), however noted that a strong moral code of ethics can avert a person from using rationalization to justify fraudulent actions.

The fraud triangle theory was relevant in this study as it was used to understand what motivates persons to commit fraud in the banks hence grounding the study on the causes of fraud as explained in financial fraud research variable. As such, the study tested whether the three pillars of fraud triangle theory (perceived pressure, perceived opportunity and perceived rationalization) actually influences people to commit financial fraud in commercial banks in Kenya.

2.2.2 Utility Theory of Crime and Punishment

The theory as put forward by Gary Becker (1968, as cited in Beams *et al.*, 2003) stipulates that one will commit a crime to increase his/her total utility. The total utility is made up of two major parts; first the probability of being caught multiplied by the utility that will be gained if caught. This comprises the monetary and non-monetary income from the activity less the cost of the punishment from the activity. Secondly, the probability of not getting caught multiplied by the utility from the

income from the activity. Thus, when the expected utility is positive the individuals will be willing to commit the crime. This explains why banks will intentionally violate the stipulated regulations. Becker further derived the following model of determining the utility derived from a crime;

$$E(U_j) = P_j * U_j(Y_j - f_j) + (1 - P_j) * U_j(Y_j) \text{.....} (2.1)$$

Where: $E(U_j)$ = expected utility from the crime

P_j = probability of conviction

U_j = individuals' utility function

Y_j =offender's income including monetary and psychic

f_j = Monetary equivalent of punishment

The perceived probability of being caught greatly influences the intention to commit a crime (Mason & Calvin 1984, as cited in Beams *et al.*, 2003). Past severity of legal penalties surveys established that there is significant effect of the legal penalties on the intention to engage in criminal activity and that the severity of penalties acts as a significant deterrent in tax compliance (Beams *et al.*, 2003).

Further, people have the choice between various options and measures the expected results of each option and select the one likely to yield the best result. Hence in a law-breaking situation, a perpetrator tries to gauge what will result in the best net result: complying with the rules or break the rules. He basically chooses to break the rules if breaking the rules gives higher expected value than the complying with the rules (Elffers *et al.*, 2003).

Punishments are mostly categorised into three; legal punishments, peer imposed punishments and self-imposed punishments. Out of the three punishments, the severity of legal penalties has a significant impact on the intention to engage in wrongdoing hence acts as a deterrent of noncompliance (Grasmick & Green 1980, as cited in Beams *et al., 2003)*. Peer imposed punishments includes social stigma where by the non-complying person loses respect from the peers. On the other hand, self-imposed punishment includes the guilt that a person would feel for engaging in

unlawful act. Guilt also deters individuals from engaging in unlawful behaviour (Beams *et al.,* 2003).

A person's moral reasoning in competitive game situations is lesser than their non-game moral reasoning (Reall *et al*., 1998, as cited in Beams *et al., 2003*). This means that individuals may respond in a game situation so as to win the game, knowing that no person is being hurt in the game. Perceived fairness of laws does not increase compliance, however, it has a significantly acts as deterrence (Scott & Grasmick, 1981, as cited in Beams *et al.,* 2003).

Becker assumed that an offense was perpetrated by one utility maximizer who ultimately decides whether to commit a crime or not based on the expected penalty. Nonetheless corporate crimes have more than one perpetrator who could be passive or active. For instance, a worker may dump hazardous waste in river acting against the corporate policy and against the supervisor's instructions or may do so with participation of the supervisor. In such a case a socially optimal criminal sanction policy advocates for huge corporate fines instead of jail sentences for the perpetrator (Becker 1989). Thus Cohen (1996) advocates that because corporate can be held legally liable for wrongdoing of their workers although they were against the corporate policy and against the supervisor's instructions, Becker's utility theory of crime and punishment needs to factor the incentives problems behind a principal-agent relationship (Cohen, 1996).

The utility theory of crime and punishment is relevant in this study as it is used to underpin why various regulators keeps adjusting the probable fines and penalties that could be imposed on offenders to deter them from repeating an offence in the future. In this study, the theory justifies why CBK keeps on increasing the monetary penalties to deter banking institutions from violating the banking Act and Prudential guidelines among other regulations. For this reason, the maximum monetary penalty was thus increased from a maximum of sh1M to a maximum of sh5M in 2013 and from sh5M to not exceeding Sh20M in December 2016. The maximum monetary penalty against a natural person was increased from sh200, 000 to not exceeding shs1M. CBK also introduced a monetary of not more than

sh100,000 for each additional day that a failure continues unabated. The increase in penalty aims at providing adequate deterrence against violating banking Act, prudential guidelines and other regulatory requirements (CBK, 2016). This theory was thus used to explain the theoretical underpinning relating to regulatory noncompliance cost, operational risk legal liability cost and employment practice & workplace safety research variables.

2.2.3 Creative Destruction Theory

This theory was put forward by Joseph Schumpeter, an Australian capitalist economist in 1942 as a theory of economic innovation and business cycle. The creative destruction theory states that, the process of industrial mutation continuously revolutionizes the economic structures from within continuously destroying the old ones and continuously creating new ones. He attributes creative destruction to a process in which new technologies, new types of products, new production methods and new distribution means makes the old ones outdated, compelling existing organizations to promptly adjust to a new environment or else be unsuccessful. This takes place when innovation deconstructs an established arrangements and frees resources to be used elsewhere. The theory also notes that the revolutionary process rewards profitable adaptations and innovations and penalizes less efficient ways of organizing resources (Sledzik, 2013). The process can be rough and unlikable for some but the trend line is toward progress, growth and higher standards of living. The word destruction is used to denote that the outcomes of the process of creative destruction are losses together with profits, and that there are both losers and gainers in creative destruction process. For instance, the internet-based companies of the 1990s resulted to a revolution in both social and economic organizations whereby the losers were the old economy companies that could not adjust in time to take advantage of the new technology while the gainer were those newly created internet based organization and those who adapted internet based technology in their operations (Investopedia, 2017).

Schumpeter further argues that since technical innovation is mainly risky, risk bearing seems to be more likely when organizations are able to set up a variety of restrictive practices to protect their investments. Through the theory of creative destruction Schumpeter successfully despises average ideas on economic change and argues that economic evolution is not a simple growth progression whereby each sector develops in a balanced way, but it entails destruction of old products and processes as a result of new innovations. He furthermore argues that the existing organizations do not easily upgrade their competencies and revise their areas of specialization hence they frequently die during the evolutionary process. Thus, creative destruction theory reveals the competitive struggle and emphasizes the reactions to the transitory welfare costs (Andersen, 2004).

New profit opportunities lie around creative destruction driven by global sustainability (Stuart & Mark, 1999, as cited in Carmen & Carmen, 2013). Though creative destruction and disruptive innovation improves the entrepreneurial landscape, regulation of sectorial markets and competition can delay this change or even bring it to a standstill (Schneider, 2017). In reality, in absence of obstacles certain product or process innovation will occur at each instant in time. Lack of obstacles to adjustment means that continuous innovation would cause endless restructuring. However, some obstacles to creative destruction such as technological, regulation and other man-made institutional impediments hinder restructuring hence slowing down creative destruction (Caballero, 2006).

Pettinger (2018) in his support for creative destruction argues that if an organization becomes unprofitable, it should close down to allow movement of resources to more profitable organizations. Lack of this compliance to change may cause the society to stick to 19th century living standards. In addition, he argues that the risk of going out of business triggered by innovation is a motivation for organizations to adapt to the changing market trends and in the long run may keep costs low. He also advocates for creative destruction urging that while short-term job losses are bad for those affected, people frequently overlook the new jobs created throughout this economic change. However, periods of labour market change will allow increasing

real wages in the long-term and new jobs will crop up as new industries and new firms are created hence better standards of living.

This theory best fits this study because 90% of downtime is usually planned due to banks' system backups, maintenance and upgrades among others while only about 10% of downtime is usually unplanned (Arnold, 2010). Likewise, the process of creating new banking Information Technologies does not happen without destroying the pre-existing older technologies hence a feature of creative destruction. This is why banks will halt some of their operational processes for a day or more so as to upgrade their IT processes. Unfortunately, while this upgrading is ongoing, operational risk is at play as some banking services especially the internet banking among others are mostly unavailable which could result to decline in their financial performance. Therefore, Schumpeter as capitalist affirms that while the process of creative destruction is underway, pain and gains are inevitably linked hence will happen simultaneously. Creative destruction theory is useful in this study as it helps to explain how business disruption and utility outages that occurs as banks upgrades their systems affects their financial performance. Basel II operational risk management regulation is also featured in this theory as an obstacle to creative destruction as CBK regulates the extent of IT innovation that the commercial banks can engage in.

2.3 Conceptual Framework

The conceptual framework for this study was guided by Bank for International Settlements (BIS) debate on Basel II Pillars. From BIS elaborative debate on operational risk as a risk in Basel II pillar one some operational risks were measured to determine how they affected commercial banks' financial performance. Operational risk is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events (Higginbotham, 2021). Operational risks in the banking industry are categorized into seven broad classes; Internal fraud risk, external fraud risk, employment practices and workplace safety risk, clients, products and business practices risk, damage to physical assets risk, business disruption and system failure risk and lastly

execution, delivery and process risks (Higginbotham, 2021). The conceptual framework for this study was based on the five operational risk independent variables that were alleged to affect the financial performance of commercial banks. These includes; financial fraud costs, regulatory non-compliance cost, business disruption and utility outage cost, operational risk lawsuit cost and employment practices & workplace safety non-compliance costs. From these five Basel II operational risks this study depicts the interaction between operational risks and financial performance in the following conceptual framework as shown in figure 2.1.

The conceptual framework was further guided by three theories namely the fraud triangle theory, utility theory of crime and punishment and creative destruction theory. The fraud triangle theory as put forward by Cressey in 1953 proposes perceived pressure, perceived opportunity and perceived rationalization to be the three drivers of fraud. The theory thus argues that employees commit fraud due to financial pressure like high medical bill, opportunity to commit fraud like having access to money and the rationalization that their actions as acceptable. Fraud triangle theory was that used to underpin how financial fraud as an independent variable affects the financial performance of commercial banks. The conceptual framework was also guided by the utility theory of crime and punishment as put forward by Gary Becker in 1968 which states that individuals will commit a crime to increase their total utility. The theory further argues that individuals will commit crime if the utility derived from committing the crime exceeds the punishment for committing the crime hence justifying why banks normally violate some regulations. The utility theory of crime and punishment was thus used to reinforce the regulatory non-compliance, operational risk legal liability lawsuit cost and employment practices & workplace safety non-compliance as independent variables affecting financial performance of commercial banks.

The conceptual framework was in addition steered by creative destruction theory as put forward by Schumpeter in 1942 which states that the process of industrial mutation continuously revolutionizes the economic structures from within continuously destroy the old ones and continuously create new ones hence

innovation of new technology makes the old technology outdated forcing the banks to upgrade their IT system. This theory was thus used to reinforce the business disruption and utility outage independent variable influencing financial performance of commercial banks. The study thus hypothesized the five independent variable; financial fraud costs, regulatory non-compliance cost, business disruption and utility outage cost, operational risk lawsuit cost and employment practices & workplace safety non-compliance costs affects the dependent variable; financial performance as shown in figure 2.1:

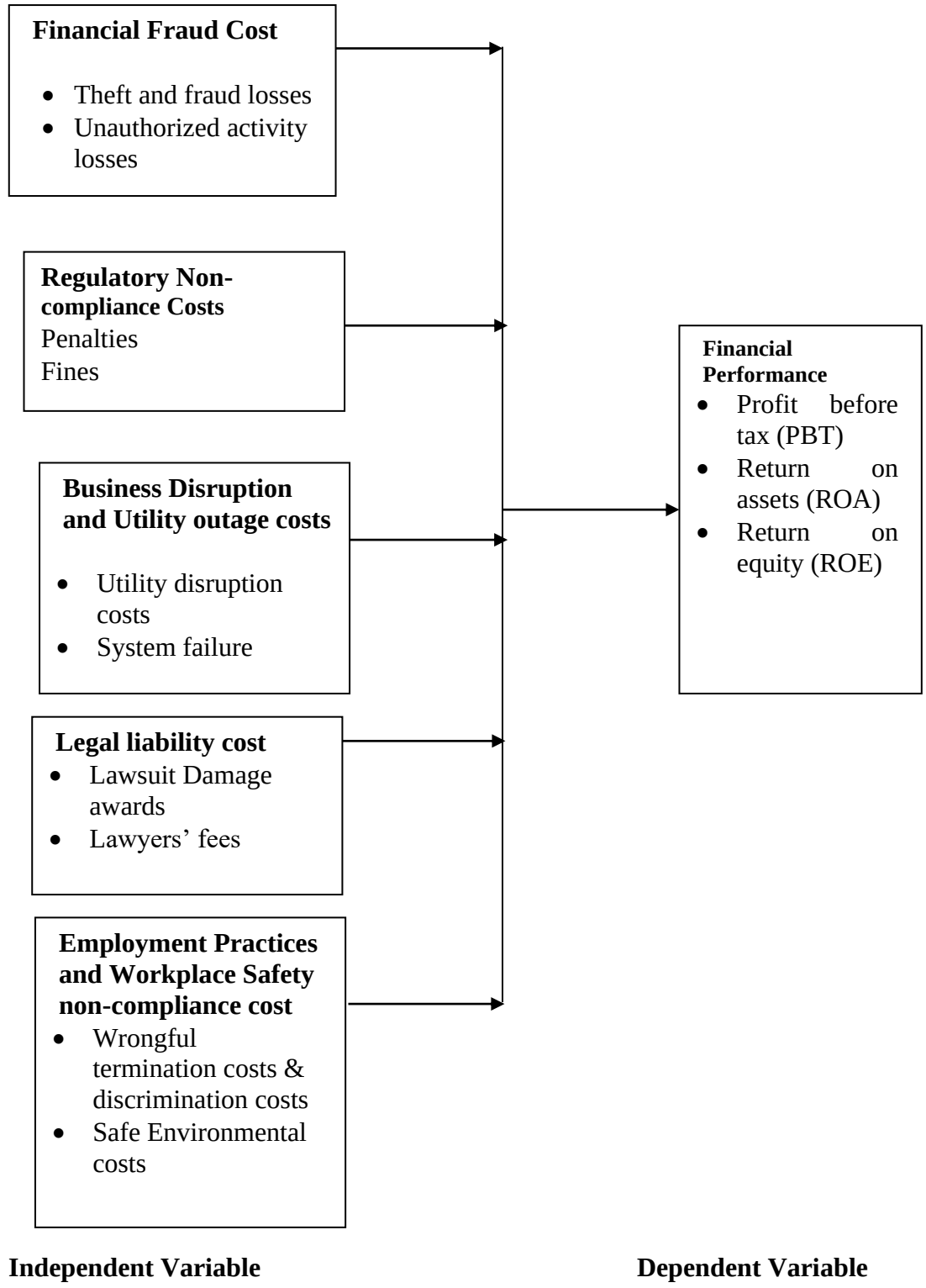

Figure 2.1: Conceptual Framework

2.4 Review of Variables

Effects of Basel II operational risk management variables were reviewed to determine the extent to which implementation of Basel II Accord affected the financial performance of commercial banks in Kenya. As such, five independent variables (finance fraud costs, regulatory noncompliance costs, business disruption & utility outage costs, legal liability and Employment practices & work place safety costs) were reviewed to ascertain how they influence the independent variable; the financial performance of commercial banks as follows:

2.4.1 Effect of Bank Fraud on Financial Performance of Banks

Financial fraud has been defined as an intentional misrepresentation, misstatement or omission of financial transactions for the purpose of personal gain (Hull, 2018). Similarly, Chakrabarty (2013) defined fraud as any behaviour by which one person intends to gain a dishonest advantage over another. Basel II stipulates that commercial banks are exposed to eight broad types of operational risks namely; internal fraud, external fraud, employment practices and workplace safety, clients' products and business practices, damage to physical assets, business disruption and system failures, execution delivery and process management and finally relationship risks (Hull, 2018). These operational risks are broadly classified into major operational risks if they have low frequency-large loss and minor operational risks if they have high frequency-small loss. Out of these various types of operational risks, internal and external frauds, employment practices & workplace safety, business disruption and system failure are menaces hence the concern for this study. These broad types of operational risks are broken down into several categories relating to activities that causes the operational risk as follows:

Internal frauds are defined as losses due to acts intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity/discrimination events, which involves at least one internal party. Such frauds emanate from unauthorized activities and theft. Unauthorized activities frauds include; transactions intentionally not reported and intentional mismarking of position. On the other hand, theft activities entail; credit fraud, worthless deposits,

theft, extortion, embezzlement, robbery, misappropriation of assets, malicious destruction of assets, forgery, cheque kiting, smuggling, account take-over, impersonation, tax non-compliance, bribes, Insider trading not on firm's account among others. On the other hand, external fraud is described as losses due to acts intended to defraud, misappropriate property or circumvent the law, by a third party. They include activities such as robbery, forgery, cheque kiting, system security hacking damage and theft of information (Hull, 2018).

There are several reasons why all commercial banks are exposed to fraud risks. Among the key reasons include sophisticated database technology, mobile access devices and online information exchange. The most common frauds in commercial banks today are first party fraud, internal fraud and third-party fraud. First party frauds are frauds where accounts are opened by fraudsters who eventually siphon banks money using these accounts. Internal frauds employees conspiring with outsiders or else their accounts being phished whereas third party frauds are frauds involving fraudsters attacking businesses' online credentials and siphoning money out of their accounts (Urban, 2014).

In most financial service organizations frauds are mainly executed by External fraudsters who accounted for 60% and 57% in 2011 and 2014 respectively with Kenya ranking seventh among the world's countries experiencing high ranks of economic crime noting that 52 % of respondents had experienced some form of economic crime (PWC, 2014). Fraud in financial institutions in East Africa is attributable to the loss of $30 million due to cash theft in 2012, out of which Kenya experienced 50% of these frauds with the reminder occurring in Rwanda, Uganda and Tanzania (Deloitte East Africa, 2013). The report also revealed that cheque fraud was highest in Uganda, Kenya was second while Tanzania was trailing. Further the report showed that much of these frauds involved collusion between external and internal parties and that non-management personnel are the biggest perpetrators of financial crimes.

Commercial banks, securities firms, investment fund organizations, insurance companies and payment & clearing systems are the leading targets for cyber fraudsters who steal money, data or jeopardize vital infra-structure. These criminals are driven by the huge cash volumes held and by increased internet banking. As a result, cyber-attacks raised by 50% in the second quarter of 2016 as opposed to same period in the previous year while the number of cyber-attacks on financial institutions was predicted to be four times higher than in other sectors (Deloitte, 2017). In another report on fraud in India, 8,322 cases of cyber frauds translating to 527M INR and 1,144 cases of service tax evasion translating to 7,928.22 INR were reported during 2013/14. Further this report revealed that these frauds entailed bank employees keeping original fixed deposit receipts with themselves and hand over fake fixed deposit receipts to customers and then they cancel fixed deposits by forging signatures or use of customer's lost cards or obtaining personal information and taking control of their account or fraudsters opening bank lockers to take key impressions of other lockers and then use duplicate keys to steal assets as well as internet banking and related frauds. This report showed that technology-related frauds accounted for 65% of the total fraud cases reported by banks in India (PWC - India, 2015).

Commercial banks in Kenya lost sh1.49B in one-year period from April 2012-April 2013 to Techno Savvy fraudsters who stole from customers' accounts (Banking Fraud Investigations Department, 2013, as cited in Kimani, 2013). However only sh530M was restituted. Banking fraud activities results to massive siphoning of the money deposited in the banks by rogue traders and other unintended persons. This can consequently result to decline of financial performance of the affected commercial bank. According to Meridian Research, the cost of US companies not using anti-fraud application was $60B in 2005 alone. The report further noted that organizations were losing an average of 6% of their annual income to fraud perpetrated by their internal workforces. LexisNexis (2014) survey on true cost of fraud in US merchant banks conducted from 5634 respondents found that the cost of fraud had increased for the third successive year, with merchant banks reporting paying $3.08 for each dollar of fraud losses in 2014, compared to $2.79 paid in 2013. This was attributed to adoption of new payment technologies. Overall the

merchant banks reported 0.68% fraud loss in 2014 as a percentage of their incomes as opposed to 0.51% in 2013.

2.4.2 Regulatory Non-Compliance Costs

Regulatory non-compliance risk means losses occurring as a result of unintentional or negligent failure to observe professional obligation to specific clients including fiduciary and suitability requirements or from the nature of product. Such loses results from events such as fiduciary breaches/guideline violations, suitability/ disclosure issues, retail consumer disclosure violations, breach of privacy, aggressive sales, account churning, misuse of confidential information, lender liability, unlicensed activity, money laundering, failure to investigate client per guidelines and exceeding client exposure limits among others (BCBS, 2015). Every commercial bank is required by law to abide by the various regulations including; banking act, the prudential guidelines and other regulatory requirements. When a commercial bank violates any of the stipulated regulations, the penalties can range from monetary fines to license revocation which could adversely affect its financial performance.

Despite having stipulated code of conduct for the commercial banks in various forms such as banking act and prudential guidelines among others, it is nonetheless notable that globally commercial banks don't recede from flouting the stipulated laws. In Kenya, in 2014 two banks violated the rule prohibiting a bank not to lend to one borrower above 25% of its core capital, two other banks violated the law requiring that bank's investment in land and building should not exceed 20% of its core capital, two others violated the law requiring that the minimum capital to total risk weighted assets ratio is 12% while one bank violated the requirement that each board member must be present in at least 75% of all board meetings in a bank's financial year (CBK, 2014). In general, the number of commercial banks that violate different banking rules differ from one year to another, for instance; three in 2011, six in 2012, four in 2013, five in 2014, four in 2015 and twelve in 2016 (CBK, 2016). Further, Family bank, Sidian bank and Faulu microfinance bank

were fined sh1million each for allowing the withdrawal of huge sums of money by persons linked to National Youth Service money fraud (Mutai, 2016).

In another report six banks (Citigroup, J.P Morgan Chase, Bank of America Corp, HSBC holdings, UBS AG and Royal Bank were fined $4.3B by US, UK and Swiss regulators for foreign exchange price manipulation. In addition, Citigroup bank further paid $2.7B legal fees to resolve these charges as well as interest rates and money laundering investigations. Likewise, Bank of America paid $ 6.3M to Federal Housing Agency for selling faulty mortgages (Schafer *et al*., 2014). The France's BNP Paribas bank was fined more than $8.9B because of breaching U.S. sanctions against countries such as Iran and Sudan. The bank pleaded guilty of conspiring to violate the International Emergency Economic Powers Act and the Trading with the Enemy Act by processing billions of dollars in illicit transactions from 2004 to 2012. This caused BNP Paribas's shares to dip by 16%, resulting to $16.4B loss in the firm's market value (Raymond, 2015).

In addition, Morss (2014) survey on banks fines and penalties in large banks in US found that despite the regulator issuing financial sanctions prohibiting any bank operating in US from transacting with Burma, Cuba, Iran, Libya and Sudan customers, the following banks violated these sanctions and were penalized as follows; BNP Paribus ($8.9B), HSBC ($2B), ING ($619M), Credit Suisse ($536M), Lloyds TSB Bank ($350M), Barclays ($298M) and Standard Chartered ($227M). In a separate case JP Morgan Bank in 2013 paid $410M fine for manipulating electricity prices, while Universal Bank in Switzerland was fined $780M in 2009 by US regulators for aiding tax evasion.

The costs of regulatory non-compliance among financial institutions are more than ever before because fines no longer induces the level of reputational loss that they earlier did. As a result, every global systemically important bank has been fined at one point making it difficult for clients, investors and other stakeholders to select which bank to conduct business with. The non-compliance penalties mainly involve monetary fines but the financial effects are considerably severe than the real fine charged. Thus, the regulators in addition to monetary fines also punishes through;

ending of a business line, requiring the offender to increase liquidity/capital, putting offenders at a disadvantage to their competitors, firing senior managers, placing the offender under receivership or to the worst revoke the licence hence ending the business. Such penalties can turn out to be costly and increase operational cost like cost of recruiting and retaining high calibre staff and customers, increased supervisory scrutiny, regulatory change and customer mistrust (Stacy & Hammond, 2014).

The essence penalties and fines charged for regulatory noncompliance is to enforce applicable laws, avert market manipulations, guarantee competency of financial services providers, safeguard customers and to uphold confidence in the financial system. Moreover, penalties and fines levied by regulators for regulatory noncompliance can improve the stability in the financial sector as they might prohibit future regulatory noncompliance by the banks.

2.4.3 Business Disruption and Utility Outages

Business disruption and system failure risk are the losses arising from disruption of bank's business or bank's system failure. This therefore entails losses emanating from software, telecommunications and utility outage/disruption (BCBS, 2001 as cited in Hull, 2018). Cyber terror rages in the banking sector revealed that coordinated denial of service attacks shut down Bank of America's, JP Morgan's Chase, Wells Fargo, U.S. bank and PNC bank's websites for several hours. The criminal hackers using their multitude of computers and malware floods the bank's website with massive amount of traffic until it is overwhelmed hence shuts down (Rothman, 2012).

Downtime cost impacts a lot on worker's productivity which can be stated in form of salaries, wages and benefits of workers that remains unused occasioned by system downtime. In addition, after a downtime event, corrective actions are usually needed to rectify the damage which may require IT operators to work overtime at overtime rates or hiring provisional workers to recover lost data and record accrued paper transactions. A special marketing program may be carried out to win back customers in the event that customer dissatisfaction had occurred (Martinez, 2009).

Only about 10% of downtime is usually unplanned while about 90% of downtime is planned due to system backups, maintenance and upgrades among others (Arnold, 2010).

IT outages whether planned or unplanned, can cause direct and indirect costs like loss of transaction income, lost wages, lost records, corrective labour costs, advertising costs, bank charges, legal fines for undelivered service agreements, loss of business chances, demotivated workers, lost clients goodwill, damaged brand image, loss of business to competitors or negative public relations. Further retail banks are failing to adjust to disruption by holding onto their traditional expensive branch networks while more and more customers switch to digital banking (Graham, 2016). Technology is critically eroding the branches as more and more people switch to digitally delivered products and services.

Despite advanced robustness in IT various commercial banks still experience downtime from hardware or software ranging for short periods or long periods which can make them shut down the business for hours resulting to lost revenue, reputation damage and lost productivity. Downtime costs however differs from one industry to another. Utility outages can have devastating effects in the banking industry. The Bank of America online banking downtime and outage that happened for six days in October 2011 as a result of technical failure and unanticipated enormous web traffic affected twenty nine million customers resulting to huge bank losses (Perlin, 2012). Likewise, in Kenya, Standard Chartered Bank ATM services, credit card and online banking services were disrupted for several hours in May 2015 after a power surge caused by a bus accident that hit the power post carrying power to the bank's headquarters (Mutegi, 2015). If a critical IT application fails a commercial bank can lose the application's service or data which further can results to significant legal and financial impact (Central Florida Computer Engineering, 2011).

2.4.4 Costs of Operational Risks Legal Liability

Legal liability includes bank clients, employees and other third party law suits. The operational risks have both direct and indirect cost. The direct costs entail customers' restitutions, penalties and fines, and license cancellation among others. Indirect cost may mean loss of the affected bank customer and other potential customers. All these costs will adversely affect the financial performance of a commercial bank. People's Bank of China (2015) defined environmental legal responsibilities of a bank as the legal liabilities to be taken by a bank as a result of environmental pollution occasioned by the bank's mistakes that happens in their procedures of loan issuance, like financing the borrowers polluting projects or investing in other companies pursuing polluting projects.

In this connection, Bank of America incurred $91.2B in legal fines and settlement relating to 2008 financial crisis. This includes monetary and nonmonetary legal settlement, judgments and regulatory fines charged in the period 2008 to 2014. This was paid for fifty one legal related settlements resulting from various operational risk among them: The Bank of America for selling to the public toxic mortgage backed securities which triggered the 2008 financial crisis (fined $16.65M), overstating regulatory capital by $4.3B (fined $7.65M) and forcing customers to sign up for extra credit cards (fined $727M), (Maxfield, 2014).

Further Goldman Sachs, Citi Bank, Morgan Stanley, JP Morgan and Bank of America were fined $137B for foreign exchange rate rigging to US backed securities and mis-selling of payments protection insurance. These fines resulted to reduction of equity and the amount of capital a bank should to hold. The report added that the litigation costs for US mortgage issues accounted for $110B, PPI at $43B foreign exchange rigging at $15B money laundering at $15B and LIBOR $10B (Steenis, 2015). In another incidence, the regulator ordered Citizen Bank of US to restitute $14 million and fined $20.5 million penalties for failing to credit hundreds of thousands of Customers accounts the full amount of their deposits (Mccoy, 2015).

In Kenya the court ordered Kenya Commercial Bank limited, Kenya Commercial Finance Company limited and Kenya National Capital Corporation limited to refund to their customers (Madhupaper International Limited and Samuel Kamau Macharia), Shs56 millions, interest on this money and the costs of the suit incurred due to unjust benefit received by means of duress and coercive pressure, (Kenya law, 2003). Further, in a judgment law suit by judge Majanja (2014) where Manfred Walter Iscipl the director of Sparkyben limited had sued Diamond Trust Bank Kenya limited (DTB), attorney general, Director of public prosecutions and Banking frauds investigations department, due to violating their right to privacy which is protected under article 31 of the Kenyan constitution. In this case Mr Manfred had in 2010 opened four accounts with DTB which he used to transact Swiss francs, euros, US dollars and Kenya shillings. Mr Manfred transferred sh635M into the accounts via 45 different transactions to facilitate his business operations located in Kenya. This made DTB to report Central Bank of Kenya as suspicious transactions causing the freezing of the four accounts. The court later ruled that the director was innocent and suffered damages amounting to shs491, 104 for cost of accommodation and airfare, shs2.9M legal fees paid to their advocates, shs5.8M lost interest at the rate of 13.5% on the sum of shs635M, shs29.7M missed business opportunities and stalling potential investment after freezing their accounts for a long period.

In another case where Standard Chartered Bank had been sued by Rose Wanjiru in a civil case 433 filed in 2003 requiring standard Chartered Bank to restitute sh38, 960 it had levied from Wanjiru by charging her higher interest rate without the approval of the finance minister as required by the Banking Act of 1989 that states that “no institution will rise its banking rates or other fees without prior approval of the minister” (Gikonyo, 2014). This law suit turned contagion when Wanjiru was allowed to invite millions of banks’ customers from 42 other banks who could have illegally been levied some money without the minister’s approval.

Commercial banks normally resolve their legal disputes through settlement with the appropriate regulatory authorities as well as among themselves (Flore *et al.,* 2018). They however noted that the legal penalties paid by the US commercial banks was on increase stating that on average the banks paid $42B annually in the period 2011

to 2014 hence emphasizing the importance and magnitude of legal proceedings which the European Systemic Risk Board warned that enormous legal penalties could lead to systemic risks in banks. They in addition noted that even though financial penalties charged for illegality may result to large direct costs for the said bank, the final legal resolution acts as a relief to shareholders of the charged bank because it reduces operational uncertainty. Murphy et al., (2009, cited in Karpoff, 2012) reported that the mean legal fine for firms that commit frauds that affected related parties was $18.79 million. Procurement fraud triggered fines that averaged $8.0 million in addition to restitution of $4.4 million (Karpoff et al., 1999, cited in Karpoff, 2012). Moreover, banks with greater exposure to lawsuit risk have a tendency to reduce capital expenditures in order to retain extra cash in anticipation of future settlement costs. This constrains the bank's growth and decreases future cash flow available to stakeholder (Arena & Julio, 2010).

2.4.5 Employment Practices and Workplace Safety Non-compliance Costs

Employment practices and workplace safety risk are the losses arising from acts inconsistent with employment, health or safety laws or agreements, from payment of personal injury claims or from diversity or discrimination events (Hull, 2018). Such losses may further be classified into; employee relations, safe environment and diversity & discrimination of employees. Employee relation risk entail events such as employee compensation, benefit, termination issues and organized labour activities. On the other hand, safe environment in the bank refers to events such as general liability emanating from slides and falls among others, employee health and safety rules and events as well as workers' compensation liabilities. Discrimination at workplace refers to employees not being treated fairly as compared to other and the reason for this discrimination is not related to the ability of the employee to perform their specific job.

Occupational, Safety and Health (OSH) laws generally require that the employer provides a safe working environment for their personnel. Any employer who breaches OSH legislations may be prosecuted and if found guilty penalized. Places where money transactions occur like banks and cash transit services are at high risk

of armed robbery thus many banks have had general liability law suits for failing to proactively manage such risks (Bunn & Guthrie, 2009). As such Commonwealth Bank of Australia was charged with a breach of OSH rules for failing to ensure the safety of their four staffs who sustained injuries from armed hold-ups that happened on August 1999. The bank was fined $25,000 and required to install anti-jump barriers and security cameras and hire a guard. In another similar case, ANZ bank was found guilty of breaching OSH rules for a bank robbery that occurred when the robbers jumped through the bank's counter via a 400mm gap between the ceiling and the anti-jump barrier in June 2002. The bank was fined $156,000 on the grounds that it had been put on a notice for potential robbers to leap anti jump barrier prior to the hold-up but had not rectified the problem. In addition, the bank incurred additional cost of $ 18,766 for installing anti jump barrier for the branch and a total of $ 476,000 for all the bank branches.

In Kenyan case by judge Rika (2013) involving Bank of Africa Kenya Limited and GMV, where the bank had wrongfully terminated its employee Elizabeth Anyango on the grounds of pregnancy. The Judge ruled that the termination was in violation of the constitutional rights of article 27(5) and 41(1) of the constitution of Kenya and that the termination was in violation of section 45 and 46(a) of the employment Act of the laws of Kenya. The bank was thus ordered to compensate the employee as follows; shs3M coalesced damages, shs1, 473,006 for salary in lieu of notice, service/gratuity pay including outstanding leave and 3 days worked. Further the bank was also required to pay the employee the costs of the lawsuit and interest on the principal sum and on costs, granted to the employee at 14% per annum.

2.5 Empirical Review

There are very few specific studies that have been done on effect of financial fraud, regulatory non-compliance, business disruption & utility outage, operational risk legal liability and employment practices & work place safety non-compliance costs on financial performance of commercial banks which presents some challenges of arriving at definite conclusions. Nonetheless, the little available literature provided a stepping stone from which these variables were discussed.

2.5.1 Effect of Fraud on Financial Performance of Commercial Banks

Uchenna and Agbo (2013) study on fraud and fraudulent practices influences on the performance of banks in Nigeria examined the extent of fraud and unethical practices and their impact on the banking industry. Their study majored on sums involved in fraud, number of staffs involved and number of fraud cases. Their study used evaluative research design to assess the nature, extent and consequences of fraud in performance of banks in Nigeria. This study showed that in the period 2003 to 2005 there were several types of frauds facing banks in Nigeria with fraudulent transfers topping the list, followed by forged cheques, granting of unauthorized loans, suppression of cheques/cash, armed robbery and outright theft. The survey also pointed that the monetary fraud losses grew steadily from 2001 to 2004 with

the losses declining from 2.6B₦ in 2004 to 1.4B₦ in 2005 but later increasing to 11.4B₦ in 2010. Further the results showed a high positive correlation between ROA and ROE, but ROE was negatively correlated with the amounts lost to fraud and that the amount of money lost to fraud had a low negative correlation with bank efficiency (r = -0.050).

Nwankwo (2013) studied effects of fraud on commercial banks performance in Nigeria aiming at establishing how banks' financial performance is affected by ATM fraud, forged cheque and clearing cheque fraud. The study showed that there is significant negative effect of fraud on the financial performance of commercial banks, with ATM fraud, forged cheques fraud and clearing fraud having significant negative effect on banks' financial performance. Chelangat (2014) study on influence of fraud on the financial performance of deposit taking SACCOs in Kenya, disclosed that fraud negatively influences the financial performance of deposit taking SACCOs. Further the study revealed that the major causes of fraud were; behavioural, legal, technological and management causes.

Kaunyu (2017) study on impact of financial fraud on financial performance of State Corporations in Kenya with specific goal of assessing the consequence of fraud loss ratio and number of fraud cases on share value, cost of debt, liquidity, and project funds. The study revealed that financial fraud significantly negatively affects the

financial performance of state corporations which results to rendering of poor services to the public. Further the study observed that theft and embezzlement, fraudulent money transfer and unauthorized withdrawals were the common forms of frauds in state corporations. In addition, the study pointed out that greed, poor internal controls, lack of adequate punishment to fraudsters, poor record keeping, poor salaries and inadequate training were the main causes on frauds in state corporations.

Kiragu *et al.*, (2015) study on bank size and occupational fraud risk effects on commercial banks in Kenya, looked at bank characteristics, management control systems, technology adoption and staff characteristic influence on occupational fraud. The findings indicated that there was a significant negative connection among bank size and occupational fraud risk in commercial banks in Kenya indicting that tier 3 banks faces more occupational fraud risks than tier 1 banks.

Githecha (2013) study on influences of fraud risk management strategies on financial performance of commercial banks in Kenya, looked at effects of technology adoption, governance and regulation on ROA. The study revealed a significant positive relationship among fraud risk management strategies and the financial performance of commercial banks. Olongo (2013) studied financial fraud and liquidity effects on financial performance of commercial banks in Kenya by looking at influences of fraud and liquidity on ROA. The study showed that financial fraud loss and liquidity ratios had a strong positive impact on financial performance with positive correlation of $p = 0.688$ and $p = 0.705$ respectively.

Njenga and Osiemo (2013) study on effects of fraud risk management on organization performance of deposit taking microfinance institutions in Kenya concentrated on anti-fraud policies, corporate governance practices, fraud detection mechanisms and systems of internal controls. The study found out that fraud risk management significantly affected ROA as was expressed by p value of 0.971. Gitau and Njenga (2016) studied the implications of financial fraud on the financial performance of commercial banks in Kenya with the specific aim of establishing the effect of cheque fraud, fraudulent invoice and fraudulent loans on financial

performance of Commercial Banks Kenya. The study found out that there was significant negative effect of fraud on financial performance of banks.

2.5.2 Effects of Regulatory Non-compliance costs on Financial Performance

Robinson *et al*., (2011) study on determinants of disclosure noncompliance and the effect of the Security and Exchange Commission (SEC) review. The study used descriptive research design where the study sample was 336 firms out of which 50 firms SEC proxies were not reviewed by the SEC. Their research variables excess compensation, proprietary costs, negative media coverage and subsequent CEO compensation. The study aimed at determining whether SEC reviewed firms corrected their disclosure defects and whether negative media attention increased the level of compliance with the required compensation disclosures. The study found out that, the organizations reviewed by the SEC corrected all the identified disclosure defects while the organizations not reviewed by the SEC demonstrated slight compliance change. They further observed that most disclosure faults were deliberately made after weighing noncompliance costs and benefits and not caused by inexperience of the new regulations. The study also found out that the compensation disclosures fault numbers are positively correlated to excess CEO compensation and to previous negative media attention about CEO compensation.

Ismaila and Damola (2018) study on regulatory noncompliance and performance of deposit money banks in Nigeria found that financial penalties imposed by regulators have no significant impact on the defaulters because the cost of penalties is below the benefits enjoyed from such noncompliance by defaulters. Further the survey found out that the defaulting institution treats these insignificant penalties imposed by regulators as operational expenses and charges them against their customers' accounts.

Koster and Pelster (2017) studied the financial penalties and the systematic risks of banks in Europe with the objective of determining the effect of financial penalties on stability of the banking industry. Study used descriptive research design and further sampled 68 internationally listed banks which gave a total of 671 financial penalties charged between 2007 and 2014. The study findings showed that the

highest ratio of financial penalty to total assets was to 3.862 % translating to $374.25M in one year and that the highest penalty paid was $27B. Further, the findings revealed that although a financial penalty increases the systematic risk exposure of banks, they do not affect the banks involvement to systematic risk. Instead the financial penalty increases the bank's default probability making them more vulnerable to systematic risk events. The study also revealed that the design of regulatory and supervisory framework of a country influences the effect of financial penalties on systematic risk exposure, thus countries with strict capital requirements and prompt corrective power are less likely to cause systematic risk exposure to their banks through penalties. However, if the regulators have strong powers to declare a bank insolvency it increases the ability of financial penalties to case systematic risk exposure. Thus, the study found that there was a significant negative relationship between financial penalties and bank's systematic risk exposure.

Zeidan (2013) studied the effects of illegal behaviour on the financial performance of US banking institutions where the research objectives were to determine whether financial performance was affected by corporate regulatory violations. The study employed a sample of 128 publicly traded banks that were subjected to regulatory enforcement by US regulatory Authority for over 20 -year duration. The study used descriptive research design. It showed that there was a significant negative market reaction pursuant to regulatory violations, further the study showed that violating legal procedures results to negative market reaction that results to reduced value of the firm. In addition, the study also showed that multiple violations of regulations do not significantly affect the market reaction hence proving that the market reactions do not take into account the bank's earlier regulatory violation records.

Baucus and Baucus (1997, cited in Zeidan, 2013) the long-term financial consequences of corporate illegal behaviour of firms in different industries among them automobiles, petroleum refining and paper products. The financial performance of the respondents was measured for duration of five years. The study research objectives were to determine the effects of time, seriousness of offense and repetition of convictions on financial performance of the respondent firms. Further the research sample comprised of 300 companies which the courts convicted of

illegality and engaging in unethical behaviour. The study findings revealed that there was a negative correlation between illegality and long-term financial performance of the firms though the correlation was not significant. In addition, the study found that there was significant correlation between the seriousness of illegality and its effect on ROA but not significant for return on sales and shareholder's return of the firms. In addition, the study did not find firms with numerous convictions experiencing reduced financial performance when compared to companies charged with a single offense. Lastly the findings revealed that convictions for discrimination and antitrust violations significantly negatively affected the ROA and return on sales.

Flore *et al.,* (2018) studied how penalties imposed on banks travel through markets in the US market from the period 2005 to 2015 for financial institutions. The study used descriptive research design to measure the response of stock, bond and CDS markets after the legal ruling like settlement with regulators or financial penalties were made public. From a study population of twenty-five biggest financial institutions in US, the study sampled 400 legal settlements cases from one financial institution whose financial penalties exceeded $5M. The study found that financial penalties legal rulings pronouncements have significant positive impact on stock, bond and CDS valuation. Thus, legal penalty pronouncement reduces the prevailing uncertainty hence the increase in value after the ruling pronouncements. The study further found that resolved legal actions results to positive valuation influence on other financial institutions with unresolved lawsuits with the same legal body. The study further found that financial penalties reduces cash flow on a fifty- fifty basis in the year the penalties are pronounced but the bank's incomes not affected by such penalties pronouncements an attribute they said occurred as provision for penalties by the banks.

Murphy *et al.,* (2010) studied penalties associated with corporate misconduct and their effects on profitability and risk in US. Using descriptive research design the study obtained a sample size of 155 lawsuit cases comprising of 106 cases with financial legal penalties and the rest with no financial penalties. The findings indicated that systematic risk declined slightly after the announcement of

misconduct and that there was a significant negative effect on the stock price after lawsuits were made public.

Bin and Xi'an (2016) study on impact of information disclosure violation on firm value in China listed firms found that firm's value in violating firms is significantly lower than firm value in non-violating firms. Further, the study found that financial fines and the total number of warning types issued by regulators negatively affect the firm's value. Kirat and Rezaee (2015) study on financial markets reactions to regulatory sanctions found that the amount of monetary sanction is too low compared the market size of the non-complying companies, to impact on stock prices and contribute in reputational loss.

KLM (2008, as cited in Karpoff, 2012) studied the impact of fines and penalties on firms using a sample of 585 firms. The study revealed that monetary penalties were less common as Security Exchange Commission imposed an average of 1.4 non-monetary sanctions for each of the 585 firms, most of which were 90.6% cease-and desist orders or permanent injunction which all imposed small penalties. Only 8% of the firm received monetary penalties whereby the average fines were $58.8M. Further the study revealed that the monetary penalties for from shareholders class action lawsuits were more common than fines from regulators with 39% of the firms being fined $37.7M. The study concluded that although legal penalties may be large they are very small compared to firms' share value hence results to 3.1% of the total loss in the market value of the firm and to 8.8% total dollar loss.

Yusuf and Ekundayo (2018) study on effect of regulatory penalties on the performance of deposit banks in Nigeria that used correlational research design and sampled fifteen deposit banks from 2006-2015. The study used multiple regression analysis and found out that penalties imposed by regulators in the Nigerian banking industry have no significant impact on defaulters and that the cost of penalties is below the benefits enjoyed as they are treated as operational expenses which are transferred to customers. Likewise, Demirguk-Kunt *et al.,* (2004, as cited in Naceur & Omran 2011) examined the impact of bank regulation, market structure and

national institutions on bank interest margins and overhead cost using 1400 banks across 72 countries. The survey found that bank regulation becomes insignificant when controlling for national indicators of economic freedom or property rights protection.

Gikundi *et al.,* (2014) looked at effects of operational risks in the lending process on profitability of commercial banks in Kakamega county- Kenya. The operational risk variables considered were compliance, systems, character, culture and fraud. The study used empirical research design and a population of 74 lending officers drawn from 10 banks present in Kakamega town and a sample of 54 respondents. The study showed that there is significant impact of operational risk on profitability of commercial banks because as the banks comply with the laid down rules and procedure they reduce the operational losses hence profitability increases while as non-compliance increases the operational risk will also increase hence lowering the bank's profitability.

Makai and Olweny (2016) studied corporate governance and financial growth in SACCOs in Kirinyaga County, Kenya with the aim of determining the extent to which board leadership, financial performance disclosures, corporate social responsibility and compliance with legislation influences the growth of SACCOs. This study adopted descriptive research design on a target population of 31 SACCOs from which a sample of 20 was drawn for the study. On the objective of influence of legislation compliance on SACCOs growth, the study found that financial performance disclosure and compliance with legislation have negative relationship with financial growth of the SACCOs with a $p>0.05$.

Chumo (2013) studied the effects of regulatory compliance on financial performance of deposit taking SACCOs in South Rift Kenya. The objective was to determine the extent of implementation of financial regulations by SACCOs and its effect on financial performance. This study employed positive and normative economic theories of regulation and descriptive research design on a study population of 28 SACCOs where 4 respondents were chosen from each giving a

sample of 112 respondents. The study showed that regulation on election of independent board has not improved profitability of SACCOs.

2.5.3 Effects of Business Disruption and Utility Outages on Financial Performance of Commercial Banks

Rose *et al.,* (2007) studied the terrorist attack business disruption impacts on electric power system in Los Angeles with the aim of determining the direct and indirect economic effect terrorism attack power outages. The study sampled 33 producing sectors comprising of the households, government and the external agents and studied them for two weeks of power blackout. The findings showed that electric power disruption accounted for 93.6% reduction in economic activity translating to $20.5B. with no resilient adjustment and $2.8B when several types of resilience were included.

Wasileski *et al.,* (2011) studied the business closure and relocation as a result of the Loma Prieta earthquake and Hurricane Andrew with the aim of determining the extent to which business characteristics and disruptiveness of building damage and lifelines after the disasters were correlated with owners' decisions to close or relocate their businesses. The study sampled 6774 firms from South Dade and Santa cruz that were in operation when the risk occurred regardless of whether they were affected or not. The findings showed that physical damage to infrastructure, inventory or equipment have significant impact on business closure and relocation following major disasters. Further the study found out that businesses were more likely to relocate if in leased or rented premises as opposed to owned business premises and if the business was not durable masonry structure. Moreover, the study revealed that after disaster occurrence wholesale/retail business sectors are more affected than other businesses.

Forkuoh (2015), study on effects of power insecurity on SMEs growth revealed that power outage has a significant negative influence on SMEs growth as they increase operation cost of SMEs as they turn to alternative power supply as well as damaging the electrical appliances resulting to heavy servicing costs and alternative power costs hence deviating the revenue meant for reinvesting.

Emerson Network (2010) study on causes of downtime involving more than 450 US-based professionals found that 65% of downtime was due to uninterruptible power supply (UPS), 53% exceeding UPS capacity, 51% human error and 49% equipment failure. The end result of downtime differs with the application and the type of business (Tina, 2015). In this regard, for certain organizations' email may be a critical service which could cost thousands of dollars a minute. They further estimated that the typical industry hourly cost of downtime in US dollars is 6.48M in brokerage services, 2.8M in energy, 2.0M in telecommunication, 1.1M in retail, 636,000 in health care, and 90,000 in media. In the airline industry, Virgin Blue's airline's check-in and online booking systems went down for 11 days in September 2010 which affected online booking, reservations, check-in and boarding systems hence causing customers not to board their scheduled flights. This outage resulted to immense negative press which saw the company lose millions in profits from about 50,000 passengers and 400 flights (Perlin, 2012).

Further customers of Lloyds Banking Group in United Kingdom were in 2014 faced with payment problems following a server failure that lasted for 3½ hours hence declining debit card transactions as ATMs throughout the country would not dispense cash. The banks' IT system problem is not new, however it is not an easy problem to fix unlike in the old days. This is because it deals with information that is being updated throughout as regulatory changes are adjusted and when a product is removed or modified or as customers use internet banking, ATMs, spending money online among others making them more complex. IT systems are often programmed in different languages, on diverse machines, by different teams to prevent a particular person/team from ever fully understanding the whole structure of a system hence when there is a system failure it can take several hours or days to repair as teams struggle to find out where the problem lies (Osborne, 2014).

Emerson Network (2010) noted that application maintenance costs are growing at a 20% per annum. For instance, manual configuration errors can cost a firm about $72,000 on hourly basis in Web application downtime. Thus, for firms whose income models relies exclusively on the data centres' ability to deliver IT and networking services to clients like in case of telecommunications service providers

and e-commerce corporations like banks, downtime could be expensive, with the highest cost of a particular event amounting to $1M translated to more than $11,000 per minute. Sombers Associates (2007) study in US constituting 200 data centre managers reported that over 80% of these managers incurred hourly downtime expenses above $50,000 while over 25% exceeded $500,000 per hour. Arnold (2010), noted that businesses in US loses $84,000 to $108,000 on average each hour IT system is downtime. Topping this list are financial services, manufacturing, telecommunications and energy industries. He further observes that downtime costs differ from one industry to another and by the size of business operations.

Harris (2011) reported that a survey by CA Technologies in 200 companies based in Europe and America on losses incurred from an IT outage found that in a year businesses on average experience 14 hours IT downtime. This translated to more than $26.5B revenue lost each year or $150,000 lost by each business per annum. This survey also revealed that these losses differed with the size of the company with more than $55,000 being lost annually by small company $91,000 by medium sized companies and more than $1M being lost by large companies annually.

Kigen *et al*., (2014) study on cyber threat attacks noticed in the Kenyan cyberspace showed that cyber-attacks increased in 2013 by 108% to 5.4M attacks compared to 2.6M attacks detected in 2012. This rapidly growing cyber-threat was attributed to unidentified proxy servers situated in Kenya. According to this survey, there were 290,000 attacks coming from anonymous proxy servers compared to 50,000 attacks in 2012. Moreover, the survey also showed that Kenyan online banking portals have inadequate security mechanism to protect the client's login credentials. Among 33 commercial banks sampled, only 2 installed client side encryption meaning that the end user Pc network will disclose the customers' password exposing them misuse by unauthorized users.

2.5.4 Effects of Operational Risk Legal Liability Cost on Banks Financial Performance

McNulty and Akhigbe (2014) study on effect of bank litigation on bank performance and operational risk in US using three institutions that had

unfavourable pattern of litigation during the financial crisis after engaging in mortgage lending prior to the crisis. The study sampled 150 BHCs annual 10k reports for three financial institutions for the period 2002 to 2006 prior to financial crisis. The study showed that the legal expenses before the financial crisis for the three financial institutions were very high as compared to their peers. The study further found that high legal expenses significantly negatively affect future financial performance of a bank.

Kakmaz and Keles (2018) studied whether stock prices respond to illegal corporate behaviour in Turkey with the purpose of determining the effects of illegal corporate behaviour on the financial performance of listed companies in the period 2007-2016. The study employed event study methodology and from the capital market bulleting the study identified a sample of 101 illegal actions of committed during this period and that were penalized by the regulator and then measured the stock market response to those violations. The study found out that announcement of illegal corporate behaviour significantly negatively influences the financial performance of companies that are involved in such violations.

Bhagat *et al.,* (1998, as cited in Zeidan, 2013) studied the effects of corporate lawsuits on shareholders' wealth using event study technique. The study aimed at determining the direct and indirect costs of lawsuits to the culprit company by sampling legal disputes made public in the wall street journal in US from 1981 to 1983. The study revealed that it does not matter who sues a company for illegal behaviour whether government, another company or an individual the defendant company experiences significant decline in its stock value once the lawsuit is filed. The study observed that the share value decline can result to corporate wealth loss of 0.97% of the market value equity of the firm translating to $15.96M. The study further indicated that the magnitude of loss of share value will depend on the plaintiff hence companies sued by government reported higher share decline than other plaintiffs. Moreover, the study pointed out that the amount of loss of share's value will vary on the size of the sued company where the companies approaching bankruptcy had the highest loss of share value.

Song and Han (2017) study on how stock markets react to corporate crime in South Korea specifically looked at how the different types of crimes like operational, financial, white collar and street crimes influenced the financial performance of financial and industrial organizations. The study observed that the stock value was negatively affected around the pronouncement of corporate crime. Further the study revealed that financial crimes significantly negatively affect the stock value as opposed to operational crimes in organizations. Similarly, organizations in the financial sector are affected more by pronouncement of corporate crimes than non-financial sector organizations. Moreover, the white collar crimes had significant negative effect to stock value than street crimes.

Yuan and Zhang (2014) study on banks price litigation risk in debt contracting showed that agency conflicts between banks' shareholders and management may result to lawsuits which can impose enormous costs on sued bank. They found out that lawsuits settlement accounts for 8% of the beginning total assets or 26% of the total shareholders' equity. Other costs may include lawyers' fees and increased directors' liability insurance premiums, which could immensely reduce the bank's cash flow. Demirguc-Kunt and Huizingua (1999, as cited in Bouheni 2013) study on legal and institutional differences that sampled 80 industrialized and unindustrialized countries revealed that better contract enforcement, an efficient legal system and lack of corruption are correlated with low profitability.

Mpiana (2017) study on influence of corporate scandals on financial performance of listed firms at Nairobi Security Exchange aimed at determining the impact of corporate scandals on share value, profitability and liquidity of quoted companies. The study employed multiple cases research design to study a sample five publicly quoted companies involved in corporate scandals. The study established that the corporate scandals significantly negatively influence the financial performance of listed companies. Further the study established that some company's share value was negatively affected by corporate scandals while others were not. In addition, the study established that corporate scandals significantly negatively influence the profitability and liquidity of the affected companies' suppliers and customer tend to shy away from such companies. This study however failed to state whether there

were any litigations for the scandals involved and how they impacted on financial performance of the respondents.

2.5.5 Effects of Employment Practices and Workplace Safety Non-compliance Cost on Financial Performance of Commercial Banks

Lind *et al.,* (2000) study on situational and psychological determinants of wrongful termination claims revealed that wrongfully terminated employee claim for compensation is caused by feelings of financial loss and the expectations that they shall win the lawsuit of wrongful-termination and get a financial damage award. Further the study findings showed that wrongful termination claiming is caused by social psychological feelings of injustice and poor treatment which makes fired employee think of suing their former employers. In addition, the findings indicated that the litigation expenses for wrongfully terminated employees were expensive amounting to an average of $13200 per litigation.

Ijaola et al (2021) used survey research design to study the effects of noncompliance with safety practices in construction projects in Nigeria. The study concentrated on six effects of non-compliance with safety practices; physical injury, workmen's compensation, liability insurance premiums, low morale, costs of delay and time of cost. The study revealed that the awareness level on the implications of non-compliance with safety practice among professionals was high and that there are significant differences in the level of awareness among professions.

Derek *et al.,* (2014) study on consequences of perceived gender discrimination among the audit professionals sampled 234 women auditors working in public accounting organizations. The study aimed to determine the impact of workgroup composition factors and organizational climate factors on perceived gender discrimination and to determine the effect of perceived gender discrimination. The study found out that perceived gender discrimination leads to reduced organizational loyalty and higher turnover intentions which could curtail the financial performance of an organization. In addition, the findings revealed that women auditors experienced reduced levels of gender discrimination if working in organizations with many female partners or organizations where stronger ethical

climates is embraced or organizations that promote alternative work arrangements and in organizations with top management supporting well-being of their workers.

Wallace (2008) study on employee discrimination claim and employee initiated lawsuits sampled 54 geographically dispersed facilities from a population of the fortune 500 companies in US in order to determine the effect of procedural justice climate on the employee discrimination claim. The study considered employee discrimination claims filed with organization's equal employment office in the first half of year 2003 and lawsuits filed in the first half of the year 2004. The study found out that employee discrimination claims were significantly positive related to number of filed lawsuits and that employee originated lawsuits have huge financial, reputational and psychological effect on the employee and the employer.

Weil (1996, as cited in Weil 2001) study on the determinants of established level of compliance with occupation safety and health administration among the manufacturing companies in US reported that the predicted expenditures for complying with the machine-guard and hand tool standards ranged between $5000-$15000 while the cost of retrofitting vary by the type of equipment ranging from table saws which may cost $ 350-$500 to equip with guards, and wood shaper. The study also revealed that there were four chances of inspection and that the fines for non-compliance during each inspection amounted to $300. The studies also showed that because the cost of compliance is more than the fines charged for noncompliance the firms deliberately choose not to comply beyond their profit maximizing level.

Karpoff *et al.*, (2005, as cited in Karpoff, 2012) studied reputational penalties for environmental violations with the aim of determining whether organizations that pollute the environment damage their reputation. The study used a sample of 478 cases of environmental violations by listed firms from 1980-2000. The study established that charges or allegations that an organization was involved in environmental regulation noncompliance lead to significant reduction in the organization's share price. Further the study established that environmental regulatory noncompliance announcement resulted to 1.69% loss in share price of

the non-complying company while noncompliance charged resulted to 1.58% reductions in share price. The study further sampled 148 out of the initial sample of 478 and determined the effect of legal penalties, fines and damage awards emanating from environmental noncompliance on their financial performance. The findings revealed that legal penalties were 2.26% of the value of the firm's share inferring that legal penalties significantly affect the share value as compared to reputational penalties.

Nyakego (2013) studied effects of prosecution on noncompliance to requirements of safety and health in workplaces in Kenya. The study specifically measured workplace safety using workplace registration, risk assessment, health and safety audits and fire safety audit. The study used exploratory research design to study a population of 132 court cases charged under different provisions of occupation safety and health act of Kenya from 14 different counties from 2007 to 2010 from which a sample of 89 was drawn. The study found out that prosecution of non-complying organizations resulted to decline in the level of noncompliance with the specific workplace noncompliance after prosecution standing at 30% for workplace registration noncompliance, 45.7% for workplace risk assessment noncompliance, 30.8% noncompliance on safety and health audit and 36.8% noncompliance on fire safety audit.

2.6 Critique of Existing Literature

A number of studies have used different theories and research variables to examine the effects of operational risk management on financial performance. In order to explain the effect of fraud on financial performance, Uchenna and Agbo (2013) studied the influence of fraud and fraudulent practices on the performance of banks in Nigeria giving much weight to sum involved, number of staffs involved and number of fraud cases. The study failed to shed light to causes of fraud which will explain why the staffs are involved in fraud, the types of fraud and their influence on financial performance. Nwankwo (2013) study on effects of fraud on commercial banks performance in Nigeria look at ATM fraud, fake cheque and clearing cheque types of fraud and how they impact on financial performance.

Similarly, this study failed to look at causes of fraud. Chelangat (2014) studied influence of fraud on the financial performance of deposit taking SACCOs in Kenya using the types of fraud as the study variable. Despite ignoring the causes of fraud, this study also ignored commercial banks' frauds which are slightly different from SACCO frauds. Kaunyu (2017) study on influence of financial fraud on financial performance of state corporations in Kenya used fraud loss ratio and number of fraud cases as research variables and share value, cost of debt, liquidity, and project funds as measures of financial performance. Likewise, the study also overlooked the causes and types of fraud as well profitability measures of financial performance. A study by Kiragu *et al.,* (2015) studied the effects of bank size on occupational fraud risk in commercial banks in Kenya. The study used bank characteristics, management control systems, technology adoption and staff characteristic influence research variable and disregarded other aspects of fraud like causes and types of fraud. Githecha (2013) study on influences of fraud risk management strategies on financial performance of commercial banks in Kenya used technology adoption, governance and regulation as research variables.

On the effects of regulatory noncompliance cost, Robinson *et al.,* (2011) studied determinants of disclosure noncompliance and their effect on SEC review focusing on excess compensation, proprietary costs, negative media coverage and subsequent CEO compensation. This study however did not look at how the SEC noncompliance impacts on financial performance as well as failing to explain the causes and types of regulatory noncompliance. Moreover, the studies looked at quoted companies and not necessarily commercial banks. Koster and Pelster (2017) study on the financial penalties and systematic risks of banks looked at the effect of financial penalties on stability of the banking industry. The objective of this research was to determine whether financial penalties cause systematic risks and ignored their effect on financial performance. Gikundi *et al.,* (2014) studied effects of operational risks in the lending process on profitability of commercial banks in Kakamega County-Kenya focusing on compliance, systems, character, culture and fraud operational risk variables using empirical research design. This study only concentrated in banks from one county which could be facing the same risk resulting to regulatory noncompliance hence ignored banks from other counties.

Chumo (2013) studied the effects of regulatory compliance on financial performance of SACCOs hence ignored commercial banks. The study employed positive and normative economic theories of regulation while overlooking the utility theory of crime and punishment. Flore *et al.,* (2018) studied how penalties imposed on banks travel through markets in the US market from the period 2005 to 2015 for financial institutions. This study looked at effects of penalty ruling pronouncement and overlooked the effects of penalties themselves. Kakmaz and Keles (2018) study on how stock prices react to illegal corporate behaviour in Turkey used event study methodology. This study looked at listed companies and not necessarily the commercial banks in addition to using event study methodology instead of descriptive research methodology.

On business disruption and utility outage research variable, Rose *et al.,* (2007) study on terrorist attack business disruption impacts on electric power system in Los Angeles looked at producing sectors comprising of the households, government and the external agents and employed event study methodology. This study ignored the effects of terrorism attack on commercial banks. Wasileski *et al.,* (2011) study on the business closure and relocation as a result of the Loma Prieta earthquake and Hurricane Andrew majored on the factors that motivate a business to close after an operational risk. The study however failed to quantify the impact of these operational risks on the financial performance of the firms. Further the study included even firms that never incurred the operational risk which could jeopardize the findings.

On the effects of operational risk legal liability, Mpiana (2017) study on effects of corporate scandals on financial performance of listed firms at Nairobi Security Exchange aimed at determining the impact of corporate scandals on share value, profitability and liquidity of quoted companies using multiple cases research design. This study disregarded operational risk legal liability and emphasized on corporate scandals. Further the study concentrated on listed companies and not necessarily commercial banks and relied on multiple cases research design as opposed to descriptive research design. McNulty and Akhigbe (2014) studied the effect of bank litigation on bank performance and operational risk in US using a sample of three

institutions. Three financial institutions may not adequately represent the entire banking industry hence the generalizations from the findings may not be correct. To overcome this weakness this study sampled 38 commercial banks in Kenya and managed to get 26 of them responding to the research questionnaires. Kakmaz and Keles (2018) studied the stock prices reaction to illegal corporate behaviour in Turkey using event study methodology while Song and Han (2017) studied the stock market's reaction to corporate crime in South Korea distinctively looking the effects of operational crime, financial crime, white collar and street crimes on financial performance of financial and industrial organizations. Both of these studies concentrated on effect of making illegal behaviour public and overlooked at the effect of the cost of lawsuits emanating from the illegal behaviour itself. Bhagat *et al.,* (1998, cited in Zeidan, 2013) study on effects of corporate lawsuits on shareholders' wealth concentrated on effects of lawsuits based on the type of plaintiff (whether government, another company, or an individual). The study however failed to emphasize on causes of operational risk legal liability and their effects on financial performance.

On effect of employment practices and workplace safety noncompliance, Nyakego (2013) study on effects of prosecution on noncompliance to requirements of safety and health in workplaces in Kenya gave emphasis on whether the company that had not complied with workplace safety will comply after prosecution. The study however failed to measure the financial cost of the lawsuit for noncompliance and the cost of complying after prosecution. Lind *et al.,* (2000) study on situational and psychological determinants of wrongful termination claims concentrated on what motivates wrongfully terminated employees to sue their employers. The study entirely disregarded the effects of lawsuits by the wrongfully terminated employees to their employer's financial performance.

2.7 Research Gaps

While the previous studies provide valuable contributions to help scholars understand the underpinning topic on effects of Basel II operational risk management on financial performance of commercial banks in Kenya, most

researchers have concentrated mainly on impacts of Basel II in developed countries' commercial banks, fewer have been conducted in commercial banks in developing countries and very few have been researched in Kenya. Even those conducted on commercial banks in Kenya, more emphasis is given to the types of Basel II operational risk events facing commercial banks in Kenya but ignores their financial consequences on commercial banks financial performance. A few studies have looked at types of frauds and their financial implication. Further, the few that looked at the effect of fraud on financial performance ignored the implication of Basel II full compliance that took place in Kenya in 2015 going forward. Uchenna and Agbo (2013) study on effect of fraud and fraudulent practices on the performance of banks in Nigeria ignored causes hence failing to clarify what motivated the staff to commit fraud. Githecha (2013) study on effects of fraud risk management strategies on financial performance of commercial banks in Kenya used technology adoption, governance and regulation as research variables while this study was pegged on, regulatory non-compliance cost, business disruption cost and operational risk legal liability cost effects on financial performance. Gikundi *et al.,* (2014) study effects of operational risk in the lending process of commercial banks in Kakamega town used firm characteristic theory, signalling theory and loan pricing theory while this study was steered by fraud triangle theory, utility theory of crime and punishment and creative destruction theory.

Further, Robinson *et al.,* (2011) looked at disclosure noncompliance by listed firm and their effect on Security Exchange Commission review hence disregarded commercial banks that were not listed. However, this study considered all commercial banks in Kenya whether listed or not. Flore *et al.,* (2018) and Kakmaz and Keles (2018) studies both studied the effects of penalty ruling pronouncement and overlooked the effects of penalties charges on financial performance. Wasileski *et al.,* (2011) studied business closure and relocation as a result of operational risk concentrated on the factors that make a business to close after an operational risk but failed to measure the impact of these operational risks on the financial performance of the closing or relocating firms. Nyakego (2013) study on effects of prosecution on noncompliance to requirements of safety and health in workplaces in Kenya stressed on compliance after prosecution and omitted the cost that comes

with prosecution and compliance after prosecution and how it impacts on financial performance hence the need for this study.

Generally, past studies have ignored other aspects of Basel II operational risk management such as regulatory non-compliance, business disruption & utility outage, operational risk legal liability and employment practices & workplace safety non-compliance effects on financial performance of commercial banks. Thus, former studies have looked at different variables of operational risk as opposed to those of this study. As such in addition to fraud as researched on by other researchers, this study additionally researched on, regulatory non-compliance cost, business disruption & utility outages cost, operational risk legal liability cost and employment practices & workplace safety non-compliance cost. Researching on all the above variables was motivated by the desire to cover as many operational risk types as stipulated by Basel accord in order to measure their relative effect on financial performance of a commercial bank. This research is thus different from past researches in that it included five types of Basel II operational risks as opposed to others which majorly covered only one operational risk and ignore the rest. This study equally relied on fraud triangle theory as used by others but in addition the study employed utility theory of crime and punishment and creative destruction theory.

2.8 Summary

This study sought to establish the effects of operational risks stipulated by the Basel II Accord on the financial performance of commercial banks operating in Kenya. In order to achieve this objective, three theories; the fraud triangle theory, utility theory of crime and punishment and creative destruction theory were employed to explain the underlying relationships between the operational risks (financial fraud, regulatory non-compliance costs, business disruption, operational risk legal liability costs and employment practices non-compliance costs) and financial performance of commercial banks.

Several past researchers laid the foundation upon which this study found a bearing in terms of the objectives looked at, theories used, research design used, findings and recommendations given. Some studies studied the impact of fraud and fraudulent practices on the performance of banks and found out the amount lost to fraud was negatively correlated to ROE. Other studies carried in Kenya on effects of operational risks in the lending process on profitability of commercial banks revealed that there is significant negative impact of operational risk on profitability of commercial banks. Past studies on effects of operational risks on financial performance used different theories, objectives and research designs hence arrived at different results. However, this study concentrated only on effects of financial fraud, regulatory non-compliance cost, business disruption & utility outages cost, operational risk legal liability cost and employment practices & workplace safety non-compliance cost.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered the research design, target population, sampling frame and sampling technique, data collection instruments, data collection procedures, pilot study, data analysis and data presentation techniques.

3.2 Research Philosophy

This study inclined towards the assumptions of positivistic views of research philosophy. Research philosophy is a belief about the way in which data around a phenomenon should be gathered, analysed and used (Saunders et al., 2012). Positivism's research philosophy was adopted for this research with the view that reality is stable and can be observed and described from an objective viewpoint and that the research phenomena can be detached and researchers can repeat observations. This research leaned towards positivism philosophy hence the observed and explained findings and their inter-relationships can be used to make future forecasts. This research adopted quantitative and qualitative approach of the research variables whose effect on Basel II operational risk management was tested as required by Positivism philosophy thus the research findings were observable and quantifiable (Park, 2019).

The researcher's work was thus limited to data collection and objective interpretation of findings which is what positivism philosophy demands. The researcher was therefore just an objective analyst and distanced herself from personal views. Likewise, the researcher concentrated purely on quantifiable facts that lead to statistical analyses as required by positivism Philosophy. Moreover, to fulfil the positivism principles, the researcher ensured that the goal was to explain and predict the phenomena, the research was empirically observable through human senses, inductive reasoning was used to develop hypotheses, common sense was not

allowed to bias the research findings and that science was only judged by logic Dudovskiy (2022).

3.3 Research Design

This study embraced descriptive research design which is a scientific method of collecting data by administering questionnaires to a sample of persons and describing their behaviours without influencing in any way. The researcher preferred this research design because it can be used to collect information about the risk managers' attitudes, opinions, habits or any other social issues (Namusonge, 2010). The descriptive research design also helps the researcher to describe each variable thus enabling the researcher to interact naturally with the respondents in their natural setting and thus making recording without undue influence. Descriptive research design also assisted the researcher in describing the risk manager's responses to questions about the situation thus helping understand the respondents' perception from which truism was constructed. This design was also used by Olongo (2013); Njenga (2013); Makai and Olweny (2016) and by Chumo (2013) in their respective studies.

3.4 Target Population

The target population of this study was all the 42 commercial banks licensed by Central Bank of Kenya to operate in Kenya as of 30th June 2017. The research was carried out at the head offices of the banks and not at the bank branches because whenever operational risks happens at a branch it is always reported to the head office and hence a branch may not have information on all the operational risks that happened to other branches. Thus, it is the head office that has consolidated reports of all the operational risks that faced the bank. Similarly, policies made at the head office are cascaded to the branches thus making the head office ideal source of data needed for this study. From a target population of 42 commercial banks, one respondent who was either the security officer in charge of fraud investigations, the internal auditor or the head of operations was targeted from the head office of each commercial bank depending on the tier of the bank. This is because in tier 1 banks the information pertaining operational risk management is the mainstay of security

officer, in tier 2 banks some lacked the security officer but assign their internal auditor to handle this docket while tier 3 banks mainly lacked both the security officer and internal auditor hence assign the responsibility to head of operations. Further, one respondent per bank was ideal because due to consolidation of operational risk reports and financial performance of all the bank's branches into one report, it is not possible for two or more respondents from the same bank to give varying responses. The banks were further categorized into Tier 1, Tier 2 and Tier 3 banks as classified by CBK based on their profitability, liquidity, asset quality, capital adequacy and efficient use of assets. Tier 1 consisted of six large banks with assets worth over hundreds of billions of shillings and millions of clients jointly controlling 80% of the Kenyan market. The tier 2 banks are medium-sized banks consisting of 16 banks that jointly control 11.6%. Tier 3 consists of 20 small banks that control 8.4% of the market. The target population was 42 commercial banks as indicated in Table 3.1:

Table 3.1: Target Population

Type of Commercial Bank	Target Population
Tier 1 commercial banks	6
Tier 2 commercial banks	16
Tier 3 commercial banks	20
Total	**42**

3.5 Sampling Frame

A sampling frame is a list of all the objects in a target population (Kothari, 2019). The sampling frame for this study was derived from the CBK database. According to CBK (2017), there were 42 commercial banks operating in Kenya as at 30th June 2017 which formed the researcher's sampling frame (refer to appendix iii). The study was confined to security officers in charge of fraud investigations for tier 1 banks, internal auditors for tier 2 and operations managers for tier 3 banks for all the forty two commercial banks.

3.6 Sample and Sampling Technique

3.6.1 Sampling Technique

In order to gather qualitative data using questionnaires, stratified random sampling was used. The commercial banks were subdivided into three strata namely Tier 1, Tier 2 and Tier 3 commercial banks as grouped by CBK (2016). This this ensured that respondents containing elements representative of traits found in all the three tiers were selected. The first respondent was picked randomly from folded numbers while the rest of the respondents were obtained using table of random number. Sampling was done without replacement hence any duplicate number in the random number tables was ignored. The study thus sampled 38 commercial banks out of 42. Only one respondent from each bank's headquarters was chosen to fill the questionnaire hence a total sample of 38 respondents were sampled. The reason behind one respondent per bank was informed by the fact that the bank policies are disseminated to all its branches for compliance and all reports from all branches are sent to the head office for consolidation. Thus, even in tier 1 banks with all the three categories of respondents (security officer, the internal auditor and the operations manager) it was meaningless to give three questionnaires because each would draw data from the same database hence will be alike. The study was thus carried out in Nairobi as all commercial banks' headquarters are in Nairobi.

3.6.2 Sample Size

The study sampled 38 commercial banks out of a population of 42 commercial banks in Kenya. This figure was arrived at using Krejcie and Morgan 1970 formula (Abdul, 2021) as follows:

$$n = \chi^2 Np(1-p)/[d^2 (N-1) + \chi^2 p(1-p)] \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Where: n = the desired sample size

N = Target population

p = Population proportion (assumed to be 0.50 since this would provide the maximum sample size).

D = degree of accuracy shown by the amount of error that can be accepted in fluctuation of a size about the population and corresponds to the significance level with a standard error of the population and corresponds to the significance level with a standard error of the proportional at the corresponding confidence level =5%.

χ^2= The chi square value for one degree of freedom relative at the desired level of confidence (χ^2= 3.841 at 95% confidence level)

n = ((3.841*42*0.5(1-0.5))/ [0.05^2(42-1) + ((3.841*0.5(1-0.5))]

=40.3368/1.0629

=37.95

=38

The study further employed proportional allocation method of stratified random sampling technique to calculate the number of banks that should be selected at random from each tier group. A sample of size n was picked from a population of size N where the population is partitioned into strata with sizes N_1, N_2 and N_3 (in this case the populations for tier 1, tier 2 and tier 3 respectively) such that $N_1 + N_2 + N_3 = N$. The corresponding samples n_1, n_2 and n_3 were picked such that $n_1 + n_2 + n_3 = n$. Then, according to proportional allocation method by Cochran (1977) $n_i = \frac{N_i}{N} \times n$, for $i = 1, 2, 3$; in this case samples for tier 1, tier 2 and tier 3 were calculated as shown in Table 3.2.

The researcher then selected one respondent from each sampled bank who was either security officer in charge of fraud investigations, or an internal auditor or head of operations from each bank thus resulting to a total of 38 the total number of respondents sampled as shown in Table 3.2:

Table 3.2: Sample Size

Type of Commercial Bank	Total population	Sample size
Tier 1 commercial bank	6	(6/42)*38= 5
Tier 2 commercial banks	16	(16/42)*38= 15
Tier 3 commercial banks	20	(20/42)*38=18
Total	**42**	**38**

3.7 Data Collection Methods and Instruments

This study entailed both primary and secondary data.

3.7.1 Primary Data

The Primary data for this study was collected by the use of structured likert scaled questionnaires. The questionnaire had six sections; section A collected background data, section B focused on the five variables under study where section A of B focused on financial fraud, section B of B on regulatory non-compliance, section C of B on business disruption and utility outages, section D of B operational risk legal liability and section E of B on employment practices and workplace safety. Specifically, the questionnaires were used to collect data relating to causes, types and effect of fraud; types, causes and effects of regulatory non-compliance; the types, causes and effects of business disruption and utility outages; the types, causes and effects of operational risk legal liability and types, causes and effects of employment practices and work place safety non-compliance. The questionnaires were favoured because they are free from interviewers' bias as respondents answered in their own words as well giving the respondents sufficient time to provide well thought out responses (Kothari, 2019). In addition, Mugenda and Mugenda (2013) advices that questionnaires define the problem and the specific study objectives thus making them appropriate for primary data collection.

3.7.2 Secondary Data

Secondary data, mainly quantitative was gathered from the CBK publications using data collection schedules (see appendix ii). Specifically, the data obtained from CBK was commercial banks' profit before tax, ROE and ROA. This data helped to measure the banks financial performance.

3.8 Data Collection Procedures

The study entailed both primary and secondary sources of data. As such, the primary data collection procedure started by identifying the respondents and their availability. Request permission to collect data were then sent to the respondents' banks managers and upon receipt of permission to collect data from the contacted respondent bank, the researcher and five trained research assistants dropped the questionnaires to the respondents for self-administration. The respondents were requested to specify a day within two weeks' period during which they would have completed filling the questionnaire. The questionnaires were then picked after two weeks for data analysis purposes.

Secondary data was extracted from CBK annual reports for the period 2011 to 2016 so as to capture the financial performance before Basel II implementation (2011-2013) and the period after Basel II implementation (2014-2016).

3.9 Pilot Study

The research questionnaires were pre-tested in four purposively selected banks. Thus, out of 42 commercial banks, 4 acted as pilot test while 38 were earmarked for the actual research. The questionnaires were pilot tested to determine their validity and reliability. Pilot test was conducted in order to determine approximate time take to complete a questionnaire as well as to help further refinement of the questionnaires.

3.9.1 Reliability of the Study

Reliability of the questionnaire was measured to test the degree of consistency and repeatability to be able to give similar results (Morrison, 2022). The results of the pilot questionnaire were analysed using Cronbach's alpha reliability formula to assess the internal consistency so as to visualize how closely related a set of responses are as a group. The theoretical value of alpha ranges from 0 – 1 and higher values of alpha are more desirable hence reliability of 0.7 and above is a reasonable threshold in a research (Garson,2016). The average Cronbach Alpha value for this study was 0.844 as shown in Table 3.3 which is within the recommended threshold.

This alpha value was obtained using the formula:

$$\alpha = \frac{N.\overline{C}}{\overline{V} + (N-1).\overline{C}} \quad \text{.....(3.2)}$$

Where: N= the number of items

$\overline{C}$ = the average inter-item covariance among the items

$\overline{V}$ = the average variance

The study consisted of five independent variables; financial fraud, regulatory non-compliance cost, business disruption & utility outage cost, operational risk legal liability cost and employment practices & workplace safety non-compliance cost. These five independent variables and the dependent variable were tested for reliability using Cronbach's Alpha reliability test and the results were as shown in Table 3.3:

Table 3.3: Summary of Reliability Test

Variables	Cronbach's Alpha standardized item	Number of Items
Financial fraud	0.826	32
Regulatory noncompliance cost	0.939	20
Business disruption & utility outage cost	0.825	18
Operational risk legal liability cost	0.734	8
Employment Practices & Workplace safety non-compliance cost	0.873	16
Financial performance	0.865	18
Average	**0.844**	

The results indicated that for all the six variables the Cronbach alpha was greater than 0.7 hence acceptable according to Sekaran and Bougie (2016). The average Cronbach of 0.844 denotes that there is acceptable degree of consistency among responses against each item. Further, factor analysis was computed to determine the dimension of all variable within a group.

3.9.2 Validity

The questionnaires were tested for validity to establish the extent to which they measured what the researcher actually intended to measure. The internal validity of a test is the magnitude with which a questionnaire measures what it is supposed to measure whereas the external validity of a test refers to how well the test can be generalized to others in the population for which it was developed (Kothari, 2019).

The questionnaires were tested for validity to test if they measured the objectives of this study. Pearson Product Moment correlation was used to test the presence or absence of systematic errors. To test validity of the questionnaire, each item of the questionnaire score was correlated with the total score. The item-item questionnaire that significantly correlates with total score showed that the items are valid. If the significance value is <0.05, then the questionnaire is valid while if it is >0.05 then it is invalid. Improvements and changes were effected on the questionnaires to enhance their validity.

3.10 Data Analysis and Presentation

The data gathered by the questionnaires was sorted, coded and analysed using Statistical Package for Social Sciences (SPSS) version 22 and STATA version 15 statistical packages. Descriptive and inferential analyses were done to obtain more information and make worthwhile conclusions about the variables of interest. These produced statistics such as the percentages, mean, standard deviation, correlation coefficients and panel regression among others statistics. These techniques give simple summaries regarding the sample data besides presenting quantitative descriptions in a manageable manner (Gupta, 2014). In addition to simple graphics analysis, descriptive statistics forms the base of nearly all quantitative analysis of data (Kothari, 2019).

The data was presented using frequency distribution tables and line graphs for easier understanding. The frequency tables generated depicts percentages and means responses of all the questionnaires measured on a five point likert scale with scores ranging from 1 to 5 for all the independent variables. The dependent variable (financial performance) was extracted from CBK annual reports in terms of profit before tax, ROA and ROE.

3.10.1 Panel Regression Model

This study used panel regression model because the data obtained possessed both cross-section and time dimension attributes. Panel regression model was suitable for this study because panel data are well suited to study the dynamics of change as it studies repeated cross section of observations hence was used to track the commercial banks' change in financial performance from 2011 to 2016. In addition, because panel data related to commercial banks financial performance over time, panel regression model allow for heterogeneity by allowing for individual-specific variables. Likewise, panel regression combines time series of cross-section observations hence giving more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency (Gujarati *et al*, 2020).

Thus, using panel regression model, financial performance indicators were followed and measured over time (2011–2016) for the time periods before (2011-2013) and after (2014-2016) the implementation of Basel II operational risk management. Panel data regression models are based on panel data which are observations on the same commercial bank were measured over several time periods. This study adopted mixed effect panel model hence was able to capture both fixed and random effects. Thus, a linear mixed effects model was utilized to study the influence of the independent variables on the dependent variable accounting for time effect and different correlation structures in the data. The dependent variable of this regression model was financial performance of commercial banks while the independent variables were; financial fraud, regulatory non-compliance cost, business disruption cost, operational risks legal liability cost and employment practices & workplace safety non-compliance cost. Generally, the panel regression model used for this study was:

$$\mathrm{Y}_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + u_{i_t} + \varepsilon_{\mathrm{i}} \text{ .....(3.3)}$$

Where:

$Y_{it} =$ Financial performance of the ith bank at a given time t measured by PBT, ROA, and ROE

$\beta_o =$ a fixed intercept term

$\beta_1,...,\beta_5 =$ coefficient estimates was used to measure the sensitivity of the dependent variables (Y) to unit change in the explanatory variable ($X_1...,X_5$) respectively.

$X_{1it} =$ Financial Fraud cost of the ith bank at time t

$X_{2it} =$ Regulatory non-compliance cost of the ith bank at time t

$X_{3it} =$ Business Disruption cost of the ith bank at time t

$X_{4it} =$ Legal liability costs of the ith bank at time t

$X_{5it} =$ Employment practices non-compliance cost of the ith bank at time t

$u_{it} =$ a random slopes error term which is assumed to be normally distributed with mean zero and constant variance.

$\varepsilon =$ a random error term which captures the unexplained variations in the model which is assumed to be normally distributed with mean zero and constant variance.

3.10.2 Paired T-Test Model

A paired t-test was used to compare the financial performance before and after Basel II operational risk management implementation. A paired t-test is a statistical procedure that shows if the mean difference between two sets of observations is zero (Statistics Solutions, 2018). A paired sample t-test is used to compare two samples in which observations in one sample can be paired with observations in the other sample such as before-and-after observations on the same subjects (Statistics Solutions, 2018). A paired t-test simply calculates the difference between paired observations such as before and after, and then performs a 1-sample t-test on the differences (Stone *et al.*, 2016). In order to determine the effect of Basel II operational risk management on the financial performance of commercial banks in Kenya, financial performance was measured in terms of profit before tax (PBT), returns on assets (ROA) and returns on equity (ROE). In this case, financial performance was measured before implementation of Basel II operational risk management for the period 2011 to 2013 and after the implementation of Basel II operational risk management for the period from 2014 to 2016 as follows:

Let x denote the financial performance before the implementation of Basel II operational risk management and y denote the financial performance after the implementation of Basel II operational risk management. To test the hypothesis that the true mean difference is zero, the difference $(d_i = y_i - x_i)$ between two observations on each pair is first calculated. Secondly, the mean difference $(\bar{d})$ is calculated. Next, the standard error of the mean difference is calculated as follows:

$$SE(\bar{d}) = \frac{s_d}{\sqrt{n}}$$

Where $s_d =$ the standard deviation of the differences and

$n =$ the numbers of subjects, in this case, the commercial banks.

Further, the t-statistic is calculated as: $T = \frac{\bar{d}}{SE(\bar{d})}$. Under the null hypothesis, this statistics follows as t-distribution with $n-1$ degrees of freedom. Finally, the value for T is compared to the value for t_{n-1} to give the p-value for the paired t-test.

The test was carried out at a 5% confidence level hence where the p-value was less than 0.05 the null hypothesis was rejected and concluded that there was a significant mean difference and that the results are not based on chance. If the p-value was greater than 0.05 then the researcher failed to reject null hypothesis and concluded that the mean difference was equal to zero meaning that there was no significance change in financial performance even after the implementation of Basel II.

3.11 Diagnostic Tests

Before conducting any statistical procedure, the researcher screened through all the returned questionnaires in order to clean out any error emanating from respondents failing to fill some questions, filling questions that they were require to skip, as well as giving more than one answer in Likert scaled responses. This ensured that the data used thereafter to conduct, correlation and T-tests was free from such errors. Likewise, before carrying out any panel regression statistical test, the researcher ensured that the independent variables were pre-tested by conducting preliminary diagnostic tests as follows:

3.11.1 Test for Linearity

Linear mixed model is assumed to be linear with respect to the residuals. Linearity assumption was tested by plotting residuals (the difference between the observed financial performance value and the model estimated value) versus the dependent variable (financial performance). A linear pattern of the scatter plots indicates a linear relationship between the variables while a random pattern indicates a non-linear relationship, which would be a violation of the linear regression assumptions. If the residuals are evenly distributed with a tendency of concentrating towards the zero line, then it implies linearity of the error terms. The linearity assumption was fulfilled as the emerging pattern was random as shown in figure 4.3.

3.11.2 Normality Testing

Another assumption of panel regression is that the residuals are normally distributed with mean zero and variance. Normality of the residuals was tested using Quantile-Quantile (QQ) plots. The QQ plot is a graphical technique for examining whether two data sets come from populations with a common distribution. QQ plots can estimate where the standardized residuals lie within normal quantiles. Large deviation from the provided line implies that residuals are not normally distributed, (Ghasemi & Zahediasl, 2012). The curves portrayed a normal shape as they followed a diagonal movement which was a condition for true normal distribution. This meant that the data was normally distributed as there were no serious outliers as shown in figure 4.4.

3.11.3 Homogeneity of Variance

Panel regression model also assumes that the residuals have equal variances across the groups. In this case the groups for this study were the individual (bank) level. Analysis of variance (ANOVA) was used to test the between group (banks) residuals. A p-value < 0.05 indicates that there is heteroscedasticity (variances between groups are not equal) while a p-value greater than 0.05 indicates that homogeneity of variances of the residuals exist (SPSS tests, 2015). Homogeneity of variance makes sure that the distributions of the outcomes in each independent group are comparable and/or equal. If independent groups are not similar it can result to fake findings. The assumption of homogeneity of variance was measured using Levene's test for equality of variances. The p-value for Levene's test should above 0.05 as shown in Table 4.37. If the p-value is below 0.05, then the assumption of homogeneity of variance has been violated.

3.11.4 Heteroskedasticity

Paired T-test assumes there is no heteroskedasticity. The study employed Breush-pagan test for heteroskedasticity. Breusch-pagan test shows a chi-square value and a significance value for the independent variables. A p-value < 0.05 indicates that

there is heteroskedasticity while a p-value greater than 0.05 indicates heteroskedasticity does not exist (SPSS tests, 2015).

3.11.5 Hypothesis Testing

This study tested how Basel II operational risk management (independent variables) influences Commercial banks financial performance. The hypotheses in this study were tested by correlation and paired t-test techniques. The significance value (p value) corresponding to the coefficient of the variable is useful in this case. If the p value obtained is less than 0.05 then the null hypothesis was rejected, otherwise if p>0.05, then the researcher failed to reject the null hypothesis. The hypotheses were interpreted as shown in Table 3.4:

Table 3.4: Summary of Hypothesis Testing

Hypothesis	Statistical Test	Interpretation
H_{01}: Financial fraud does not have significant effect on the financial performance of commercial banks in Kenya.	Correlation analysis, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{02}: Regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.	Correlation analysis, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{03}: Business disruption and system failure costs do not have significant effects on the financial performance of commercial banks in Kenya.	Correlation analysis, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{04} Operational risk legal liability costs do not have significant effect on the financial performance commercial banks.	Correlation analysis, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{05} Employment practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks.	Correlation analysis, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{06} The true mean difference between PBT before and after the implementation of Basel II operational risk management is equal to zero	Paired t-test, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{07} The true mean difference between ROA before and after the implementation of Basel II operational risk management is equal to zero	Paired t-test, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis
H_{08} The true mean difference between ROE before and after the implementation of Basel II operational risk management is equal to zero	Paired t-test, significance value (p)	p <0.05, reject the null hypothesis; p >0.05, fail to reject the null hypothesis

The conclusions about the effects of independent variables was based on the p-value where if the p-value was less than 0.05 then it was concluded that the independent variable was significant predictor of the dependent variable otherwise it was concluded that the independent variable was not significant and could not be used to explain the variations in the dependent variable.

3.12 Measurement of Variables

The dependent variable for this study was financial performance of commercial banks while the independent variables were financial fraud, regulatory non-compliance costs, business disruption and utility outages costs, operational risks legal liability costs and employment practices and work place safety non-compliance costs. Each of these variables was measured as follows:

3.12.1 Measures of Fraud Cost

Financial fraud can be viewed as an intentional misrepresentation, mis-statement or omission of financial transactions for the purpose of personal gain (Bank for International Settlements, 2019). Fraud was measured by the total amount involved in both internal and external fraud in millions Kenya shillings.

3.12.2 Regulatory Non-compliance Cost

Regulatory non-compliance cost was measured by the total amount charged as fines, penalties and any costs attributable to non-compliance cost expressed in millions Kenya shillings.

3.12.3 Measures of Legal costs

Legal cost was measured by the total amount charged by the court and other legal costs involved in millions Kenya shillings.

3.12.4 Business Disruption and System Failure costs

Business disruption and system failure cost was measure by value of lost business from customers, additional repair cost and marketing costs to win back customers in millions Kenya shillings.

3.12.5 Measures of Employment practices and Workplace Safety Cost

The employment practices and workplace Safety cost was measured by fines and penalties charged to the offending bank, damages charged, and other legal costs expressed in millions Kenya shillings.

3.12.6 Measures of Financial Performance

This study adopted profit before tax (PBT), return on assets (ROA) and return on equity (ROE) as the measures of financial performance. PBT also known as pre-tax profits or earnings before tax is a measure of profitability which determines a bank's profits before the corporate income tax is paid. It is obtained by subtracting all operating expenditures from income. ROA is the net income which is the PBT for the year divided by total assets. ROA as a measure of banks' profitability considers the banks size as opposed to PBT thus making it easier to compare performance of banks that are in the same tier. Conventionally, ROA is seen as a more reliable profitability indicator than ROE in terms of efficiency performance since it is adjusted for the leverage effect (ROA=ROE/leverage). As such commercial banks with the highest ROA have shown more resiliency after a financial crisis. On the other hand, ROE is net income which is PBT divided by average total equity. A high level of ROE can be a sign for high level of profitability or more limited equity capital. However, ROE is, not risk-sensitive as it omits the proportion of risky assets and the solvency situation of a bank, thus where ROE fluctuations have entirely been caused by operational performance, it becomes difficult to explain the trade-off between risk and return in financial performance explaining why some of the high-ROE banks financial performance was poor during the financial crisis of 2007/08. ROE ratio has historically been widely used to measure banks financial performance with the public arguing that a ROE of 20% and above is satisfactory since it is sustainable. ROE failed to differentiate the best performing banks from the others in terms of sustainability of their results during the 2007/08 financial crisis (European Central Bank, 2010). Thus, ROE is a short-term pointer explaining the current financial health of a bank and does not factor the bank's long-term strategy or the long-term damages caused in the past and hence should not be used

as a stand-alone measure of financial performance in banks. Due to this reason, this study adopted PBT, ROA and ROE as the measures of financial performance. Other financial performance measures include cost-to-income ratio and net interest margin.

3.13 Ethical Considerations

The researcher contacted each respondent and explained the objectives of the study to each and sought consent from them prior to the study. The researcher also ensured that the privacy of research participants and that of their institutions was ensured by not requiring the respondents to indicate their names, phone numbers or emails neither those of their institutions anywhere in the questionnaire. The researcher also ensured adequate level of confidentiality of the research data and only used the data for academic purposes as was promised during the consent level. Further, the researcher acknowledged the works of other authors used in any part of this thesis using APA referencing system.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter contains the results of data analysis on the effects of Basel II operational risk management on financial performance of commercial banks in Kenya. Specifically, the chapter entails; the response rate, demographic characteristic of variables under study, variable normality analysis, factor analysis, descriptive statistics of independent and dependent variables, correlation of variables, t-test analysis, hypothesis testing and summary of this chapter.

4.2 Response Rate

The response rate was obtained by dividing the number of respondents who filled and returned the questionnaires by the total number of respondents who were initially issued with the questionnaires. A total of 38 questionnaires were administered to the respondents who were mainly the security officers in charge of fraud investigations, internal auditors and operations managers of the selected commercial banks in Kenya. Out of the thirty eight questionnaires issued to the respondents, 26 questionnaires were returned fully filled representing 68.4% response rate while 12 questionnaires were not returned. According to Fincham (2008) a response rate of 60% is considered appropriate for self-administered questionnaires. Failure to achieve adequate response rate can limit the usefulness of the findings, thus this study's response rate of 68.4% was considered appropriate for further analysis since it was above 60%. The response rate was as shown in Table 4.1:

Table 4.1: Response Rate

Category	Frequency	Percentage
No. of questionnaires issued, filled and returned	26	68.4
No. of issued questionnaires issued and not returned	12	31.6
No. of questionnaires issued to respondents	38	100

4.3 Background Information

The respondents were required to indicate their gender, age group, job title and highest academic level attained. The findings were as follows:

4.3.1 Respondent's Gender

The respondents were required to tick whether male or female. The findings were as shown in Table 4.2.

Table 4.2: Respondents' Gender

Category	Frequency	Percentage (%)
Male	19	73.1
Female	7	26.9
Total	26	100

From table 4.2 an analysis of the respondents' gender indicated that majority (73.1%) of the respondents' were males while the minorities (26.9%) were females. This indicates that more males than females are tasked with operational risk management in the commercial banks in Kenya.

4.3.2 Respondent's Age Group

The respondents were further required to indicate their respective age groups. The findings were as shown in Table 4.3:

Table 4.3: Respondents' Age Group

Age group	Frequency	Percent
31-40 years	15	57.7
41-50 years	9	34.6
51-60 years	2	7.7
Total	26	100

The results in Table 4.3 reveals that majority (57.7%) of the respondents were aged between 31 to 40 years, 34.6% were aged between 41 to 50 years, 7.7% were aged 51 to 60 years while none was aged less than 30 years. This signify that the responsibility of operational risk management is usually vested with vibrant experienced professionals who have some work experience as portrayed by less advanced age of the respondents.

4.3.3 Respondent's Level of Education

Respondents were in addition asked to indicate the highest education level attained. The findings were as indicated in Table 4.4:

Table 4.4: Respondent's Level of Education

Highest level of Education	Frequency	Percent
Bachelor degree	16	61.5
Master degree	10	38.5
Diploma	0	0
Total	26	100.0

From Table 4.4, majority (61.5%) of the respondents had attained a bachelor's degree while the remaining 38.5% had attained a master's degree with none with diploma qualifications. This indicates that the role of operational risk management in commercial banks is vested with professionals who must have specific skills and knowledge imparted at bachelor level of education.

4.4 Descriptive Statistics

4.4.1 Descriptive Statistics on Effects of Fraud

The respondents were asked to rate some statements describing the causes of fraud in their banks. Likert scale was used to measure the respondents' level of agreement with the statement. The findings were as shown in Table 4.5:

Table 4.5: Causes of Fraud in Banks

Statement: Fraud in my bank is caused by:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Poor staff remuneration	3(11.5%)	10(38.5%)	6(23.1%)	6(23.1%)	1(3.8%)
Poor record keeping	3(11.5%)	10(38.5%)	9(34.6%)	2(7.7%)	2(7.7%)
Weak internal controls	15(57.7%)	4(15.4%)	4(15.4%)	3(11.5%)	0(0.0%)
Greed by staff	12(46.2%)	8(30.8%)	6(23.1%)	0(0.0%)	0(0.0%)
Work place frustrations	3(11.5%)	11(42.3%)	8(30.8%)	3(11.5%)	1(3.8%)
Urgent financial need (debt, medical, gambling, alcohol)	10(38.5%)	9(34.6%)	6(23.1%)	1(3.8%)	0(0.0%)
Need to cover someone's poor performance	1(3.8%)	10(38.5%)	4(15.4%)	7(26.9%)	4(15.4%)
Access to information and money	2(7.7%)	16(61.5%)	3(11.5%)	0(0.0%)	5(19.2%)
Lack of punishment	3(11.5%)	6(23.1%)	8(30.8%)	7(26.9%)	2(7.7%)

From Table 4.5, majority (50% i.e. 11.5% +38.5%) of the respondents agreed that poor staff remuneration is a cause of fraud in the banks while only 26.9% of the respondents disagreed with this statement while 23.1% were undecided. Further, majority (50%) of the respondents agreed that poor record keeping is a cause of fraud in banks, while 34.6% were undecided and only 15.5% disagreed that poor record keeping causes fraud in banks. In addition, most (73.1%) respondents agreed that weak internal control causes frauds in the banks, 15.4% were undecided while 11.5% disagreed. Similarly, majority (77%) of the respondents agreed that greed by staff is the major cause of fraud in the banks while 23.1% were undecided. Further the respondents were asked to express their perception on work place frustration as cause of fraud in banks; majority (53.8%) agreed that work place frustration causes fraud, 30.8% were undecided while 15.3% disagreed. Likewise, respondents were required to rate whether urgent financial need such as medical, debt, alcohol and gambling causes fraud. Majority (73.1%) of the respondents agreed that urgent financial need causes fraud in banks, 23.1% were undecided while only 3.8% disagreed. Asked whether fraud is caused by the need to cover someone's poor performance, an equal percentage (42.3%) of the respondents agreed and disagreed that need to cover someone's poor performance is a cause for fraud in banks while the remaining percentage (15.4%) were undecided. Similarly, majority of the respondents (69.2%) of the respondents agreed that access to information and money causes fraud in the banks, 19.2% disagreed while 11.5% were undecided in their opinion. Lastly the respondents rating on whether lack of punishment causes fraud in banks showed that, equal number (34.6%) of the respondents agreed but disagreed that lack of punishment was a cause for frauds in the banks while 30.8% were undecided.

In general, it can thus be concluded that among the major causes of fraud in banks are greed by staff (77%), weak internal controls and urgent financial need each with 73.1% and access to information & money (69.2%). However, the least cause of fraud in banks is lack of punishment (34.6%) followed by need to cover someone's poor performance (42.3%). These findings support the fraud triangle theory assumptions that perceived pressure such as urgent financial need causes fraud. The

findings also concur with fraud triangle theory that the opportunity to commit fraud such as weak internal control and access to information & money causes fraud.

4.4.2 Types of Fraud Risks Experienced by the Bank in Kenya

The respondents were required to indicate the types of risk that they experienced in their banks by rating them on a five point Likert scale ranging from never occurred to very frequently occurring risks. The findings were as indicated in Table 4.6:

Table 4.6: Types of Fraud Risks Experienced by the Bank in Kenya

Type of Fraud Risk	Fraud Event	Never	Rarely	Sometime	Frequently	Very Frequently
Unauthorized Activity	Transactions not reported (intentional)	1(3.8%)	10(38.5%)	15(57.7%)	0(0.0%)	0(0.0%)
	Mismarking of position (intentional)	5(19.2%)	11(42.3%)	10(38.5%)	0(0.0%)	0(0.0%)
Theft and fraud (internal)	Fraud/credit fraud/ worthless deposits	0(0.0%)	10(38.5%)	8(30.8%)	7(26.9%)	1(3.8%)
	Theft /robbery /embezzlement	5(19.2%)	7(26.9%)	14(53.8%)	0(0.0%)	0(0.0%)
	Misappropriation of assets	7(26.9%)	9(34.6%)	9(34.6%)	1(3.8%)	0(0.0%)
	Malicious destruction of assets	7(26.9%)	11(42.3%)	8(30.8%)	0(0.0%)	0(0.0%)
	Forgery	4(15.4%	4(15.4%)	13(50.0%)	5(19.2%)	0(0.0%)
	Cheque kiting	4(15.4%	8(30.8%)	9(34.6%)	5(19.2%)	0(0.0%)
	Account takeover/impersonation etc.	3(11.5%)	5(19.2%)	12(46.2%)	6(23.1%)	0(0.0%)
	Tax non-compliance /evasion (wilful)	10(38.5%)	10(38.5%)	4(15.4%)	1(3.8%)	0(0.0%)
	Bribes/kickbacks	10(38.5%)	9(34.6%)	5(19.2%)	2(7.7%)	0(0.0%)
	Insider trading (not on firm's account)	14(53.8%)	7(26.9%)	5(19.2%)	0(0.0%)	0(0.0%)
External Fraud	Theft/Robbery	8(30.8%)	8(30.8%)	8(30.8%)	2(7.7%)	0(0.0%)
	Forgery	6(23.1%)	4(15.4%)	13(50.0%)	3(11.5%)	0(0.0%)
	Cheque kiting	5(19.2%)	7(26.9%)	9(34.6%)	4(15.4%)	0(0.0%)
	System hacking/ money /info loss	0(0.0%)	3(11.5%)	4(15.4%)	9(34.6%)	10(38.5%)

From Table 4.6, the findings revealed that under unauthorized activities, transactions intentionally not reported were sometimes experienced as expressed by 57.7% of the respondents, while mismarking of positions was rarely experienced as expressed by 42.3% of the respondents. Under internal theft and fraud types of risks, fraud/credit fraud/worthless deposits were rarely experienced as expressed by 38.5% of the respondents, theft/embezzlement /robbery was sometimes experienced as indicated by 53.8% of the respondents, misappropriation of assets was sometimes and rarely experienced as explained by 34.6% of the respondents. Malicious destruction of assets was rarely experienced as expressed by 42.3% of the respondents. Forgery, cheque kitting and account take-over/impersonation were sometimes as expressed by 50%, 34.6% and 46.2% of the respondents respectively. 38.5% of the respondents reported that tax non-compliance had never been experienced at their banks while an equal percentage indicated that this fraud was rarely experienced. While most (38.5%) respondents reported that bribes/kickbacks were never experienced in their banks with 34.6% of the respondents rarely experiencing this risk. Most (53.8%) respondents had never experienced insider trading risk while it was rarely experienced in 26.9% of the respondents' banks. Under external fraud, theft/robbery had never occurred in 30.8% of the respondents, sometimes occurred in 30.8% of the respondents while similar percentages rarely experienced this risk. However, 7.7% of the banks frequently experienced theft/robbery. On the other hand, 50% of the respondents sometimes experienced forgery as an external fraud, while cheque kiting was sometimes experienced by 34.6% of the respondents. Lastly 73.1% of the respondents reported that they frequently experienced system hacking/money/information loss while 15.4% reported experiencing it sometimes.

From the general findings on the types of fraud risks facing commercial banks in Kenya, it can be concluded that most (73.1%) respondents experience system hacking by external fraudsters, internal fraud (57.7%) in the form of unauthorized activities in transactions intentionally not reported, theft/embezzlement/robbery (53.8%), forgery 50%, external theft/robbery 50%, account take-over/impersonation 46.2% followed by cheque kiting 34.6%. On the contrary some fraud risks never or rarely occurred in the commercial banks in Kenya; insider trading not on firm's

account, tax non-compliance/evasion and bribes/kickbacks. These finding are in agreement with CBK (2016) that greater usage of ICT in the banking sector has raised cases of ICT related frauds in the recent years with BFID fraud report revealing that computer, mobile and internet banking fraud cases are on the increase. CBK also points out that cyber-crime involving criminals getting unauthorized access to organizations' computer programs and data together with card fraud have also become emerging frauds among commercial banks in Kenya.

4.4.3 Effects of Fraud on the Financial Performance of the Bank

The respondents were in addition required to rate the extent to which fraud affects the financial performance of their banks. The results were as shown in Table 4.7:

Table 4.7: Effects of Fraud on the Financial Performance of the Bank

Statement: Fraud in my Bank	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Reduces profitability	12(46.2%)	13(50.0%)	0(0.0%)	1(3.8%)	0(0.0%)
Reduces return on assets (ROA)	6(23.1%)	13(50.0%)	7(26.9%)	0(0.0%)	0(0.0%)
Lowers return on Equity (ROE)	8(30.8%)	12(46.2%)	6(23.1%)	0(0.0%)	0(0.0%)
Increases the operating expenses	10(38.5%)	13(50.0%)	3(11.5%)	0(0.0%)	0(0.0%)
Disrupts banks operation	3(11.5%)	13(50.0%)	8(30.8%)	2(7.7%)	0(0.0%)
Reduces consumer confidence	8(30.8%)	10(38.5%)	5(19.2%)	3(11.5%)	0(0.0%)
Destabilizes the economy	0(0.0%)	7(26.9%)	11(42.3%)	7(26.9%)	0(0.0%)
It can bring down a bank	7(26.9%)	12(46.2%)	5(19.2%)	2(7.7%)	0(0.0%)

The results in Table 4.7 show that majority (96.2%) of the respondents agreed that frauds in bank reduces profitability while a few (3.8%) disagreed. Further majority (73.1%) of the respondents agreed that fraud reduces return on assets while minority (26.9) disagreed. Likewise, majority (77%) agreed that fraud lowers return on equity while few (23.1%) disagreed. Moreover, majority (88.5%) of the respondents agreed that fraud increases the operating expenses though 11.5% differed. Similarly, majority (61.5%) agreed that fraud disrupts bank operations and equally majority (69.3%) of the respondents agreed that fraud reduces consumer confidence. However, majority (42.3%) of the respondents were undecided on whether fraud destabilizes the economy while 26.9% agreed as a similar proportion disagreed that fraud destabilizes the economy. On the other hand, majority (73.1%) of the respondents agreed that fraud can bring down a bank while 7.7% disagreed to the statement.

Consequently, it can thus be concluded that the major effects of fraud in commercial banks in Kenya are that fraud; reduces profitability (96.2%), increases operating expenses (88.5%), lowers return on equity (77%), reduces return on assets (73.1%), reduces consumer confidence (69.3%) and disrupts bank operations (61.5%). On the contrary frauds happening in commercial banks do not destabilize the economy. These findings partly support Njenga and Osiemo (2013) findings that found out that fraud risk management significantly affects ROA.

4.4.4 Fraud Related Losses Experienced by Commercial Banks

The respondents were required to state the average fraud related loses that their banks experienced in a period of six years. The results were as shown in Table 4.8:

Table 4.8: Fraud Related Losses Experienced by Commercial Banks

Cost of fraud (sh)	2011	2012	2013	2014	2015	2016	Total banks for 6 yrs.
< 10 M	5(20%)	6(24.0%)	4(16.0%)	5(19.2%)	1(3.8%)	3(11.5%	30
11-20M	0(0.0%)	1(3.8%)	6(24.0%)	2(7.7%)	6(23.1%)	3(11.5%	24
21-30M	7(28%)	4(16.0%)	5(20.0%)	7(26.9%)	2(7.7%)	4(15.4%	36
31-40M	4(16%)	8(32.0%)	1(3.8%)	1(3.8%)	3(11.5%)	7(26.9%	29
41-50M	4(16%)	1(3.8%)	3(12.0%)	6(23.1%)	2(7.7%)	1(3.8%)	23
51-60M	0(0.0%)	3(12.0%)	2(8.0%)	1(3.8%)	5(19.2%)	1(3.8%)	17
> 60M	4(16%)	1(4.0%)	4(16.0%)	3(11.5%)	6(23.1%)	5(19.2%	20
NIL	1(4.0%	1(4.0%)	0(0.0%)	1(3.8%)	1(3.8%)	2(7.7%)	6

From Table 4.8, the results indicated that in the year 2011, 28% of the respondents incurred the cost of fraud ranging between shillings 21-30M, 16% experienced over shillings 60M whereas 20% reported less than sh10M. In 2012, the cost of fraud for most (32%) respondents ranged between sh31-40M with a few (4%) incurring more than shillings 60M and 24% incurring less than sh10M. In 2013, most (24.0%) of the respondents experienced fraud related losses amounting to between sh11-30M, with 16% experiencing more than shillings 60M and similar percentage experiencing less than shillings 10M fraud related losses. In 2014, most (26.9%) banks experienced losses ranging from sh21-30M of the valid respondents while 11.5% experienced more than sh60M with 19.2% experiencing less than sh10M loss. In 2015, 23.1% of the respondents experienced fraud related losses ranging between sh11-20M with similar proportion experiencing above sh60M fraud losses. However, a few (3.8%) of the respondents experienced less than sh10M fraud losses. In 2016, Most (26.9%) of the respondents experienced fraud related costs ranging between sh31-40M with 19.2% experiencing above sh60M and 11.5% experiencing below sh10M fraud related losses. It can thus be concluded that the annual fraud related losses experienced by most commercial banks mainly ranged between sh21-30M.

4.4.5 Change in Fraud after Basel II Implementation

The respondents were further probed to indicate the change in fraud after Basel II implementation. The findings were as indicated in Table 4.9:

Table 4.9: Change in Fraud after Basel II Implementation

After my bank adopted Basel II regulations (n=26)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Fraud has decreased with more than 10%	6(23.1%)	2(7.7%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has decreased with 5%- 10%	0(0.0%)	4(15.4%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has decreased with 1%-5%	0(0.0%)	2(7.7%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has remained at the same level	1(3.8%)	5(19.2%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has increased with more than 10%	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has increased with 5%- 10%	0(0.0%)	2(7.7%)	0(0.0%)	0(0.0%)	0(0.0%)
Fraud has increased with 1%-5%	0(0.0%)	4(15.4%)	0(0.0%)	0(0.0%)	0(0.0%)

From Table 4.9 the findings show that after Basel II implementation in 2015, 30.8% of the respondents agreed that fraud decreased by more than 10%, 15.4% agreed that fraud decreased by 5%-10%, 7.7% agreed that fraud decreased by 1%-5%, 23% reporting that fraud remained at the same level while 7.7% agreed that fraud increased by 5%-10% as 15.4% agreed that fraud marginally increased by 1%-5%.

It can thus be concluded that implementation of Basel II in commercial banks in Kenya has born fruits as 30.8% of the respondents had fraud decreased by more than 10%, 15.4% of the respondents' fraud decreased by 5% -10% and while 7.7% of the respondents had fraud decreasing by 1% - 5%. It was however notable that the decrease was too small that for some respondents it still lied in the same measuring scale. In the same vein, a total of 53.9% (30.8+15.4+7.7) respondents reported a reduction in fraud risk after Basel II implementation. On the contrary

23% experienced no effect as fraud remained at the same level whereas similar number of respondents, 23.1% (7.7+15.4) reported increased fraud though at very low level (1%-10%). The general implication is that fraud in majority (53.9%) of the respondents reported a decreased in with 30.8% of them reporting more than 10% decrease in fraud after Basel II implementation. The marginal increase23.1% i.e. (15.4+7.7) in fraud in some respondents could be attributed to greed by staff as was found out to be the major cause of fraud in section 4.4.1 which is not factored in by Basel II requirements.

4.4.6 Causes of Decrease in Frauds

The respondents who reported that fraud had decreased were further asked to indicate what they thought contributed to decrease in fraud in their banks. The results were as shown in Table 4.10:

Table 4.10: Causes of Decrease in Frauds

Fraud in my bank has decreased as a result of:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Staff training and education	8(50.0%)	7(43.8%)	1(6.2%)	0(0.0%)	0(0.0%)
Enhanced methods to authenticate customer t	9(56.2%)	7(43.8%)	0(0.0%)	0(0.0%)	0(0.0%)
Basel II implementation	6(37.5%)	9(56.3%)	0(0.0%)	1(6.2%)	0(0.0%)
Enhanced internal controls and procedures	11(68.8%)	5(31.3%)	0(0.0%)	0(0.0%)	0(0.0%)
Adopted or increased use of risk management tools offered by Basel II	7(43.8%)	8(50.0%)	0(0.0%)	1(6.2%)	0(0.0%)
financial service provider e.g. account alerts, positive pay	5(31.3%)	9(56.3%)	2(12.5%)	0(0.0%)	0(0.0%)
Enhanced fraud monitoring system	9(56.3%)	7(43.8%)	0(0.0%)	0(0.0%)	0(0.0%)

N=16 (Valid)

From Table 4.10, most (93.8%) of the respondents agreed that staff training and education was one of the causes of decrease in fraud while 6.2% were not sure. All (100%) of the respondents agreed that enhanced methods to authenticate customer and/or validate customer account caused decrease in fraud. Furthermore, majority (93.8%) agreed that Basel II implementation caused decrease in fraud while only 6.2% disagreed that Basel II implementation caused fraud decrease in the banks. Moreover 100% of the respondents agreed that enhanced internal controls and procedures caused a decrease in the fraud. Likewise, majority (93.8%) agreed that increased use of risk management tools offered by Basel II caused decrease in fraud in the banks. On the other hand, 87.6% agreed that decrease in fraud was due to financial institutions account alerts and positive pay while enhanced fraud monitoring was 100% agreed to be the reason behind fraud decline.

It can thus be concluded that of the respondents who experienced decrease in fraud; 100% attribute it to enhanced methods of authenticating customer and/or validating customer account, enhanced internal controls & procedures and enhanced fraud monitoring, 93.8% due to Basel II implementation, use of risk management tools offered by Basel II and staff training and education (93.8%). Whereas 87.6% decrease in fraud due to financial institutions account alerts and positive pay. These findings support Shank (2014) findings that you cannot change employee's rationalization and potential pressure that pushes them to committing fraud but you can prevent the opportunity to commit fraud by incorporating good internal controls in the systems and procedures to minimize fraud cases and protect the business from individuals suffering from fraud triangle's temptations.

4.4.7 Causes of Increase in Fraud

All the respondents who reported that fraud had increased were further required to show what caused the increase in fraud in their banks. The results were as indicated in Table 4.11:

Table 4.11: Causes of Increase in Frauds

Fraud in my bank has increased as a result of:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Basel II implementation	0(0.0%)	0(0.0%)	2(33.3%)	4(66.7%)	0(0.0%)
Employee job dissatisfaction	2(33.3%)	1(16.7%)	0(0.0%)	3(50%)	0(0.0%)
Lack of operational guidelines	1(16.7%)	4(66.7%)	0(0.00%)	1(16.7%)	0(0.0%)
Poor internal control	1(16.7%)	5(83.3%)	0(0.00%)	0(0.00%)	0(0.0%)

N=6 (Valid)

From the results in Table 4.11, majority (66.7%) disagreed that the implementation of Basel II was a cause for increase in fraud while none agreed that Basel II implementation resulted to increase in fraud, 42.9% were however undecided. Further 50% of these respondents agreed that employee job dissatisfaction is a cause of increase in fraud in banks however a similar proportion disagreed. Majority (83.3%) of the respondents agreed that lack of operational guidelines is a cause of increase in frauds in banks though 16.7% differed. Surprisingly 100% of the respondents reported that poor internal control was the main cause of increase in fraud.

The general implication of these results is that poor internal control (100%) and lack of operational guidelines (83.3%) are some of the major causes of increase in fraud in commercial banks in Kenya.

4.5 Descriptive on Regulatory Non-Compliance Costs

4.5.1 Types of Regulatory Non-compliance in the Commercial Banks

The respondents were asked to rate the extent to which they supported the given statements that described the types of regulatory non-compliance in their banks. The findings were as shown in Table 4.12:

Table 4.12: Types of Regulatory Non-compliance in Commercial Banks

The most common types of Regulatory non-compliance in my bank are:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Guideline violation and fiduciary breaches	1(3.8%)	8(30.8%)	5(19.2%)	6(23.1%)	6(23.1%)
Failure to investigate client per guidelines	0(0.0%)	8(30.8%)	6(23.1%)	9(34.6%)	3(11.5%)
Exceeding client exposure limits	3(11.5%	10(38.5%)	4(15.4%)	7(26.9%)	2(7.7%)
Suitability / disclosure issues (Know your customer,	1(3.8%)	10(38.5%)	3(11.5%)	5(19.2%)	7(26.9%)
Breach of privacy	1(3.8%)	1(3.8%)	10(38.5%	8(30.8%)	6(23.1%)
Account churning	0(0.0%)	3(11.5%)	5(19.2%)	15(57.7%	3(11.5%)
Misuse of confidential information	0(0.0%)	6(23.1%)	7(26.9%)	8(30.8%)	5(19.2%)

The results in Table 4.12 shows that most (46.2%) respondents disagreed that their banks had experienced guideline violation and fiduciary breaches as a type of regulatory non-compliance while 34.6% agreed as 19.2% were not sure. Likewise, majority (46.1%) of the respondents disagreed that failure to investigate client per guidelines was experienced in their banks while 30.8% agreed. However, 50% of the respondents agreed that exceeding client exposure limits was experienced in their banks while 34.6% disagreed with this malpractice. On the other hand, many (46.1%) of the respondents disagreed that their banks were victims of suitability/disclosure issues while 42.3% agreed that their banks were involved in disclosure issues. Further majority (53.9%) of the respondents disagreed that their banks were breach of privacy as a non-compliance issue while only 7.6% agreed being involved in this malpractice. Most (69.2%) respondents also disagreed that their banks engaged in account churning regulatory non-compliance whereas 11.5% admitted experiencing this vice. Finally, majority (50%) of the respondents disagreed that misuse of confidential information was a regulatory non-compliance in their banks while 23.1% of the respondents agreed that this was a common malpractice in their banks.

From the above findings it can thus be concluded that some of the main types of regulatory non-compliance among commercial banks in Kenya are; exceeding clients' exposure limits (50%) and suitability/disclosure issues (42.3%). These findings are in line with CBK (2016) report that in the prudential guidelines violations, three institutions violated Section 10(1) of the banking act which restricts lending to a single borrower an amount of not more than 25% of its core capital.

4.5.2 Causes of Regulatory Non-compliance in Commercial Bank

Further the respondents were asked to qualify what they felt caused the above types of regulatory non-compliances in their banks. The findings were as shown in Table 4.13:

Table 4.13: Causes of Regulatory Non-compliance in Commercial Bank

Regulatory non-compliance penalty in my bank is caused by;	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Lack of heavy penalties	2(7.7%)	8(30.8%)	4(15.4%)	6(23.1%)	6(23.1%)
Lack of awareness	4(15.4%)	4(15.4%)	8(30.8%)	7(26.9%)	3(11.5%)
The penalties are less than the profit gained after violating the rule	1(3.8%)	8(30.8%)	3(11.5%)	7(26.9%)	7(26.9%)
Poor governance	4(15.4%)	7(26.9%)	2(7.7%)	5(19.2%)	8(30.8%)

From Table 4.13 the results majority (46.2%) of the respondents disagreed that lack of heavy penalties is a cause for regulatory non-compliance while 38.5% agreed. Further, 38.4% of the respondents disagreed that lack of awareness is a cause of regulatory non-compliance although 30.8% agreed while another 30.8% were not sure. On the other hand, majority (53.8%) of the respondents disagreed that regulatory non-compliance in their banks occurs because the penalties are less than the profits gained after violating the rules however 34.6% agreed while 11.5% were not sure. Lastly most (50%) of the respondents disagreed that poor governance was

a cause for regulatory non-compliance in their banks but 42.3% agreed. It can thus be implied that regulatory non-compliance in commercial banks in Kenya is not a major operational risk but when it happens it occurs as a result of poor governance (42.3%) and lack of heavy penalties (38.5%).

4.5.3 Effects of Regulatory Non-compliance Penalties on Commercial Bank

The respondents were required to rate the extent to which they agree with some statements regarding the effects of regulatory non-compliance penalties in the banks. The results were as seen in Table 4.14:

Table 4.14: Effects of Regulatory Non-compliance on Commercial Bank

Regulatory non-compliance penalties in my bank has led to;	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Reduced return on assets	3(11.5%)	14(53.8%)	4(15.4%)	1(3.8%)	4(15.4%)
Reduced profitability	6(23.1%)	13(50.0%)	3(11.5%)	0(0.0%)	4(15.4%)
Reduced return on equity	3(11.5%)	15(57.7%)	3(11.5%)	3(11.5%)	2(7.7%)
Damaged reputation	6(23.1%)	8(30.8%)	3(11.5%)	6(23.1%)	3(11.5%)
Loss of customers and investors	4(15.4%)	10(38.5%)	2(7.7%)	7(26.9%)	3(11.5%)
Branch closure	1(3.8%)	1(3.8%)	10(38.5%)	9(34.6%)	5(19.2%)
Required to increase capital or liquidity	2(7.7%)	7(26.9%)	10(38.5%)	4(15.4%)	3(11.5%)
Firing of senior management	2(7.7%)	7(26.9%)	6(23.1%)	6(23.1%)	5(19.2%)
Increased cost of recruiting and retaining high staff	3(11.5%)	13(50.0%)	6(23.1%)	1(3.8%)	3(11.5%)
Increased regulation scrutiny	6(23.1%)	13(50.0%)	1(3.8%)	4(15.4%)	2(7.7%)

From Table 4.14 majority (65.3%) of the respondents agreed that regulatory non-compliance penalties have led to reduced returns on assets, 19.2% disagreed while 15.4% had a neutral opinion on this effect. Similarly, majority (73.1%) of the respondents agreed that regulatory non-compliance penalties have led to reduced profitability, 15.4% disagreed while 11.5% were neutral. In addition, majority (69.2%) of the total respondents agreed that regulatory non-compliance penalties led to reduced return on equity in their banks, 19.2% disagreed while 11.5% were neutral. Moreover, majority (53.9%) of the respondents agreed that non-compliance penalties have led to damaged reputation of the bank, 34.6% disagreed while 11.5% were undecided. Likewise, majority (53.9%) of the respondents generally agreed that non-compliance penalties have led to loss of investors and customers, 38.4% disagreed while 7.7% were indifferent. On the contrary many (53.8%) of the respondents disagreed that regulatory non-compliance penalties have led to branch closure, 38.5% were neutral while 7.6% agreed. Surprisingly majority (38.5%) of the respondents were undecided on whether regulatory non-compliance penalties have led to the requirement to increase capital or liquidity, 34.6% agreed while 26.9% disagreed. Further majority (41.3%) of the respondents disagreed that regulatory non-compliance penalties have led to firing of the senior management, 34.6% agreed while 23.1% were neutral. On the contrary majority (61.5%) of the respondents agreed that regulatory non-compliance penalties have led to increased cost of recruiting and retaining high staff, 23.1% were neutral while 15.3% disagreed. Finally, majority (73.1%) of the respondents generally agreed that regulatory non-compliance penalties have led to increased regulatory scrutiny, 23.1% disagreed while 3.8% were neutral.

The general implication of these results is that regulatory non-compliance penalties has mainly led to; reduced profitability (73.1%), increased regulation scrutiny (73.1%), reduced ROE (69.2%), reduced ROA (65.3%), increased cost of recruiting and retaining high staff (61.5%), damaged reputation (53.9%) and loss of investors and customers (53.9%), On the contrary regulatory non-compliance penalties will not lead to branch closure (53.8%) or need to increase capital or liquidity as expressed by majority of the respondents.

4.5.4 Regulatory Non-compliance Cost Experienced by Commercial Bank

The respondents were further required to state the cost incurred by their banks for a period of six years as a result of regulatory noncompliance penalties. The results were as shown in Table 4.15:

Table 4.15: Regulatory Non-compliance Cost Experienced by Commercial Bank

Cost	2011	2012	2013	2014	2015	2016
Nil	6(23.1%)	6(23.1%)	6(23.1%)	7(26.9%)	6(23.1%)	5(19.2%)
<Sh0.5 M	10(38.5%)	10(38.5%)	11(42.3%)	12(46.2%)	8(30.8%)	8(30.8%)
Sh0.5-2M	6(23.1%)	7(26.9%)	6(23.1%)	3(11.5%)	7(26.9%)	7(26.9%)
Sh2-4M	1(3.8%)	1(3.8%)	1(3.8%)	1(3.8%)	2(7.7%)	2(7.7%)
Sh4-6M	3(11.5%)	2(7.7%)	2(7.7%)	3(11.5%)	3(11.5%)	2(7.7%)
Sh6-8M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	2(7.7%)
Sh8-10M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
> Sh10M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)

From Table 4.15 the results show that, in 2011, most (38.5%) of the banks incurred a cost of less than 0.5 million Kenya shillings as regulatory non-compliance penalties, 23.1% incurred between sh0.5 to less than 2M, a similar percentage didn't incur any cost related to non-compliance penalties, while 11.5% and 3.8% incurred a cost of 4 to less than 6M and between 2 and less than 4M respectively. In 2012, most (38.5%) of the banks incurred a cost of less than sh0.5M due to regulatory non-compliance penalties, followed by 26.9% that incurred between sh0.5–2M, 23.1% did not incur any cost, 7.7% incurred sh4-6M while 3.8% incurred between sh2-4M. In 2013, majority (42.3%) of the respondents incurred less than sh0.5M due to regulatory non-compliance penalties, followed by 23.1% who incurred between sh0.5-2M while similar percentage did not incur any non-compliance penalties. However, 7.7% incurred between sh4-6M with another 3.8% incurring between sh2-4M. In 2014, most (46.2%) respondents incurred less than sh0.5M as regulatory non-compliance penalties, 26.9% incurred no penalties, and 11.5% incurred sh.0.5-2 M while 3.8% incurred sh4M to less than sh6M. In 2015, majority (30.8%) of the respondents incurred less than sh0.5M regulatory non-compliance

penalties, 26.9% incurred sh0.5M to less than 2M while 23.1% incurred zero non-compliance penalties. Further, 11.5% of the respondents incurred between sh4M to less than 6M million shillings. In 2016, many (34.6%) of the respondents incurred a cost of less than sh0.5M regulatory non-compliance penalties, 26.9% incurred a cost of between sh0.5M to less than 2M, 19.2% incurred nil penalties, 7.7% incurred between sh4M to less than sh6M.

The implication of these results is that most of the banks incurred cost of less than sh0.5M as regulatory non-compliance penalties throughout 2011 to 2016 period. This could be because CBK was still applying the finance Acts that required monetary non-compliance penalties not to exceed sh5M. The findings also depict that the number of respondents and the amount of penalty marginally increased from 2014 to 2016; with 15.3% incurring between sh2-6M and sh6-8M in 2014, 19.2% in 2015 and 23.1% incurring between sh2-8M. This can be attributed to lag in complying with Basel II which was adopted in full in Kenya 2015. It could be that some banks had challenges in complying with this regulation hence the reason for the increase in penalties. This reason is also explained by the trend of banks who reported nil penalties, before fully adoption of Basel II requirements in 2015, the banks with nil penalties decreased from 26.9% (2014) to 23.1% (2015) to 19.2% (2016). The non-compliance penalties for majority of the banks are however minimal implying that most of the commercial banks in Kenya normally comply with the various regulations issued by CBK. It is also notable that 2016 recorded the highest level of regulatory noncompliance penalties. CBK attributes this abnormality to lack of compliance with liquidity ratio after Chase Bank Ltd was put into receivership due to deposit movement that was caused by bank run. Thus, this resulted to a contagion risk that mostly affecting tier 2 and tier 3 banks (CBK, 2016).

4.6 Descriptive Results of Business Disruptions and Utility Outages

4.6.1 Causes of Business Disruptions and Utility Outages in Commercial Bank

The respondents were required to rate some statements describing the causes of business disruption and utility outages in commercial banks in Kenya. The results were as shown in Table 4.16:

Table 4.16: Causes of Business Disruptions and Utility Outages in Commercial Bank

Business disruption & utility outages in my bank are caused by:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Technical failure	8(30.8%)	15(57.7%)	3(11.5%)	0(0.0%)	0(0.0%)
Planned maintenance and upgrading	3(11.5%)	12(46.2%)	7(26.9%)	2(7.7%)	2(7.7%)
Huge web traffic	0(0.0%)	4(15.4%)	11(42.3%)	9(34.6%)	2(7.7%)
Use of old networks	1(3.8%)	5(19.2%)	7(26.9%)	10(38.5%)	3(11.5%)
Power related outages	2(7.7%)	8(30.8%)	8(30.8%)	7(26.9%)	1(3.8%)
Equipment failure	0(0.0%)	10(38.5%)	8(30.8%)	5(19.2%)	3(11.5%)
Human error	1(3.8%)	11(42.3%)	11(42.3%)	2(7.7%)	1(3.8%)
Fraud activities	0(0.0%)	6(23.1%)	9(34.6%)	10(38.5%)	1(3.8%)

From Table 4.16 majority (88.5%) of the respondents agreed that business disruptions and utility outages in their banks are caused by technical failure while 11.5% were undecided. Further majority (57.7%) of the respondents agreed that planned maintenance and upgrading was a cause for business disruptions and utility outages in their banks, 42.3% disagreed while 26.9% were neutral. On the contrary for business disruptions and utility outages in the banks being caused by huge web traffic, majority (42.3%) of the respondents disagreed and a similar percentage were neutral while only 15.4% agreed. Likewise, majority (50%) of the respondents disagreed that use of traditional networks was a cause for business disruptions and utility outages in their banks, 26.9% were neutral while 23% agreed. On the other had majority (38.5%) of the respondents voted power related outages as a cause for business disruptions and utility outages, 30.8% were neutral while (30.7%)

disagreed. Moreover, majority (38.5%) of the respondents agreed that equipment failure is a cause for business disruptions and utility outages in their banks, 30.8% were neutral while 30.7% disagreed. Further majority 46.1% of the respondents agreed that business disruptions and utility outages in their bank are caused by human error, 42.3% were neutral and 11.5% disagreed. Lastly most (42.3%) of the respondents disagreed that fraud related activities cause business disruptions and utility outages in their banks, 34.6% were neutral while 23.1% agreed.

The implication of these results is that some of the major causes of business disruptions and utility outages in commercial banks in Kenya are technical failure (88.5%) and planned maintenance and upgrading (57.7%). The results support the creative destruction theory that the process of industrial transformation continuously revolutionizes the economic structures from within continuously destroying the old ones and continuously create new ones. Hence as new technologies, new products, new methods of operation and new means of service distribution are invented by banks, it makes the old ones outdated and prone to failure, forcing the commercial banks to quickly adapt to a new technology or else fail (Sledzik, 2013). The findings also support Arnold, (2010) that 90% of downtime is usually planned due to system backups, maintenance and upgrades with about 10% unplanned.

4.6.2 Effects of Business Disruptions and Utility outages on Commercial Banks

The respondents were further required to state the extent to which they agreed with some statements describing the effects of business disruption and utility outages in their banks. The findings were as shown in Table 4.17:

Table 4.17: Effects of Business Disruptions and Utility outages on Commercial Banks

Utility outage and system failure in my bank has led to;	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Lost business from customers (both short term and long term)	3(11.5%)	13(50.0%)	9(34.6%)	1(3.8%)	0(0.0%)
Employee time diverted from other tasks to get the IT systems running again	4(15.4%)	12(46.2%)	5(19.2%)	1(3.8%)	4(15.4%)
Employee overtime expenses	2(7.7%)	13(50.0%)	3(11.5%)	8(30.8%)	0(0.0%)
Cost on valuable lost data	3(11.5%)	8(30.8%)	9(34.6%)	3(11.5%)	3(11.5%)
Additional repair costs that may go on even after service has been restored	3(11.5%)	13(50.0%)	8(30.8%)	2(7.7%)	0(0.0%)
Damaged goodwill and reputation	2(7.7%)	13(50.0%)	7(26.9%)	4(15.4%)	0(0.0%)
Marketing cost to win back customers	3(11.5%)	14(53.8%)	3(11.5%)	5(19.2%)	1(3.8%)
Reduced return on assets	2(7.7%)	10(38.5%)	9(34.6%)	3(11.5%)	2(7.7%)
Reduced profitability	3(11.5%)	10(38.5%)	5(19.2%)	7(26.9%)	1(3.8%)
Reduced return on equity	3(11.5%)	9(34.6%)	9(34.6%)	4(15.4%)	1(3.8%)

From the results in Table 4.17, majority (61.5%) of the respondents agreed that business disruptions and utility outage in their banks led to lost business from customers, 34.6% were undecided while 3.8% disagreed. In addition, many (61.6%) of the respondents agreed that business disruptions and utility outage in the bank has led to employee time diverted from other tasks to get IT systems running again, 19.2% disagreed and the same percentage was neutral. Likewise, majority (57.7%) of the respondents agreed that business disruptions and utility outage in their bank has led to employee overtime expenses, 30.8% disagreed while 11.5% were neutral. Moreover, most (42.3%) of the respondents also agreed that business disruptions and utility outage in their banks has led to cost on valuable lost data, 34.6% were undecided while 23% disagreed. Similarly, majority (61.5%) of the respondents agreed that business disruptions and utility outage in their banks has led to additional repair costs that may go on even after service has been restored, however 30.8% were neutral whereas 7.7% disagreed. In solidarity majority (57.7%) of the respondents agreed that business disruptions and utility outage in their bank has led to damaged goodwill and reputation compared to 26.9% who were neutral and 15.4% in disagreement. Likewise, majority (65.3%) of the

respondents agreed that business disruptions and utility outage in their banks has led to incurring marketing cost to win back customers, 23% disagreed while 11.5% neutral. On the other hand, that most (46.2%) of the respondents agreed that business disruptions and utility outage in their bank has led to reduced return on assets, 34.6% were not sure while 19.2% disagreed. Further majority (50%) of the respondents agreed to the statement that business disruptions and utility outage in their bank has led to reduced profitability, 30.7% disagreed while 19.2% were undecided. Finally, when asked of their opinion on whether business disruptions and utility outage in their bank has led to reduced return on equity, 46.1% of the respondents agreed, 34.6% were neutral while 19.2% disagreed.

It can thus be alluded that the major effect of business disruption and utility outages in commercial banks in Kenya are; incurring marketing cost to win back customers (65.3%), employee time diverted from other tasks to get IT systems running again (61.6%), lost business from customers (61.5%), and additional repair costs that may go on even after service has been restored (61.5%). Technical failure and planned maintenance can be said to be the root cause of these effects as were rated the highest by respondents. These findings concur with Osborne (2014) that technical failure can result to banks IT systems cutting off customers from their cash which gets worse with time as new technologies and regulation increases hence putting more strain on banks' IT systems. He also noted that banks IT system failure is not an easy problem to fix, since they have to deal with new information that is being updated every time as clients use ATMs, internet banking or spending money online among others which is why it may take long to fix. To make matters more complex, new functions are usually programmed in different programming languages, on different computers, by different teams to hinder a specific person/team from ever fully comprehending the whole structure of a system. That is why if the system fails it may require several hours to resolve the problem as teams struggle to identify where the trouble is located.

4.6.3 Cost of Business Disruptions and Utility Outages Experienced by Commercial Bank

The respondents were required to indicate the business disruption and utility outage related costs that their banks had incurred for duration of six years. The results were as shown in Table 4.18:

Table 4.18: Cost of Business Disruption and Utility Outage Experienced by Banks

Cost of business disruption & utility outage	2011	2012	2013	2014	2015	2016
<10M	17(65.4%)	18(69.2%)	16(61.5%)	17(65.4%)	14(53.8%)	17(65.4%)
Sh11-20M	5(19.2%)	0(0.0%)	0(0.0%)	0(0.0%)	5(19.2%)	0(0.0%)
Sh21-30M	1(3.8%)	5(19.2%)	0(0.0%)	0(0.0%)	3(11.5%)	0(0.0%)
Sh31-40M	0(0.0%)	0(0.0%)	0(0.0%)	5(19.2%)	0(0.0%)	0(0.0%)
Sh41-50M	0(0.0%)	0(0.0%)	5(19.2%)	1(3.8%)	1(3.8%)	1(3.8%)
Sh51-60M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	5(19.2%)
Sh61-100M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
>than100M	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
NIL	3(11.5%)	3(11.5%)	5(19.2%)	3(11.5%)	3(11.5%)	3(11.5%)

From Table 4.18, in 2011 majority (65.4%) of the banks incurred cost of less than shillings 10M due to business disruption and utility outage, this was followed by cost between shillings11-20M in 19.2% of the banks, 11.5% of the banks experienced nil costs while 3.8% experienced costs between 21 and 30 million shillings. In 2012, majority (69.2%) of the banks experienced cost of less than 10 million shillings to business disruption and utility outage. This was followed by cost of between 21 and 30 million shillings in 19.2% of the banks and nil costs in 11.5% of the banks. In 2013, 61.5% experienced a cost of less than 10 million, 19.2% a cost of between 41 and 50 million as well as nil cost related to business disruption and utility outage. In 2014, majority (65.4%) of the banks experienced a cost of less than 10 million shillings due to business disruption and utility outage. This was followed by 19.2% of the banks which experienced costs amounting to between 31 and 40 million shillings, 11.5% nil cost and 3.8% of the banks which experienced

cost between 41 and 50 million shillings. For the year 2015, most (53.8%) experienced cost of less than 10 million shillings due to business disruption and utility outage. This was followed by banks which experienced a cost of between 11 and 20 million shillings (19.2%), a cost of between 21 and 30 million and nil cost (11.5%) then the ones which experienced a cost of between 41 and 50 million shillings (3.8%). In 2016, most (65.4%) of the banks incurred a cost of less than 10 million due to business disruption and utility outage. Next were banks which experienced a cost of between 51 and 60 million (19.2%), nil cost (11.5%) and between 41 and 50 million shillings (3.8%).

In general majority (53%) of the banks experienced a cost of less than 10 million due to business disruption and utility outage in the period 2011 to 2016; 65.4% in 2011, 69.2% in 2012 61.5% in 2013, 65.4% in 2014, 53.8% in 2015 and 65.4% in 2016.

4.7 Descriptive Results of Operational Risks Legal Liability

4.7.1 Causes of Operational Risks Legal Liability

The respondents were asked to state the extent to which they agreed with statements describing the causes of operational risk legal liability in their bank. The findings were as indicated in Table 4.19:

Table 4.19: Causes of Operational Risk Legal Liability

Operational risk legal liability in my bank is caused by:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Illegal operations in customer account	1(3.8%)	9(34.6%)	8(30.8%)	5(19.5%)	3(11.5%)
Illegal debt recovery and security enforcement	4(15.4%)	0%	10(38.5%)	10(38.5%)	2(7.7%)
Breach of mandate	11(42.3%)	0%	9(34.6%)	5(19.2%)	1(3.8%)
Negligence	16(61%)	0%	8(30.8%)	1(3.8%)	1(3.8%)

From Table 4.19, (38.4%) of the respondents agreed that illegal operations in customer's account causes operational risk legal liability in their bank, 30.8% disagreed while similar proportion was not sure. On the contrary, majority (46.2) of the respondents disagreed that illegal debt recovery and security enforcement causes operational risk legal liability in their banks, 15.4% agreed while 38.5% were not sure. On the other hand, majority (42.3%) agreed that breach of mandate causes operational legal liability, 23% disagreed while 34.6 were not sure. Lastly majority (61%) of the respondents agreed that negligence causes operational risk legal liability while 30.8% were not sure.

From Table 4.19, it can be concluded that the major causes of operational risk legal liability are; negligence (61%) and breach of mandate (42.3%).

4.7.2 Types of Operational Risks Legal Liability Costs

The respondents were asked to give their opinion on the extent to which they agreed with some statements describing the type of cost likely to be incurred by their banks in case of operational risk lawsuit. The responses were as shown in Table 4.20:

Table 4.20: Types of Operational Risks Legal Liability Costs

Operational risk lawsuits are likely to result to:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Lawyer's fees	12(46.2%)	13(50%)	1(3.8%)	0%	0%
Reputational damage	7(26.9%)	15(57.7%)	4(15.4%)	0%	0%
Deviation of management resources	6(23.1%)	12(46.2%)	8(30.8%)	0%	0%
Settlement fees	6(23.1%)	13(50%)	7(26.9%)	0%	0%
Increase in directors' liability insurance premium	7(26.9%)	1(3.8%)	13(50%)	5(19.2%)	0%

From Table 4.20, majority (96.2%) of the respondents agreed that operational risk law suits are likely to result to lawyers' fees, none disagreed while 3.8% were not sure. Likewise, majority (84.6%) of the respondents agreed that operational risk lawsuits are likely to result to reputational damage while 15.4% were not sure. In the same vein most (69.3%) of the respondents agreed that operational risks lawsuits are likely to result to deviation of management resources while 30.8% were undecided. Moreover, most (73.1%) respondents agreed that operational risk lawsuits are likely to result to settlement fees, although 26.9% were undecided. Lastly majority (50%) of the respondents were undecided on whether operational risk lawsuits are likely to result to increase in directors' liability insurance premiums, 30.7% agreed while 19.2% disagreed.

The results therefore imply that operational risk lawsuits will mainly result to; lawyers' fees (96.2%), reputational damage (84.6%), settlement fees (73.1%) and deviation of management resources (69.3%). These results agree with those of Yuan and Zhang (2014) that bank's legal liability can result to enormous lawsuits costs among them lawyers' fees.

4.7.3 Operational Risks Legal Liability Costs

The respondents were also required to state the average cost relating to operational risk law suits incurred by their banks in on typical year. The responses were as indicated in Table 4.21:

Table 4.21: Operational Risks Legal Liability Cost

operational risk legal liability cost	2011	2012	2013	2014	2015	2016
Nil	3(11.5%)	3(11.5%)	3(11.5%)	3(11.5%)	3(11.5%)	3(11.5%)
< Sh1M	10(38.5%)	8(30.8%)	8(30.8%)	11(42.3%)	9(34.6%)	10(38.5%)
Sh1-5M	6(23.1%)	2(7.7%)	7(26.9%)	7(26.9%)	7 26.9%)	4(15.4%)
Sh6-10M	6(23.1%)	9(34.6%)	6(23.1%)	4(15.4%)	4(15.4%)	5(19.2%)
Sh11-15		3(11.5%)			1(3.8%)	
Sh16-20			1(3.8%)			
>Sh20M					1(3.8%)	3(11.5%)

From Table 4.21, year 2011 had 38.5% of the respondents incurring less than sh1M attributable to operational risk legal liability cost, 23.1% incurred between sh1-5M and a similar percentage incurring between sh6-10M while 11.5% incurred none. In 2012, most (34.6%) respondents incurred between sh6-10M with 11.5% incurring between sh11-15m. In 2013, most (30.8%) of the respondents incurred less than sh1M, with 3.8% of the respondents incurring the highest cost of between sh16-20M. In 2014 majority (42.3%) of the respondents incurred less than sh1M while the highest cost incurred was between sh6-10M incurred by 15.4% of the respondents. In 2015 and 2016 most respondents, 34.6% and 38.5% respectively incurred less than sh1M. The general implication of these results is that in the period 2011 to 2016 most respondents incurred less than sh1M as operational risk legal liability cost apart for 2012 where majority (34.6%) incurred sh6-10M.

4.8 Descriptive Results of Employment Practices and Workplace Safety Non-compliance

4.8.1 Causes of Employment Practices and Workplace Safety Non-compliance

The respondents were asked to rate some statements describing the causes the employment practices and work place safety non-compliance in their bank. The responses were as shown in Table 4.22:

Table 4.22 Causes of Employment Practices and Workplace Safety Non-compliance Cost

Employment practices and workplace non-compliance in my bank arises from:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Employee discrimination (gender, tribe, health, e.t.c)	1(3.8%)	3(11.5%)	1(3.8%)	11(42.3%)	10(38.5%)
Violating workers compensation rules	1(3.8%)	8(30.8%)	4(15.4%)	7(26.9%)	6(23.1%)
Violating worker health & safety rules	1(3.8%)	9(34.6%)	0(0%)	10(38.5%)	6(23.1%)
General liability (slips/falls)	0(0%)	6(23.1%)	7(26.9%)	6(23.1%)	7(26.9%)
Wrongful termination	2(7.7%)	8(30.8%)	9(34.6%)	2(7.7%)	5(19.2%)
Management failure in compliance	3(11.5%)	4(15.4%)	5(19.2%)	10(38.5%)	4(15.4%)

From Table 4.22, majority (80.8%) of the respondents disagreed employment practices and workplace non-compliance in their banks is caused by employee gender/tribe/health discrimination while 15.3% agreed. Further majority (50%) also disagreed that violating workers' compensation rules occurs in their banks while 34.6% agreed. Likewise, most (61.6%) of the respondents disagreed that their banks violate workers' health and safety rules though 38.4% agreed. Similarly, majority (50%) of the respondents disagreed that general liabilities emanating from employees' slip/falls occurs in their banks thus causing workplace safety non-compliance, 23.1% agreed while 26.9% were not sure. On the contrary most (38.5%) of the respondents agreed that wrongful termination is experienced in their banks though 26.9% agreed whereas 34.6% were undecided. Lastly, majority of the respondents (53.9%) of the respondents disagreed that their banks experiences management failure in compliance while 26.9% disagreed. From these findings, it can thus be concluded that employment practices and workplace safety non-compliance is not a major risk among the respondents but some (38.5%) of the commercial banks are faced with wrongful termination and Violating worker health & safety rules operational risk.

4.8.2 Effects of Employment Practices and Workplace Safety Non-compliance

The respondents were required to rate some statements describing the effects of employment practices and workplace safety noncompliance in their banks. The responses were as shown in Table 4.23:

Table 4.23:Effects of Employment Practices and Workplace Safety Non-compliance Cost

Effect of Employment non-compliance	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
Fines and penalties	10(38.5%)	12(46.2%)	0%	4(15.4%)	0%
Cost of enhancing safe working environment	6(23.1%)	17(65.4%)	0%	3(11.5%	0%
Damages awarded to employees	8(30.8%)	13(50.0%)	5(19.2%)	0%	0%
Medical expenses	6(23.1%)	16(61.5%)	4(15.4%)	0%	0%
Lawyers' fees	12(46.2%)	9(34.6%)	3(11.5%)	2(7.7%)	0%
severance pay on excellent service	8(30.8%	9(34.6%)	7(26.9%)	2(7.7%)	0%

From Table 4.23, majority (84.7%) of the respondents agreed that failure to comply with employment practices and workplace safety in their banks can result to fines and penalties cost while 15.4% disagreed. Moreover, most (88.5%) of the respondents agreed that noncompliance with employment and workplace safety can result to increased cost of enhancing safe working environment. In addition, most (80.8%) of the respondents agreed that non-compliance will result to cost of damage awarded to their employees. Similarly, most (84.1%) of the respondents admitted that non-compliance will result to medical expenses costs of treating their injured employees. Further majority (80.8%) of the respondents agree that noncompliance will result to lawsuits hence lawyers' fees although 7.7% disagreed. Lastly most (65.4% of the respondents agreed that employment practices and workplace noncompliance in their banks will result to severance pay on excellent service.

From these findings it can be concluded that employment practices and workplace safety non-compliance in commercial banks in Kenya will mainly result to: increased cost of enhancing safe working environment (88.5%), fines and penalties cost (84.7%), medical expenses costs of treating their injured employees (84.1%), damage awarded to their employees (80.8%) and lawsuits hence lawyers' fees (80.8%).

4.8.3 Cost of Employment Practices and Workplace Safety Non-compliance

The respondents were asked to state the annual average cost their banks incurred as a result of non-compliance with employment practices and workplace safety. The findings were as shown in Table 4.24:

Table 4.24:Cost of Employment Practices and Workplace Safety Non-compliance

Cost of non-compliance	2011	2012	2013	2014	2015	2016
Nil	4(15.4%)	4(15.4%)	4(15.4%)	5(19.2%)	5(19.2%)	6(23.1%
< Sh1 M	11(42.3%)	11(42.3%)	11(42.3%)	10(38.5%)	11(42.3%)	8(30.8%)
Sh1-4M	9(34.6%)	6(23.1%)	0%	1(3.8%)	0%	0%
Sh5-8M	3(11.5%)	3(11.5%)	4(15.4%)	3(11.5%)	5(19.2%)	7(26.9%)
Sh9-12M	0%	0%	0%	5(19.2%)	0%	2(7.7%)
Sh13-16M	0%	0%	3(11.5%)	0%	0%	0%
Sh17-20M	2(7.7)	2(15.4%)	0%	1(3.8%)	3(11.5%)	2(7.7%)
Sh21-25M	0%	0%	0%	0%	0%	0%
> Sh25M	0%	0%	4(15.4%)	1(3.8%)	1(3.8%)	1(3.8%)

From Table 4.24 in the years 2011 and 2012 most (42.3%) incurred less than sh1Mcost relating to non-compliance with employment practices and workplace safety while 7.7% and 15.4% respectively incurred the highest cost ranging sh17-20M. In the year 2013 although most (42.3%) respondents incurred less than sh1M, the amount of the cost increase to more than sh25M with 15.4% of the respondents incurring it. In 2014 and 2015 there was slight improvement in compliance as respondents incurring zero cost increase from 15.4% to 19.2% and those incurring the highest cost of above sh25M dropped from15.4% to 3.8% for both years. During 2016 there was further improvement in compliance as those incurring nil cost increased slightly from 19.2% to 23.1%.

The results generally imply that after the implementation of Basel II in 2015, there has been slight improvement in compliance with employment practices and workplace safety. This has thus caused the operational risk emanating from employment practices and workplace safety noncompliance cost reduced slightly for most of the commercial banks in Kenya.

4.9 Descriptive Results on Financial Performance

4.9.1 Respondents' Profit before Tax

The profits before tax for all the respondents as obtained from annual reports of CBK were as shown in Table 4.25:

Table 4.25: Respondents' Profit before Tax

Year	Total PBT (ShM)	% Change in PBT	Average PBT (ShM)	Minimum (ShM)	Maximum (ShM)	Std. Deviation
2011	58812.34		2262.013	51.28	12103.51	3356.46
2012	69600.21	18.34	2676.931	-1533.79	16060.00	4354.92
2013	78647.00	13.00	3024.885	-1231.00	18233.00	4526.80
2014	86373.00	9.82	3322.038	-499.00	20112.00	5012.40
2015	75765.00	-12.28	2914.038	-1684.00	22388.00	5232.76
2016	94761.00	25.07	3644.654	-2889.00	22778.00	6085.20

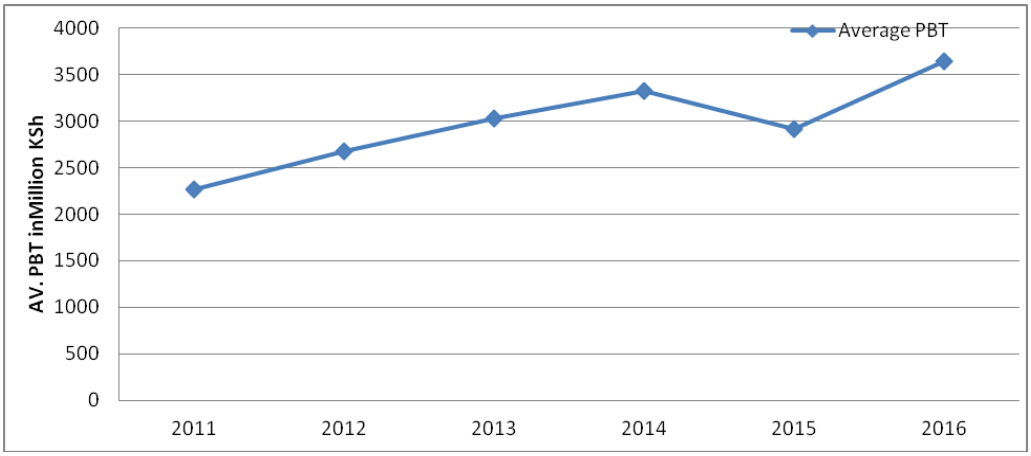

Figure 4.1: Average PBT (in Million Kenya shillings) from 2011 to 2016

From Table 4.25 and Figure 4.1, the respondents' average PBT for 2011 was Sh2262.0M with the minimum PBT being sh51.28M and a maximum of sh12103.5M. The average performance increased from sh2262.0M in December 2011 to sh2676.9M in December 2012 with some respondents incurring losses amounting to sh1533.79M while the highest profits were sh16060.0M. This showed

an overall improved performance in 2012 with total PBT increasing by 18.34% December 2011 to December 2012 as shown in Table 4.25. CBK attributes this improvement to growth in credit portfolio and investment in government securities.

Similarly, the respondents' performance improved further during the period ended December 2013, with pre-tax profits increasing by 13.0% during this year and recorded an average PBT of sh3024.89M with the highest PBT being sh18233.0M. This improvement in PBT is attributed to the growth in the credit portfolio, investment in government securities, commissions and earnings from foreign exchange trading, (CBK, 2013).

In the same vein the respondents' financial performance improved further in 2014 with the respondents' average PBT increasing to sh3322.04M from sh3024.89M the previous year. This represents a 9.82% increase in total PBT which CBK (2014) attributes to the growth in the credit portfolio, investment in government securities, commissions and earnings from foreign exchange trading. On the contrary, in 2015 there was a 12.28% decline in respondents' total PBT from sh86373.0M in December 2014 to sh75765.M in December 2015. This occurred due to faster growth in expenses (16.3%) compared to the growth in income (9.1%) attributed to lower growth pace in credit in 2015, which grew by 11.6% compared to 22.9% in 2014 (CBK, 2015). The lower growth in credit could be attributed to banks' low liquidity as they were required to raise their capital with 2.5% beyond the minimum regulatory core of 8% ratios to fully conform to Basel capital buffers with effect from 1st January 2015.

The respondents' Performance however improved in 2016 with total PBT increasing by 25.07% to shs94761M from shs75765M in December 2015. CBK attributes this increase in profitability to a higher growth associated with rise in interest on government securities triggered by respondents' increased investments in government securities. In addition, the improvement is also attributable to increase in interest income on advances in December 2016 from December 2015 occasioned by increased loans and advances in 2016 (CBK, 2016).

4.9.2 Respondents' Return on Assets

The respondents' return on asset performance records as extracted from CBK annual reports were as shown in Table 4.26 and Figure 4.27:

Table 4.26: Respondents' Returns on Asset

Year	Total (%ROA)	Minimum (% ROA)	Maximum (% ROA)	Mean (% ROA)	Std. Deviation
2011	87.269	0.45	7.18	3.3565	1.86965
2012	69.7996	-4.8	10.4	2.6846	3.15756
2013	80.1996	-3.3	7.7	3.0846	2.39361
2014	60.3096	-7.8	7.26	2.3196	3.17398
2015	56.5188	-4.53	6.56	2.1738	2.69328
2016	42.3306	-7.01	6	1.6281	3.3076

From the results in Table 4.26, in 2011, the lowest returns on asset (ROA) were 0.45% while the highest ROA were 7.18% with the average ROA for that year being 3.36%. In 2012, the lowest performance experienced by the respondents was a ROA of negative 4.8% which was a decline from that of 2011 while the highest ROA was 10.4% which was better than that of 2011. In 2013, the minimum performing respondent scored negative 3.3% ROA while the highest respondents' performance was 7.7%. There was improvement in average ROA performance with respondents' average ROA for 2013 being 3.08% which was better than 2012. In 2014, there was a decrease in the respondents' ROA performance as the mean dropped to 2.3% from 3.1 in the previous year. The least ROA performance was negative 7.8% while the highest respondents' ROA was 7.26% with the average RAO of 2.32% in 2014. In 2015, the least ROA was negative 4.53% while the highest was 6.56%. The average ROA declined to 2.17% in 2015 from 2.32% in 2014. Lastly in 2016, the lowest ROA was negative 7.01% while the highest 6.0% with the ROA 1.63% which was a fall from2.17% recorded in 2015. In conclusion, there was a general decrease in the average ROA in 2011 and 2012, followed by an

increase between in 2013 and thereafter there was a decrease in ROA 2014, 2015 and 2016.

4.9.3 Respondents' Return on Equity (ROE)

The respondents' return on equity as obtained from CBK annual reports were as shown in Table 4.27:

Table 4.27: Returns on Equity

Year	Total (%ROE)	Minimum (% ROE)	Maximum (% ROE)	Mean (%ROE)	Std. Deviation
2011	575.8506	5.35	41.11	22.1481	10.56858
2012	347.7994	-90.8	44	13.3769	30.89088
2013	489.099	-36.3	36.8	18.8115	16.54411
2014	400.1998	-39.9	49.4	15.3923	18.39887
2015	366.5402	-31.7	47.2	14.0977	17.06126
2016	279.0996	-53.3	43.5	10.7346	19.85814

From the results in Table 4.27, in 2011 the minimum ROE performance was 5.35% while the maximum was 41.11% with the average ROE of 22.15%. In 2012, the respondents' ROE performance decreased to negative 90.8% the lowest but the highest increased to 44.0% with the average dipping to13.38% from 22.15% in 2011. In 2013, although the least ROE improved from negative 90.8% the previous year to negative 36.3% the respondents' maximum ROE performance fell to 36.8% with the average ROE slightly increasingto18.81% compared to 13,38% in 2012. In 2014, the lowest ROE decreased to negative 39.9% but the Maximum ROE increased to 49.4%. The average ROE decreased further to15.39% in 2014 as compared to 18.8% in 2013. In 2015, the lowest ROE was negative 31.7% while the highest was 47.20% with the average ROE dipping further to 14.1% from 15.39% in 2014. Lastly in 2016, the least ROE was negative 53.3% while the highest was 43.5% with the average ROE dropping further to 10.73% from 14.1% in 2015.

Generally, similar to returns on assets, there was a decrease in the average returns on equity in 2011 and 2012, an increase 2013 followed by a decrease in 2014, 2015 and 2016. Nonetheless, returns on equity were generally higher than returns on assets. Figure 4.2 represents a comparative graph of ROA and ROE.

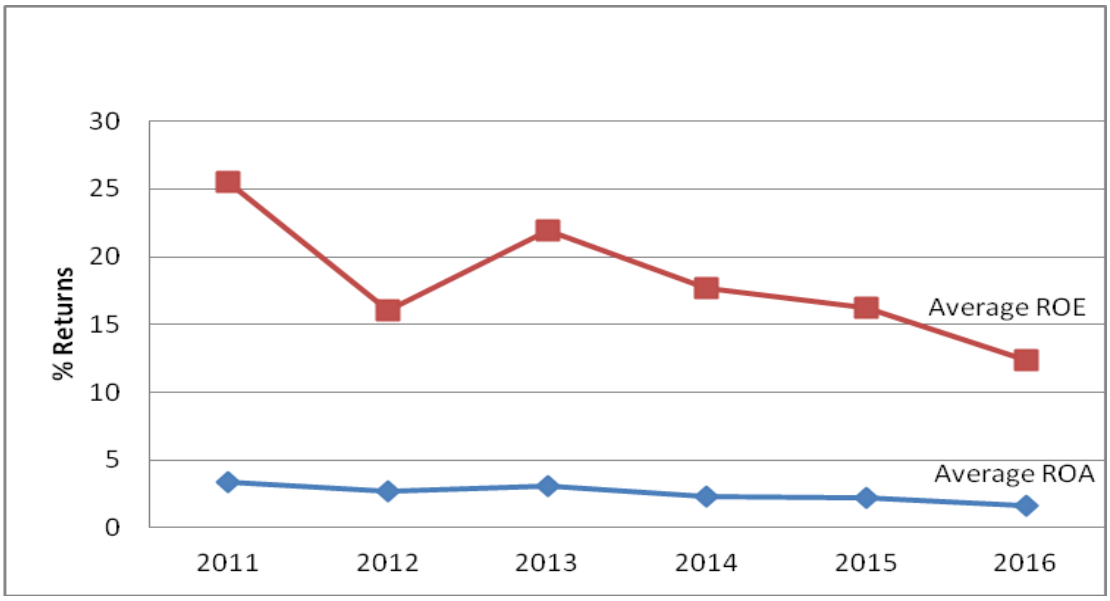

Figure 4.2: ROA and ROE Compared

4.10. Requisite Tests

4.10.1 Sampling Adequacy Results on Fraud Costs

Bartlett's test was used to test for patterned relationship between variables. The null hypothesis tested is that the correlation matrix is an identity matrix, which states that there is no correlation among the variables. From Table 4.28, the Bartlett's test has a significant value of 0.000 which is less than 0.005. The null hypothesis is thus rejected and the researcher concludes that there are patterned relationships among the variables.

Kaiser-Meyer-Olkin (KMO) was used as a measure for sampling adequacy to determine whether each of the independent variable was suitable for factor analysis. KMO values greater than 0.5 indicates that the sample is adequate for factor analysis to be applicable. The results of KMO and Bartlett's tests were as shown in Table 4.28:

Table 4.28: KMO and Bartlett's Test for the Independent Variables

Independent Variable	Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	Df	Sig.
Fraud cost	.879	81.678	15	.000
Regulatory Non-compliance Costs	.790	232.857	15	.000
Business disruptions costs	.894	249.851	15	.000
Operational risk law suit	.882	162.839	15	.000
Employment practices Non-compliance cost	.892	150.988	15	.000

From Table 4.28 results, the KMO value for fraud cost was 0.879>0.5, for regulatory non-compliance cost was 0.790>0.5, for business disruptions and utility outage costs was 0.894>0.5, for cost of operational risk law suit was 0.882>0.5, and 0.892>0.5 for employment practices non-compliance cost, hence the data for all the five independent variables was sufficient for application of factor analysis.

4.10.2 Component Matrix Results for the Five Independent Variables Costs

The component matrix results for fraud costs, regulatory non-compliance cost, business disruption & utility outage cost, operational risk legal liability cost and employment practices & workplace safety non-compliance costs were as shown in Table 4.29. For each independent variable, the costs in various years were grouped into one factor and their factor loadings on the first principal component were as shown in Table 4.29:

Table 4.29: Component Matrix for Independent Variables' Costs

Year	Component 1					
Independent variable cost	2011	2012	2013	2014	2015	2016
Fraud costs	.802	.911	.831	.888	.661	.805
Regulatory non-compliance cost	.971	.969	.971	.782	.813	.722
Business disruption and utility outage cost	.940	.960	.861	.978	.975	.900
Operational risk legal liability cost	.949	.965	.934	.937	.766	.839
Employment practices and workplace safety non-compliance	.924	.862	.904	.944	.907	.892

All the costs relating to fraud in 2011 to 2016 were grouped into one factor and their factor loadings on the first principal component were shown in Table 4.29. From Table 4.29, fraud costs in 2012 had the highest factor loading on the first factor with 91.1%, followed by fraud costs in 2014 with 88.8% factor loading then by 2013 with 83.1%, 2016 with 80.5%, 2011 with 80.2% and finally fraud costs in 2015 with a factor loading of 66.1%. Thus, a fraud cost in 2012 explains most of the variation in the first principal component and it can therefore be called the first factor.

Similarly, all the costs relating to regulatory non-compliance in 2011 to 2016 were grouped into one factor and their factor loadings on the first principal component. Table 4.29, regulatory non-compliance costs in 2011 and 2013 had the highest factor loadings on the first factor with 97.1%, followed by regulatory non-compliance costs in 2012 with 96.9%, then by 2015 with 81.3%, 2014 with 78.2% and finally regulatory non-compliance costs in 2016 was the least with a factor loading of 72.2%. Therefore, regulatory non-compliance cost in 2011 and 2013 explains most of the variation in the first principal component and thus either of them can represent the first factor.

In addition, all the costs relating to business disruption and utility outages in 2011 to 2016 were grouped into one factor and their factor loadings on the first principal component were shown in Table 4.29. From Table 4.29 business disruption and utility outage costs in 2014 had the highest factor loading on the first factor or principal component with 97.8%, followed by business disruption costs in 2015 with 97.5% factor loading, then by 2012 with 96%, 2011 with 94%, 2016 with 90% and finally 2013 with a factor loading of 86.1%. Therefore, business disruption and utility outage cost in 2014 explains most of the variation in the first principal component and so it can represent the first factor.

Further, all the costs relating to operational risk legal liability cost in 2011 to 2016 were grouped into one factor and their factor loadings on the first principal component were shown in Table 4.29. From Table 4.29, the operational risk law suits cost in 2012 had the highest factor loading on the first factor/factor/principal

component with 96.5%, followed by 2011 with 94.9% factor loading, then by 2014 with 93.7%, 2013 with 93.4%, 2016 with 83.9% and finally operational risk law suits costs in 2015 with a factor loading of 76.6%. Therefore, operational risk legal liability cost in 2012 explains most of the variation in the first principal component and hence it can represent the first factor. Lastly, all the costs relating employment practices and workplace safety non-compliance in 2011 to 2016 were grouped into one factor and their factor loadings on the first principal component were as shown in Table 4.29. The results indicate that employment practices and workplace safety non-compliance cost in 2014 had the highest factor loading on the first principal component with 94.4%, followed by non-compliance costs in 2011 with 92.4% factor loading, then by 2015 with 90.7%, 2013 with 90.4%, 2016 with 89.2% and finally 2012 with a factor loading of 86.2%. Thus, employment practices and workplace safety non-compliance cost in 2014 explains most of the variation in the first principal component and hence it can represent the first factor.

4.10.3 Factor Analysis

Factor analysis was used to lower the number of variables from huge to small, to assess the inherent dimension between measure variables and constructs and produce construct validity evidence.

Factor Analysis Results on Fraud Cost

Factor analysis as a dimension reduction technique was conducted in order to group the common factors and retain the smallest number of factors that had the highest influence in terms of the total variance explained. Factor analysis was conducted using Principal Component method approach. The extraction of the factors followed the Kaiser Criterion where an Eigen value of 1 or more indicates a unique factor. The total variance for fraud cost as presented in Table 4.30 shows that the Eigen-value corresponding to the first principal component is 4.035 hence more than 1 and the total variance is 67.26%, thus the factors in the first principal component were considered for analysis purposes.

Table 4.30: Total Variance for Fraud cost Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	4.035	67.258	67.258	4.035	67.258	67.258
2	.643	10.712	77.970			
3	.556	9.269	87.238			
4	.330	5.496	92.735			
5	.274	4.570	97.304			
6	.162	2.696	100.000			

Factor Analysis Results on Regulatory Non-compliance Costs

The total variance for results on regulatory non-compliance costs is presented in Table 4.31:

Table 4.31: Total Variance for Regulatory Non-compliance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	4.618	76.972	76.972	4.618	76.972	76.972
2	.873	14.553	91.525			
3	.256	4.261	95.786			
4	.227	3.778	99.565			
5	.020	.340	99.904			
6	.006	.096	100.000			

From Table 4.31 results, the Eigen-value corresponding to the first principal component is 4.618 which is more than 1 and it explains total variance of 76.97%, thus the researcher considers the factors in the first principal component for analysis purposes.

Factor Analysis Results on Business Disruption and Utility Outage Costs

From the results in Table 4.32, the Eigen-value corresponding to the first principal component is 5.264 which is more than the cut-off value of 1 and the total variance it explains is 87.73%, thus the first factor is considered for analysis purposes.

Table 4.32:Total Variance for Business Disruption and Utility outage Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.264	87.726	87.726	5.264	87.726	87.726
2	.478	7.963	95.689			
3	.154	2.573	98.262			
4	.052	.872	99.134			
5	.033	.549	99.683			
6	.019	.317	100.000			

Factor Analysis Results on Cost of Operational Risk Legal Liability Cost

From Table 4.33, the Eigen-value corresponding to the first principal component is 4.872 which is more than the cut-off value of 1 and the total variance it explains is 81.21%, thus the first factor is considered for analysis purposes.

Table 4.33: Total Variance for Operational Risk Legal Liability Cost Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.872	81.206	81.206	4.872	81.206	81.206
2	.486	8.092	89.298			
3	.401	6.687	95.985			
4	.102	1.694	97.679			
5	.081	1.345	99.024			
6	.059	.976	100.000			

Factor Analysis Results on Employment Practices and work-place Safety Non-compliance Cost

From the results in Table 4.34, the Eigen-value corresponding to the first principal component is 4.925 which is more than the cut-off value of 1 and the total variance it explains is 82.08%, thus the first factor is considered for analysis purposes.

Table 4.34: Total Variance for Employment Practices and Work-Place Safety Non-compliance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.925	82.080	82.080	4.925	82.080	82.080
2	.394	6.559	88.639			
3	.258	4.297	92.936			
4	.220	3.659	96.595			
5	.122	2.034	98.630			
6	.082	1.370	100.000			

4.11 Panel Regression Diagnostic Tests (Mixed Effect Modelling) of Financial Performance

Preliminary analysis was carried out before using panel regression to analyse the data in order to test whether the model assumptions were met.

4.11.1 Test for Linearity for Profit before Tax

Linearity assumption was tested using residual plots. The results were as shown in figure 4.3:

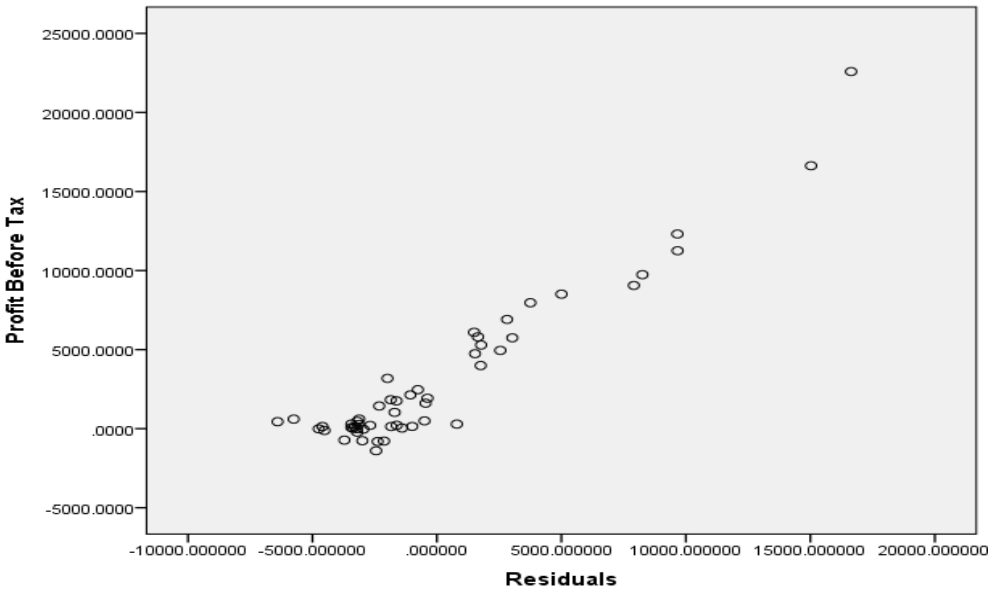

Figure 4.3: Linearity Test for Residuals of Profit Before Tax

The results in figure 4.3 shows a random pattern, an indication that the residuals of profit before tax met linearity assumption as required.

4.11.2 Test for Normality Testing for Profit before Tax

Normality was tested using a normal Q-Q plot of residuals to test whether there were serious outliers from the normal line in the QQ plot. The findings were as shown in figure 4.4:

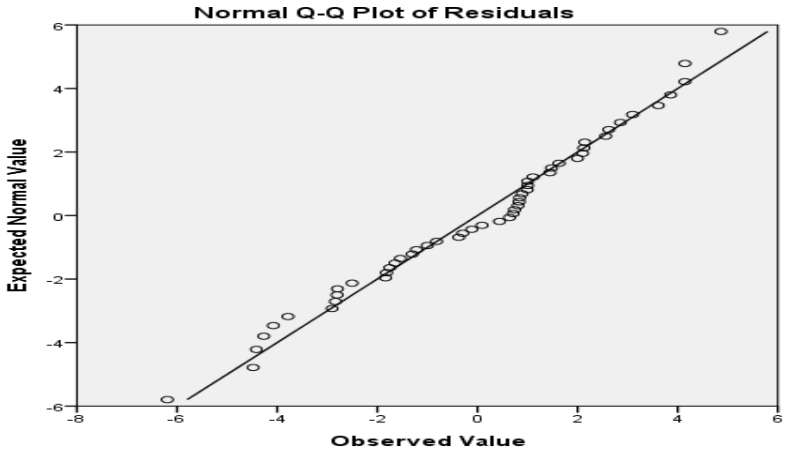

Figure 4.4: Normality Test for Residuals of Profit before Tax

From figure 4.4, it was evident that there are no serious outliers from the normal line in the QQ plot hence the residuals of profit before tax were normally distributed with mean and variance.

4.11.3 Test for Homogeneity of Variance for Profit before Tax

ANOVA was used to test whether the residuals of profit before tax had equal variances. The results were as shown in Table 4.35:

Table 4.35: ANOVA for Residuals of Profit before Tax

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	1	.000	.000	1.000
Within Groups	1216298281.403	50	24325965.628		
Total	1216298281.403	51			

The p value for the residuals between groups was 1.00 which is greater than 0.05 hence it was concluded that the residuals had equal variance.

4.11.4 Test for Linearity for Returns on Assets

A plot to test for linearity in the residuals of the returns on assets was conducted using scatter plot of residuals. The results were as shown in figure 4.5:

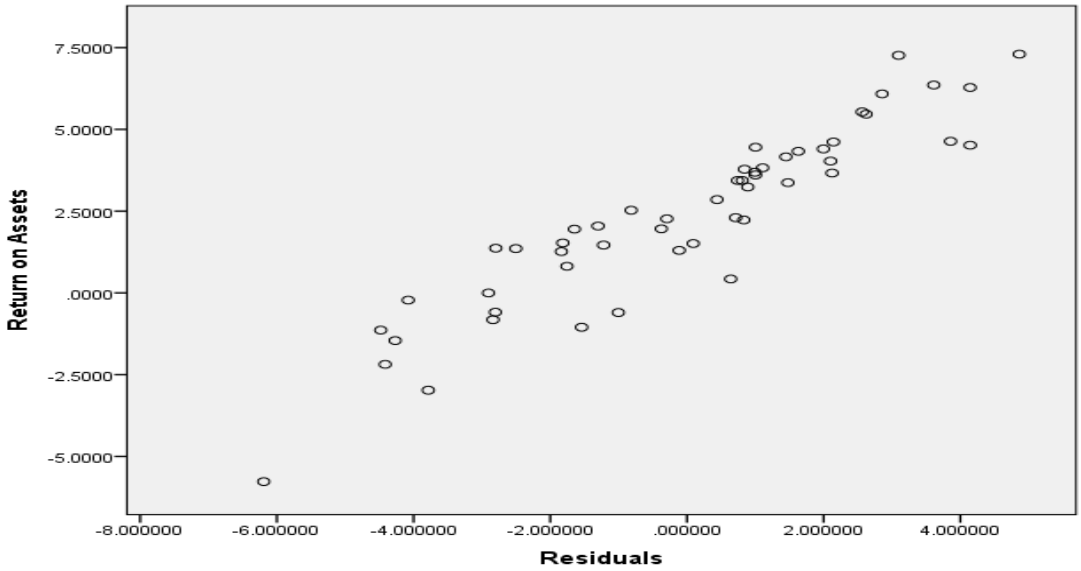

Figure 4.5: Linearity Test for Residuals of Returns on Assets

The results in figure 4.5 showed that the points were randomly distributed in a linear manner hence the assumption of linearity was met.

4.11.5 Normality Test for Return on Assets

Normality was tested using a normal Q-Q plot of residuals to test whether there were serious outliers from the normal line in the QQ plot. The findings were as shown in figure 4.6:

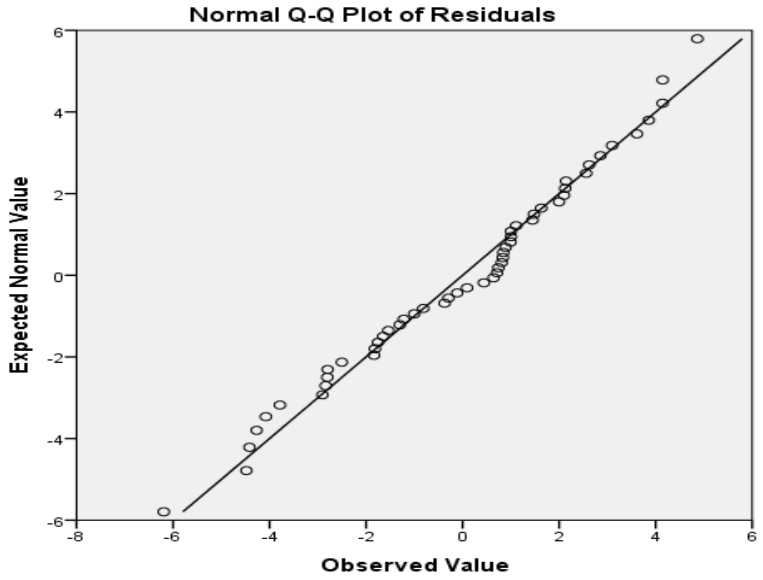

Figure 4.6: Normality Test for Residuals of Returns on Assets

From figure 4.6, the results confirmed that the normality assumption in the residuals of returns on assets was met. This is because the points cluster around the normal line in the QQ plot.

4.11.6 Test for Homogeneity of Variance for Return on Assets

ANOVA was used to check whether the residuals of return on assets had equal variances. The results were as shown in Table 4.36:

Table 4.36: ANOVA for Residuals of Returns on Assets

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	1	.000	.000	1.000
Within Groups	335.770	50	6.715		
Total	335.770	51			

From Table 4.36, the ANOVA results shows that the p value for the residuals between groups was 1.00 which is greater than 0.05 hence it was concluded that the residuals had equal variance.

4.11.7 Test for Linearity for Returns on Equity

A plot to check for linearity in the residuals of the returns on equity was plotted using residual plots. The results were as shown in figure 4.7:

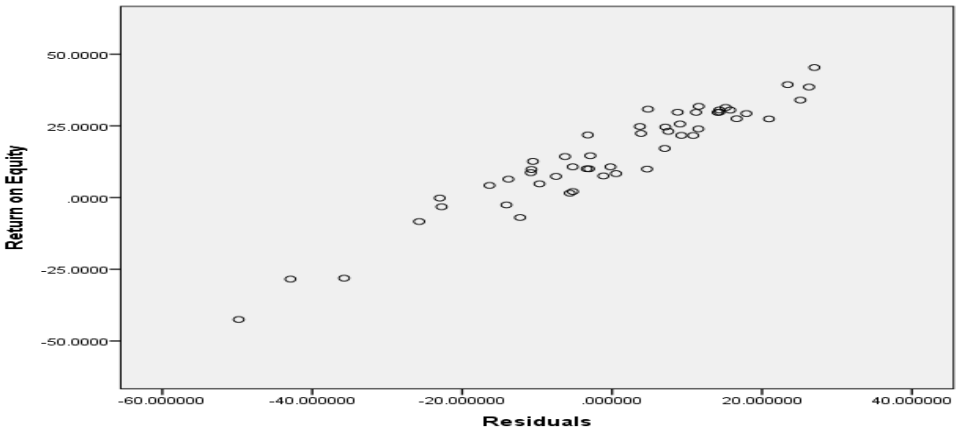

Figure 4.7: Linearity Test for Residuals of Returns on Equity

The results in figure 4.7 showed that the points were randomly distributed in a linear manner hence the assumption of linearity was met.

4.11.8 Normality Testing for Return on Equity

Normality was tested using a normal Q-Q plot of residuals to test whether there were serious outliers from the normal line in the QQ plot. The findings were as shown in figure 4.8:

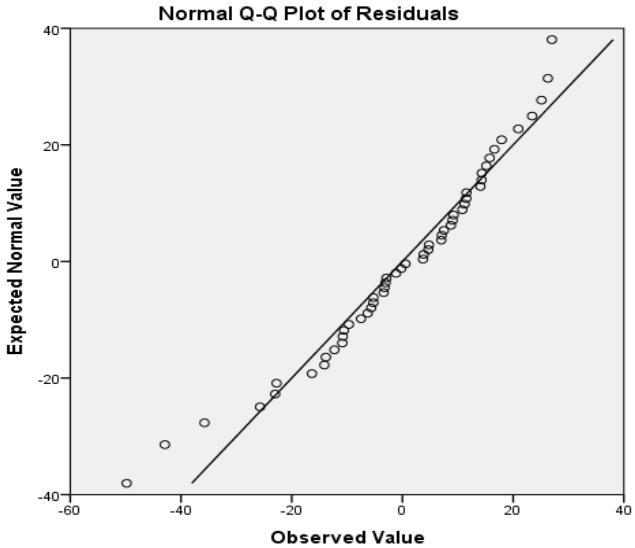

Figure 4.8: Normality Test for Residuals of Returns on Assets

From figure 4.8, it is evident that there are no serious deviations from the normal line in the QQ plot hence the residuals of returns on assets were normally distributed as required in panel regression analysis.

4.11.9 Test for Homogeneity of Variance for Return on Asset

ANOVA was used to check whether the residuals of returns on equity had equal variances. The results were as shown in Table 4.37:

Table 4.37: ANOVA for Residuals of Returns on Equity

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.000	1	.000	.000	1.000
Within Groups	14479.063	50	289.581		
Total	14479.063	51			

From Table 4.37, the p value for the residuals between groups was 1.00 which is greater than 0.05 hence it was concluded that the residuals of returns on equity had equal variance as required in linear mixed models.4.12 Inferential Analysis

4.12.1 Correlation Analysis Results of the Variables

Correlation analysis was conducted to measure the degree of relationship between variables. A correlation coefficient of -1 indicates a strong negative correlation

while +1 indicates a strong positive correlation. Pearson's correlation coefficient was thus used to measure the degree of relationship between the financial performance and financial fraud cost, regulatory non-compliance cost, business disruption & utility outage cost, operational risk legal liability cost and employment practices & workplace safety non-compliance cost. Using the criterion that a p-value less than the 0.05 level of significance shows presence of a significance relation, the correlation results were as shown in Table 4.38 as follows:

Table 4.38: Correlation Results between Variables

		FP	FFC	RNC	BDU	OLL	EWN
FP	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	26					
FFC	Pearson Correlation	-.168*	1				
	Sig. (2-tailed)	.041					
	N	26	156				
RNC	Pearson Correlation	-.062	-.026	1			
	Sig. (2-tailed)	.764	.749				
	N	26	156	156			
BDU	Pearson Correlation	-.043	.031	.183*	1		
	Sig. (2-tailed)	.836	.703	.022			
	N	26	156	156	156		
OLL	Pearson Correlation	-.011	-.016	.228**	.709**	1	
	Sig. (2-tailed)	.956	.843	.004	.000		
	N	26	156	156	156	156	
EWN	Pearson Correlation	-.082	.102	.463**	.401**	.456**	1
	Sig. (2-tailed)	.689	.205	.000	.000	.000	
	N	26	156	156	156	156	156

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

FP- Financial Performance**, FFC**- Financial fraud cost, **RNC**- regulatory non-compliance cost, **BDU**- business disruption & utility outage cost, **OLL**- operational risk legal liability cost, **EWN**- employment practices & workplace safety non-compliance costs.

From Table 4.38 results, it was established that there is a significant negative relationship between financial performance and financial fraud cost as indicated by the correlation coefficient of -0.168 and a p value 0.041<0.05. This implies that an increase in fraud related costs results to a decrease in financial performance of commercial banks and vice versa. Consequently, the researcher rejected the null hypothesis;

$H0_1$: Financial fraud does not have significant effect on the financial performance of commercial banks in Kenya, and therefore concludes that financial fraud has a significant effect on the financial performance of commercial banks in Kenya.

Table 4.38 further indicates that regulatory non-compliance cost has correlation coefficient of -.062, implying that an increase in regulatory non-compliance cost leads to a decrease in financial performance of commercial banks. The p value (0.764>0.05) however indicates that the effect of costs related to regulatory non-compliance on financial performance is insignificant. Thus, the researcher fails to reject the null hypothesis;

$H0_2$: Regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya, and conclude that regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

Likewise, Table 4.38 established that financial performance and business disruption & utility outage cost had a negative relationship as inferred from the correlation coefficient of -.043. This means that as business disruption & utility outage cost increases, there is a decrease in financial performance of commercial banks. Since the associated p value (0.836) is greater than 0.05, the researcher similarly fails to reject the null hypothesis;

$H0_3$: Business disruptions and utility outage costs do not have significant effect on financial performance of commercial banks in Kenya.

In addition, Table 4.38 also shows that financial performance and operational risk legal liability cost have a negative relationship as indicated by the correlation coefficient of -.011. This means that an increase in operational risk legal liability cost results to a decrease in financial performance and vice versa. The obtained p value of 0.956>0.05 inferring that there is no enough evidence to reject the null hypothesis;

$H0_4$: Operational risks legal liability costs do not have significant effect on the financial performance of commercial banks in Kenya.

Likewise, the findings Table 4.38 also depicts that employment practices & workplace safety non-compliance cost have a negative relationship as evidenced by -.082 correlation coefficient. This means that financial performance decreases with increase in employment practices & workplace safety non-compliance costs and vice versa. Consequently, the resulting p value of 0.689<0.05 infers that there is no enough evidence to reject the null hypothesis;

$H0_5$: Employment Practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

The results from Table 4.38 shows that there is a weak negative correlation between fraud related costs and regulatory non-compliance costs (r=-0.026). However, this relationship is statistically insignificant at 5% level of significance (p=0.749). Further, there is insignificant weak positive relationship between fraud related cost and business disruption & utility outage cost (r=0.031, p=0.703). Likewise, fraud related cost has insignificant negative correlation with operational risk law suit cost (r=-0.016, p=0.843). But there is insignificant positive relationship between fraud related cost and costs related to non-compliance with employment practices & work place safety (r=0.102, p=0.205).

Regulatory non-compliance costs have a significant positive relationship with business disruption & utility outage cost (r=0.183, p=0.022). There is a significant positive correlation between regulatory non-compliance cost and operational risk legal liability costs (r=0.228, p=0.004). There is a moderate positive correlation between regulatory non-compliance cost and costs related to non-compliance with employment practices & workplace safety (r=0.463, p=0.000).

Business disruption and utility outage costs have a significant, strong and positive correlation with operational risk legal liability costs (r=0.709, p=0.000). There is a significant, moderate and positive relationship between business disruption and utility outage cost and non-compliance with employment practices and work place safety related costs (r=0.401, p=0.000). Costs related to non-compliance with employment practices and work place safety have a significant, moderate and positive relationship with operational risk law suits costs (r=0.456, p=0.000).

The correlation coefficient value (r) from 0.10 to 0.29 is deemed weak, from 0.30 to 0.49 is said to be medium while from 0.50 to 1.0 is termed strong. Correlation coefficient should not go beyond 0.8 to avoid multicollinearity (Zaid, 2015). No multicollinearity was found in this study because the highest correlation coefficient was 0.709 existing between Business disruption & utility outages and operational legal liability cost.

4.12.2 Panel Regression Analysis

Type III Tests of Mixed Effects on Profit Before Tax

Table 4.39: Type III Tests of Mixed Effects on Profit Before Tax

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	46.870	18.281	.000
TIME	1	26.229	10.117	.004
Fraud Related Cost	1	28.653	12.900	.001
Regulatory Non-Compliance Cost	1	33.379	.140	.711
Business Disruption & utility outage	1	34.384	2.923	.096
Operational Risk legal liability Cost	1	26.780	2.516	.124
Workplace safety Non-Comp. Cost	1	28.987	.173	.681
TIME * Fraud Related Cost	1	26.110	10.767	.003
TIME * Regulatory Non-Comp. Cost	1	25.529	.748	.395
TIME * Business Disruption Cost	1	27.368	1.168	.289
TIME*Operational Risk legal liability	1	27.322	.949	.338
TIME*Workplace safety Non-Compliance Cost	1	25.966	1.176	.288

a. Dependent Variable: Profit Before Tax

From Table 4.39 and Table 4.40, it is evident that time, fraud related cost and the interaction between time and fraud related cost had a significant negative effect on profit before tax in the linear mixed effect model as indicated by a p value of 0.001<0.05 and an estimate of -551.069 respectively.

Table 4.40: Estimates of Mixed Effects in Profit Before Tax Modelling

Parameter	Estimate	Std. Error	T	Sig.
Intercept	6107.437	1381.641	4.420	.000
[TIME=1(Before implementation of Basel II]	-2100.508	660.382	-3.181	.004
Fraud Related Cost	-551.069	124.622	-4.422	.000
Regulatory Non-Compliance Cost	-80.219	135.786	-.591	.559
Business Disruption Cost	-202.753	172.976	-1.172	.250
Legal liability Cost	134.752	192.352	.701	.490
Workplace safety Non-Compliance Cost	7.290	92.808	.079	.938
[TIME=1] * Fraud Related Cost	330.455	100.710	3.281	.003
[TIME=1] * Regulatory Non-Compliance Cost	71.069	82.179	.865	.395
[TIME=1] * Business Disruption Cost	-147.176	136.201	-1.081	.289
[TIME=1] * Operational Risk Cost	180.782	185.546	.974	.338
[TIME=1]*Workplace safety Non-Compliance Cost	-83.612	77.088	-1.085	.288

From the results in the Table 4.40, the average profit before tax after implementation of Basel II operational risk management was Ksh6107M. The profit before tax was Ksh2100M lower before than after the implementation of Basel II operational risk management an implication that the profit before tax is expected to increase by Ksh2100M per year for the periods after the implementation of Basel II operational risk management. A unit increase in fraud related cost would decrease the profit before tax (after the implementation of Basel II operational risk management) by about Ksh551M. There was a significant interaction effect (p value=0.003<0.05) between fraud and time before the implementation of Basel II operational risk management. Profit before tax decreased by Ksh1770M i.e. (-2100+330) per year per unit increase in fraud related costs for the periods before the implementation of Basel II operational risk management. There was no enough evidence to conclude that regulatory non-compliance cost, business disruption cost, operational risk legal liability cost, workplace safety non-compliance cost and their interaction with time had significant effect on profit before tax since their p values were greater than 0.05.

With respect to the significance values given in Table 4.40, the optimal mixed effects model for profit before tax can be expressed mathematically as:

$$profit\ before\ tax = 6107.44 - 2100.51*[TIME = 1] - 551.07*\ fraud\ related\ \text{cost} + 330.46*([TIME = 1]*\ fraud\ related\ \text{cost}) \quad (3.4)$$

Type III Tests of Mixed Effects on Returns on Assets

Table 4.41: Type III Tests of Mixed Effects on Returns on Assets

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	51.149	31.983	.000
TIME	1	24.652	5.789	.024
Fraud Related Cost	1	30.918	15.713	.000
Regulatory Non-Compliance Cost	1	39.832	.086	.771
Business Disruption Cost	1	40.960	.732	.397
Operational Risk legal liability Cost	1	27.426	5.213	.030
Employment & Workplace safety Non-Compliance Cost	1	31.775	.365	.550
TIME * Fraud Related Cost	1	25.782	17.232	.000
TIME* Regulatory Non-Compliance Cost	1	24.899	5.721	.025
TIME * Business Disruption Cost	1	28.281	10.844	.003
TIME * Operational Risk Cost	1	27.614	8.464	.007
TIME*Workplace safety Non-Compliance Cost	1	25.254	.113	.739

a. Dependent Variable: Return on Assets

The results in Table 4.41 suggests that time, fraud related cost, regulatory non-compliance, business disruption related cost and operational risk legal liability cost, and the interaction between time and fraud related cost, regulatory non-compliance, business disruption related cost and operational risk legal lability cost had a significant effect on returns on assets in the linear mixed effect model (p values <0.05).

Table 4.42: Estimates of Mixed Effects in Returns on Assets Modeling

Parameter	Estimate	Std. Error	T	Sig.
Intercept	4.753	.869	5.473	.000
[TIME=1(Before implementation of Basel II]	-1.180	.491	-2.406	.024
Financial Fraud Related Cost	-.492	.094	-5.239	.000
Regulatory Non-Compliance Cost	-.050	.098	-.518	.608
Business Disruption & Utility outage Cost	-.278	.127	2.188	.036
Operational Risk Legal Liability Cost	-.461	.146	-3.168	.004
Employment practices & Workplace safety Non-Compliance Cost	-.028	.069	-.410	.685
[TIME=1] * Financial Fraud Related Cost	.329	.079	4.151	.000
[TIME=1] * Regulatory Non-Compliance Cost	.153	.064	2.392	.025
[TIME=1] * Business Disruption & utility cost	-.352	.107	-3.293	.003
[TIME=1] * Operational Risk legal liability Cost	.416	.143	2.909	.007
[TIME=1] * Employment practices & Workplace safety Non-Compliance Cost	-.021	.061	-.337	.739

a. Dependent Variable: Return on Assets.

From the results in Table 4.42, the average ROA after the implementation of Basel II operational risk management was 4.8%. The ROA decreased by approximately 1.2% per year for the periods after the implementation of Basel II operational risk management. A unit increase in fraud related cost would decrease the ROA (after the implementation of Basel II operational risk management) by 0.49%. A unit increase in business disruption cost would decrease the ROA by 0.28% while a unit increase in operational risk legal liability cost would decrease the ROA by 0.46% per year for the periods after the implementation of Basel II operational risk management. ROA decreased by 0.85% (-1.18+0.33) per year per unit increase in fraud related costs for the periods before the implementation of Basel II operational risk management. A unit increase in regulatory non-compliance related costs decreased the ROA by 1.03% (-1.18+0.15) per year for the periods before the implementation of Basel II operational risk management. ROA decreased by 1.53% (-1.18-0.35) per year per unit increase in business disruption related costs for the periods before the implementation of Basel II risk management operations. A unit increase in operational risk related costs decreased the ROA by 0.77% (-1.18+0.41) per year for the periods before the implementation of Basel II operational risk management. There was no enough evidence to conclude that regulatory non-

compliance cost, employment practices & workplace safety non-compliance cost and the interaction between time and regulatory non-compliance cost, employment practices & workplace safety non-compliance cost had significant effect on ROA since their p values were greater than 0.05. Thus, the optimal model for returns on assets (ROA) is:

$$\begin{aligned}
&Return\,on\ Assets = 4.75 - 1.18 * [TIME = 1] - 0.49 * Financial\,Fraud\ cost \\
&- 0.28 * Business\ disruption\ and\ utility\ outage\ cost \\
&- 0.46 * Operational\,legal\,liability\ l\ cost \\
&+ 0.33 * ([TIME = 1] * Fraud\ costs) \\
&- 0.35 * ([TIME = 1] * Business\ disruption\ and\,Utility\ outage\ cost \\
&+ 0.42 * ([TIME = 1] * Operational\,legal\,liability\ l\ cost \qquad 3.5
\end{aligned}$$

Type III Tests of Mixed Effects on Returns on Equity

Table 4.43: Type III Tests of Mixed Effects on Returns on Equity

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	51.123	11.618	.001
TIME	1	24.679	.000	.996
Fraud Related Cost	1	42.506	5.264	.027
Regulatory Non-Compliance Cost	1	51.647	.039	.843
Business Disruption Cost	1	50.952	.108	.744
Operational Risk Cost	1	34.835	.009	.925
Workplace safety Non-Compliance Cost	1	43.854	.036	.850
TIME * Fraud Related Cost	1	26.691	.014	.906
TIME * Regulatory Non-Compliance Cost	1	25.593	.096	.759
TIME * Business Disruption Cost	1	30.924	.156	.696
TIME * Operational Risk Cost	1	28.516	.046	.832
TIME *Workplace safety Non-Compliance Cost	1	26.018	1.760	.196

a. Dependent Variable: Return on Equity

From Table 4.43, it is evident fraud related costs had a significant effect on returns on equity in the mixed effects modelling of returns on equity (p value=0.027<0.05). Time, regulatory non-compliance costs, business disruption related costs, operational legal liability costs, workplace safety non-compliance cost and the interaction of such costs with time did not have a significant effect on returns on equity. These findings are in agreement with Deloitte (2015) that financial institutions are very effective in managing traditional operational risk types like regulatory compliance and legal risk but not very effective in in managing other operational risks like cyber security, data integrity and third party risks.

Table 4.44: Estimates of Mixed Effects in Returns on Equity Modelling

Source	Estimate	Std. Error	T	Sig.
Intercept	21.693	7.794	2.783	.008
[TIME=1(Before implementation of Basel II]	-.0262	5.636	-.005	.996
Fraud Related Cost	-2.015	1.017	-1.983	.050
Regulatory Non-Compliance Cost	-.292	.945	-.309	.759
Business Disruption Cost	.630	1.310	.481	.634
Operational Risk Cost	-.057	1.604	-.036	.972
Workplace safety Non-Compliance Cost	-.366	.716	-.511	.613
[TIME=1] * Fraud Related Cost	-.113	.950	-.119	.906
[TIME=1] * Regulatory Non-Compliance Cost	.241	.776	.310	.759
[TIME=1] * Business Disruption Cost	-.490	1.243	-.394	.696
[TIME=1] * Operational Risk Cost	.355	1.660	.214	.832
[TIME=1] * Workplace safety Non-Compliance Cost	.994	.749	1.327	.196

a. Dependent Variable: Return on Equity

The results in Table 4.44, depicts that the average return on equity after implementation of Basel II operational risk management was about 21.7%. The return on equity decreased by about 2.0 % per year per unit increase in fraud related costs for the periods after the implementation of Basel II operational risk management. Considering the significant estimates, the optimal model for returns on equity (ROE) is:

$$\text{Returns on Equity} = 21.69 - 2.02 * \textit{Fraud Related cost} \quad (3.6)$$

4.12.3 Paired T-Test for the Effect of Basel II Operational Risk Management on Financial Performance

Paired T-test was carried out to determine the effect of Basel II operational risk management on financial performance of commercial banks in Kenya. Financial performance was measured using profit before tax (PBT), returns on assets (ROA) and returns on equity (ROE). The Commercial banks' financial performance was measured before the implementation of Basel II operational risk regulation for the period between 2011 and 2013 and after the implementation of Basel II operational risk regulation for the period between 2014 and 2016. The motive was to determine the effect of regulatory implementation of Basel II operational risk management requirements on financial performance of commercial banks in Kenya. Paired t-test as a statistical procedure was used to determine whether the mean difference between two sets of observations, that is, before and after Basel II implementation, is zero. The findings were as shown in Table 4.45:

Table 4.45 Paired Samples Statistics

Financial Performance		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PBT Before	2821.4668	26	4269.37285	837.29290
	PBT After	3279.3462	26	5368.47541	1052.84465
Pair 2	ROA Before	2.8613	26	2.44171	.47886
	ROA After	1.9010	26	2.86930	.56272
Pair 3	ROE Before	17.4322	26	17.25300	3.38359
	ROE After	12.4162	26	17.77660	3.48628

The results in Table 4.45 shows that across all the 26 respondents, PBT increased between 457 and 458 million shillings, that is (3279.35-2821.47=457.88), on average after the implementation of Basel II operational risk management. Returns on Asset (ROA) dropped by 0.96% that is (1.901-2.861), on average after the implementation of Basel II operational risk management while returns on equity had an average drop of 5.01% that is, (12.42-17.43) after the implementation of Basel II operational risk management. The standard deviations for pre and post Basel II implementation measurements reveal that the commercial banks were more

variable with respect to ROE than ROA. These findings agree with Seuraj and Watson (2012) that there is sufficient evidence that Basel II regulations affect the financial performance of commercial banks though not always in appositive way.

Table 4.46: Paired Samples Correlations

Basel II Implementation		N	Correlation	Sig.
Pair 1	PBT before & after Basel II implementation	26	.964	.000
Pair 2	ROA before & after Basel II implementation	26	.916	.000
Pair 3	ROE before & after Basel II implementation	26	.853	.000

The results in Table 4.46 reveals that the Pearson correlation between PBT before and after the implementation of Basel II operational risk management was almost perfect positive (r=0.964) and statistically significant, (p=0.000). This implies that most commercial banks under study experienced an increased PBT and did so quite consistently after the implementation of Basel II operational risk management. These findings are in support of IMF (2005), third quantitative impact study that for many emerging and developing countries' banks' lending to emerging and developing markets will face higher capital charges for credit risk and operational risk which could result in higher borrowing costs and reduced capital flows to higher risk countries. This could mean that Basel II implementation resulted to higher borrowing costs (interest) which suddenly increased the banks interest on borrowed loans and consequently PBT.

The Pearson correlation between ROA before and after the implementation of Basel II operational risk management was strong, (r=0.916) and statistically significant, (p=0.000), an indication that most of the commercial banks under study experienced a drop in ROA after the implementation of Basel II operational risk management. The drop in ROA after Basel II implementation could be attributed to Basel II capital requirement that commercial banks build up their capital conservation buffer of 2.5% above the minimum regulatory core of 8% and total capital ratios of 12 %, which brought the core capital to 10.5%, that is (2.5+8.0) and total capital ratios to 14.5%, that is (2.5+12.0) beginning 1st January 2015 which must be maintained by

all banks at all times (CBK, 2013). This meant that there was a sudden increase in net asset of banks as they endeavoured to comply which lowered the ROA. These findings are in support of IMF (2005) that for many emerging and developing countries, the increased risk sensitivity in Basel II may lead to higher bank capital requirements for loans to these countries. Further, the Pearson correlation between ROE before and after the implementation of Basel II operational risk management showed presence of a strong, (r=0.853) and significant relationship (p=0.000), which means that most banks experienced a consistent drop in ROE after the implementation of Basel II operational risk management requirements.

Table 4.47: Paired Samples Test

Financial performance		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PBT Before – PBT After	-457.88	1689.497	331.338	-1140.28	224.523	-1.382	25	.179
Pair 2	ROA Before – ROA After	.96038	1.16830	.22912	.48850	1.43227	4.192	25	.000
Pair 3	ROE Before – ROE After	5.01606	9.50494	1.86407	1.17693	8.85519	2.691	25	.013

From Table 4.47, the average difference between PBT before and PBT after Basel II implementation was negative 457.88 million shillings which implies that PBT after the implementation of Basel II operational risk management was greater than PBT before. The confidence interval of the difference can be explained to mean that the researcher is 95% confident that the true mean difference in PBT would lie between -1140.28 and 224.52 million shillings in a repeated sample of 26 banks. The significance value of 0.179>0.05 implies that the increase in PBT after the implementation of Basel II operational risk management requirements cannot only be attributed to Basel II operational risk implementation but also due to chance or other factors not considered in this study. Further this p value leads to failure to reject the null hypothesis;

H_{06}: The true mean difference between PBT before and after the implementation of Basel II operational risk management is equal to zero.

The results further revealed that the average difference between ROA before and after the implementation of Basel II operational risk management was 0.96% implying a drop in ROA after Basel II implementation. The confidence interval implies that the researcher is 95% confident that the true average difference between ROA before and after the implementation of Basel II would lie between 0.4885% and 1.4322% in a repeated sample of 26 banks with the same attributes. Since the significance value for change in ROA (p= 0.000) is less than 0.05, the researcher can conclude that the average drop of 0.96% in ROA per bank was not due to chance but can be attributed to the implementation of Basel II operational risk management in the banks. Thus, the researcher rejects the null hypothesis;

H_{07}: The true mean difference between ROA before and after the implementation of Basel II operational risk management is equal to zero, and concludes that the true mean difference between ROA before and after the implementation of Basel II operational risk management is not equal to zero.

Moreover, the average difference between ROE before and after the implementation of Basel II operational risk management was 5.02% which implies a drop in ROE after the implementation of Basel II operational risk management. The 95% confidence interval in the differences can be interpreted to mean that the researcher is 95% confident that the true average difference between ROE before and after the implementation of Basel II operational risk management would lie between 1.1769% and 8.8552% in a repeated sample of 26 banks with the same attributes. The significance value for change in ROE (p= 0.013) is less than 0.05, thus the researcher can conclude that the average drop of about 5.02% in ROE per bank was not due to chance but can be attributed to the implementation of Basel II operational risk management in the respective banks. Therefore, the researcher rejects the null hypothesis;

H_{08}: The true mean difference between ROE before and after the implementation of Basel II operational risk management is equal to zero, and concludes that the true

mean difference between ROE before and after the implementation of Basel II operational risk management is indeed less than zero.

4.13 Test of Hypotheses

The following eight hypotheses were tested in this study:

$H0_1$: Financial fraud costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_2$: Regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_3$: Business disruptions and utility outage costs do not have significant effect on financial performance of commercial banks in Kenya.

$H0_4$: Operational risks legal liability costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_5$: Employment Practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.

$H0_6$: The true mean difference between profit before tax before and after the Basel II operational risk management implementation is equal to zero.

$H0_7$: The true mean difference between return on assets before and after the Basel II operational risk management implementation is equal to zero.

$H0_8$: The true mean difference between return on equity before and after the Basel II operational risk management implementation is equal to zero.

The study showed that out of the five independent variables; (financial fraud, regulatory non-compliance penalties, business disruption & utility outage, operational risk legal liability cost and employment practices & workplace safety non-compliance costs), only financial fraud was significant at 95% confidence level and hence significantly negatively affecting commercial bank's financial performance. The other four variables had negative but not significant effect. In addition, the test for paired t-test assumptions showed that the difference between PBT before and PBT after Basel II implementation was negative though not significant at 95% confident level, implying that the increase in PBT after the implementation of Basel II operational risk management cannot entirely be

attributed to Basel II operational risk implementation. The test for paired t-test assumptions further showed that the difference between ROA and ROE before and after the implementation of Basel II operational risk management was significant at 95% confident hence the average drop in ROA and ROE can be attributed to the of Basel II operational risk management implementation.

4.13.1 Summary of the Hypotheses Tested

The various decisions taken in relation to the eight hypotheses are as summarised in table 4.48:

Table 4.48: Decision of the Hypotheses Test

	Hypothesis	Decision Taken
H_{01}	Financial fraud costs do not have significant effect on the financial performance of commercial banks in Kenya.	Reject
H_{02}	Regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.	Failed to reject
H_{03}	Business disruptions and utility outage costs do not have significant effect on financial performance of commercial banks in Kenya.	Failed to reject
H_{04}	Operational risks legal liability costs do not have significant effect on the financial performance of commercial banks in Kenya.	Failed to reject
H_{05}	Employment Practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya.	Failed to reject
H_{06}	The true mean difference between profit before tax before and after the Basel II operational risk management implementation is equal to zero.	Failed to reject
H_{07}	The true mean difference between return on assets before and after the Basel II operational risk management implementation is equal to zero.	Reject
H_{08}	The true mean difference between ROEeturn on equity before and after the Basel II operational risk management implementation is equal to zero.	Reject

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study sought to establish the effects of Basel II operational risk management on financial performance of commercial banks in Kenya. Specifically, the study looked at financial fraud costs, regulatory non-compliance cost, business disruption and utility outage cost, operational risk legal liability cost and employment practices and workplace safety non-compliance costs. This chapter presents summary of major findings of the study, conclusions, relevant recommendations and suggested areas for further research.

5.2 Summary of Findings

This section summarizes the findings based on each specific objective as follows:

5.2.1 Effect of Financial Fraud on Financial Performance of Commercial Banks

The study observed that the major financial frauds among commercial banks in Kenya are; system hacking by external fraudsters that results to information and money loss, unauthorized activities in transactions intentionally not reported, theft/embezzlement/robbery, forgery, external theft/robbery, account take-over/impersonation as well as cheque kiting. Further the study established that the major causes of fraud in commercial banks were greed by staff, weak internal controls, urgent financial need and access to information and money. The effect of these financial frauds on financial performance of commercial banks was tested using Pearson correlation coefficient at 5% level of significance. The correlation results indicated that there is a significant negative relationship between financial fraud and financial performance. This means that an increase in financial fraud will result to a decrease in financial performance and vice versa. CBK (2016) annual report reported that increased use of ICT among commercial banks in Kenya has resulted to increased cases of ICT related frauds in the recent past. These findings

are consistent with Uchenna and Agbo (2013) findings in their study on impact of fraud and fraudulent practices on performance of banks in Nigeria which found that the amount of money lost due to fraud had a negative correlation with banks efficiency.

5.2.2 Effect of Regulatory Non-Compliance Costs on Financial Performance of Commercial Banks

The findings showed that the main types of regulatory non-compliance among commercial banks in Kenya are; exceeding clients' exposure limits and suitability/disclosure issues. The effect of regulatory non-compliance cost on financial performance as tested using the Pearson Correlation coefficient at 5% significance level showed a negative correlation and a significant value. The results hence revealed that regulatory non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya. This could be because CBK was still applying the Finance Acts that required monetary non-compliance penalties not to exceed sh5M. As a result, most of the banks incurred cost of less than sh0.5M regulatory non-compliance penalties throughout the study period of 2011 to 2016. The findings are in line with Ismaila and Damola (2018) study on regulatory non-compliance and performance of deposit banks in Nigeria that financial penalties imposed by regulators have no significant impact on the defaulters because the cost of penalties is below the benefits enjoyed from such non-compliance by defaulters. The findings are also in support of Demirguk-Kunt *et al.*, (2004, cited in Naceur & Omran 2011) study on Impact of bank regulation, market structure and national institutions on banks' interest margins and overhead costs, that found that bank regulation becomes insignificant when controlling for national indicators of economic freedom.

5.2.3 Effect of Business Disruption and Utility Outages on Financial Performance of Commercial Banks

The study findings established that the major causes of business disruptions and utility outages in commercial banks in Kenya are technical failure (88.5%) and planned maintenance and upgrading (57.7%). The effect of business disruption and

utility outage on financial performance of commercial banks in Kenya as tested using Pearson correlation coefficient at 5% significance level showed a negative correlation (r = - 0.043) and a significance value of p = 0.836. The study thus established that business disruptions and utility outages do not have significant effect on financial performance of commercial banks in Kenya, as explained by the associated p value (0.836) which is greater than 0.05. This can be explained by lack of major ICT acquisition or upgrade of existing core banking systems in Kenya's banking sector in 2016 as commercial banks continued to leverage on robust ICT platforms to provide robust banking services (CBK, 2017). From the findings, majority (53%) of the banks experienced a cost of less than sh10M due to business disruption and utility outage in the period 2011 to 2016.

5.2.4 Effect of Operational Risks Legal Liability Costs on Financial Performance of Commercial Banks

The study found out that the main types of operational risk legal liability costs among commercial banks in Kenya are lawyers' fees (96.2%), reputational damage (84.6%) and settlement fees (73.1%). Further the study established that the major causes of operational risk legal liability among commercial banks in Kenya were negligence (61%) and breach of mandate (42.3%). The effects of operational risk legal liability costs on financial performance as tested using the Pearson Correlation coefficient at 5% significance level showed a negative correlation (-0.011) and a significant value of p = 0.956. The findings revealed that operational risk legal liability costs do not have significant effect on the financial performance of commercial banks in Kenya as explained by the p value of 0.0956 > 0.05.

5.2.5 Effect of Employment Practices and Workplace Safety Non-compliance Costs on Financial Performance of Commercial Banks

The study found out that employment practices and workplace safety non-compliance risk is not a major operational risk in most commercial banks in Kenya. However, some respondents reported that wrongful termination (38.5%) was experienced sometimes in their operations. It was however notable that wrongful termination was not very often among the commercial banks. The findings also

established that employment practices and workplace safety non-compliance among commercial banks in Kenya will mainly result to: increased cost of enhancing safe working environment (88.5%), fines and penalties cost (84.7%), medical expenses costs of treating their injured employees (84.1%), damage awarded to their employees (80.8%) as well as lawsuits hence lawyers' fees (80.8%). The effect of employment practices and workplace safety non-compliance cost as tested using the Pearson correlation coefficient at 5% significance level showed a negative correlation (-0.082) and a significant value of $p = 0.689$. The results thus imply that employment practices and workplace safety non-compliance costs do not have significant effect on the financial performance of commercial banks in Kenya as explained by the p value of $0.689 > 0.05$.

5.2.6 Effect of Basel II Operational Risk Management on Financial Performance of Commercial Banks

The paired t-test results showed that there was an increase in profit before tax after implementation of Basel II operational risk management by approximately 457 million shillings. However, this change could not be only attributed to Basel II operational risk management but also due to chance as explained by the p value of $0.791 > 0.05$. The study also established that ROA significantly decreased by 0.96% after the implementation of Basel II operational risk management as explained by the p value of 0.000 which is less than 0.05. Similarly, ROE dropped by about 5.02% after the implementation of Basel II operational risk management. This drop was largely attributed to Basel II operational risk management implementation as evidenced by the p value of $0.013<0.05$.

5.3 Conclusions

From the five independent variables of Basel II operational risk management whose effect on commercial banks' financial performance was measured, only financial fraud had a significant negative effect on financial performance (PBT) while regulatory non-compliance cost, business disruption & utility outage cost, operational risk legal liability cost and employment practices & workplace safety non-compliance costs all had negative but not significant effect. Thus from the

study findings it can be concluded that significant increase in any of the five Basel II operational risk variables will cause decrease in financial performance (PBT) of commercial banks in Kenya and vice versa.

Further, from the five Basel II operational risk variables whose effect on commercial banks' financial performance was measured, only three (financial fraud, business disruption & utility outage cost, and operational risk legal liability cost) had a significant negative effect on financial performance (ROA) while regulatory non-compliance cost and employment practices & workplace safety non-compliance costs had negative but not significant effect on ROA of commercial banks in Kenya. Moreover, only financial fraud had a significant negative effect on ROE while the other four variables had no significant effect on ROE.

From the paired t-test research findings on effects of Basel II operational risk management on financial performance of commercial banks in Kenya, it was concluded that implementation of Basel II operational risk management regulatory requirements was beneficial to the commercial banks in Kenya because the average PBT increased after implementation of Basel II operational risk management. However, the test for significance indicated a higher significance than the study significance level pointing out that the increase in PBT after the implementation of Basel II operational risk management regulation cannot entirely be attributed to Basel II implementation but also to other factors not considered in this study. Implementation of Basel II operational risk management however required increase in capital reserve hence resulting to average drop in both ROA and ROE as reflected by paired t-test results. This drop in ROA and ROE was largely attributed to Basel II operational risk management as the significance test showed lower significance level than the study's significance level.

From the findings that financial fraud risk has a significant negative effect while the other four operational risk had no significant negative effect on financial performance of commercial banks in Kenya, it is eminent that implementation of Basel II operational risk management regulation has succeeded in managing some operational risk such as regulatory non-compliance risks, business disruption and

utility outage risks, operational risk lawsuit legal liability cost, employment practices and workplace safety non-compliance operational risks. However, Basel II operational risk management regulation has not succeeded in managing operational risks arising from external and internal fraud risks in Kenya. The findings further established that Basel II operational risk management is weakest in managing external frauds perpetrated through system hacking by external fraudsters as this was the leading type of fraud facing majority of commercial banks in Kenya. The findings also linked fraud effects to adverse consequences in commercial banks such as reduced profitability and increased operating expenses which further lowers ROA and ROE as well as reducing consumer confidence.

5.4 Recommendations

From the study findings, only financial fraud costs have significant negative effect on PBT of commercial banks while regulatory non-compliance cost, business disruption and utility outage cost, operational risk legal liability cost and employment practices and workplace safety non-compliance costs have no significant statistical effect on financial performance of commercial banks in Kenya. The researcher thus found it prudent to overlook the other research variables and only give recommendations inclined towards fraud operational risk management. The study findings further revealed that the dominant types of fraud risks facing commercial banks in Kenya are external fraud committed through banks' system hacking by external fraudsters leading to information and money loss commercial banks. This is so because the modern commercial banks have heavily embraced ICT in most of their operations. The increased replacement of manual procedures with ICT processes despite improving the commercial banks efficiency and cost effectiveness is however a blessing in disguise because it has resulted to increased ICT related frauds year after year. In this line, the study makes two forms of recommendations; managerial and policy/regulatory recommendations as follows:

5.4. 1 Managerial Recommendations

From the findings of this study that financial fraud costs have significant negative effect on financial performance of commercial and that external frauds committed through banks' system hacking by external fraudsters are the leading types of operational risks facing these commercial banks, the researcher thus recommends that commercial banks' management invests in enhanced ICT related fraud controls which should be entrenched in the commercial banks' ICT processes relating to mobile banking, computer banking and internet banking as this will reduce system hacking by external fraudsters hence reducing information and money loss. In addition, the commercial banks' management should invest in regular security information trainings for both old and new human resources to prevent fraud risks with great emphasis on ICT associated risks. Further, the study also revealed that internal fraud was the second major fraud risk committed in the form of unauthorized activities in transactions intentionally not reported, theft/embezzlement/robbery, forgery and external theft/robbery each. Further, the study disclosed that these frauds are mainly caused by greed by staff, weak internal controls, urgent financial need and access to information and money. Therefore, to manage internal fraud risk the study recommends that the commercial banks management should enhance their internal controls by adopting fraud monitoring tools such as FDR footprints, Fiserv fraud risk manager, Memento, Actimize, Intellinx among others (McKenna, 2016) in their operations to help capture transaction level information from the host system and track keystroke level activities from each employee that accesses the system. This will generate risk reports that can flag staffs that seem to be pilfering account details. In addition, the banks should conduct character check during interview to weed-out dishonest employees, put limitations over transactions, more than one signature for high value transactions, increased authorization procedures, and increased reconciliation of activities and accounts among other internal controls. As Kingsley, (2012) advices, an excellent internal control system should encourage effective trailing of transactions and ensuring that all activities are properly authorized, recorded, and reconciled.

5.4.2 Policy Recommendations

The study further recommends that the commercial banks' regulator (CBK), compels the commercial banks to implement ICT related fraud controls and to further carry out regular ICT related fraud risks audits to measure banks' level of compliance and the effectiveness of the adopted ICT fraud control technique in managing the external fraud risk. Further, the study found out that four of the Basel II operational risks measured (regulatory non-compliance cost, business disruption & utility outage cost, operational risk legal liability cost and employment practices & workplace safety non-compliance costs) have insignificant effect on financial performance of commercial banks in Kenya, which implies that Basel II implementation has managed to tame these operational risks. In addition, the findings from paired T-test also reported improved PBT for commercial banks after Basel II implementation. From these findings, this study therefore recommends that the commercial banks regulator (CBK) should not relent on full compliance with Basel II requirements and that the regulator should even upgrade to Basel III regulation to ensure that commercial banks in Kenya remains prudent in their operations.

5.5 Contribution of the Study to Knowledge

This study contributes immensely to literature in several ways. First the study is exceptional in terms of variables tested as it tested five of the Basel II operational risks and their effects on commercial banks financial performance in Kenya as opposed to former studies that only tested one operational risk at a time. As such this study despite studying the effect of fraud as mainly studied by most researchers did in addition study on the regulatory non-compliance cost, business disruption & utility outage cost, legal liability cost and employment practices & work place safety non-compliance cost. Studying five of the Basel II operational risk makes this study outstanding as it gives broader perspective to the existing literature on effects of Basel II operational risks on financial performance. The readers are thus able to assess the effect of several operational risks that were measured on the same respondents overtime as opposed to the existing scenario where different studies

measured different Basel II operational risks using discordant respondents at different times. This study is thus different from past studies by incorporating five types of banks' operational risks as opposed to other studies which mainly cover one operational risk at a time.

Moreover, the methodology adopted by this study assessed the interaction of various operational risks with financial performance before and after Basel II operational risk regulation implementation in commercial banks in Kenya. This sheds light to a new insight on how Basel II operational risk management has changed the banking profitability landscape in Kenya in terms of PBT, ROA and ROE before and after Basel II adoption. Further the study explores the interaction between Basel II operational risks and financial performance of commercial banks in Kenya by measuring the impact of each operational risk on the each of the three financial performances (PBT, ROA, ROE) and made recommendations to both commercial banks management and regulators on strategies likely to combat operational risks in order to increase banks' profitability. As such this study expands the existing body of knowledge by suggesting new possible remedies of handling operational risks in commercial banks such internal fraud monitoring tools.

5.6 Areas for Further Research

The findings of this study can be advanced further to give scholars more knowhow on Basel II regulation. One of the findings of this study was that regulatory non-compliance penalties had no significant effect on financial performance of commercial banks in Kenya. It was however notable that during the period under study CBK was implementing the finance acts which required that monetary penalties should not exceed five million Kenya shillings. A further study need to be carried out on influence of regulatory non-compliance penalties on financial performance after implementation of other finance acts that increased the non-compliance penalties to twenty million Kenya shillings or more.

In addition, the study concentrated on effects of Basel II operational risk management on effects of financial performance on commercial banks in Kenya before the interest rate capping. Further studies can be carried out to determine the effects of Basel II operational risk management on financial performance after the interest rate capping in Kenya.

Besides, the study only concentrated on effects of only five operational risks as stipulated by Basel II pillar I; financial fraud risk, regulatory non-compliance risk, business disruption and utility outage risk, operational risk legal liability and employment practices and workplace safety non-compliance risks. Future studies should incorporate other types of operational risks as stipulated by Basel II as operational risks such as client's products & business practices, damage to physical assets, execution, delivery & process management and relationship risk management so as to assess how they affect financial performance of commercial banks.

REFERENCES

Abdul, B. (2021). Sample Size Determination Using Krejcie and Morgan Table. Retrieved from https://www.researchgate.net/publication/349118299 _Sample_Size_ Determination_Using_ Krejcie_and_Morgan_Table

Abdullahi, R. & Mansor, N. (2015). Fraud Triangle Theory and Fraud Diamond Theory. Understanding the Convergent and Divergent for Future Research. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *1*(5), 38-45.

Aghghaleh, S. F., Iskandar, T. M., & Mohamed, Z. M. (2014). Fraud Risk Factors of Fraud Triangle and the Likelihood of Fraud Occurrence: Evidence from Malaysia. *Information Management and Business Review*, *6*(1), 1-7.

Albrecht, W. S., Albrecht, C., & Albrecht, C. C. (2008). Current Trends in Fraud and its Detection. *Information Security Journal: A Global Perspective*, *17*(1), 2-12.

Ali, M.M., Cecil, H.W. & Knoblett, J.A. (2001). The effects of tax rates and enforcement policies on taxpayer compliance: A study of self-employed taxpayers. *Atlantic Economic Journal*. *29*(2), 186-202.

Andersen, E.S. (2004). From Schumpeter‘s failed Econometrics to Modern Evometric Analysis: Creative Destruction as a Tale of Two Effects, Conference of the International Schumpeter Society, Bocconi University, Milan, 9-12 June

Arena, M., & Julio, B., (2010). *Litigation risk and corporate cash holdings, Working paper*, London: London Business School.

Arnold, A. (2010). Assessing the Financial Impact of Downtime. *Business Computing World*, *41*(3), 6. Retrieved from http://www.business computingworld.co.uk/assessing-the-financial-impact-of-downtime.

Bank for International Settlement (2019). OPE10 - Definitions and application. Retrieved from https://www.bis.org › Basel framework › chapter › OPE.

Basel Committee on Banking Supervision, (2001). Consultative Document. *Bank for International Settlement,* Basel, Switzerland.

Basel Committee on Banking Supervision, (2013). The New Basel Capital Accord. *Bank for International Settlement,* Basel Switzerland.

Basel Committee on Banking Supervision, (2004). International Convergence of Capital Measurement and Capital Standards: A Revised Framework. *Bank for International Settlement,* Basel, Switzerland.

Basel Committee on Banking Supervision, (2011). Principles for the Sound Management of Operational Risk. *Bank for International Settlement*, Basel, Switzerland.

Basel Committee on Banking Supervision, (2014). Consultative Document on Operational risk: Revisions to the simpler approaches. *Bank for International Settlement*, Basel, Switzerland.

Basel Committee on Banking Supervision, (2015). Eighth progress report on adoption of the Basel regulatory framework. *Bank for International Settlement*, Basel, Switzerland.

Basel Committee on Banking Supervision, (2006). International Convergence of Capital Measurement and Capital Standards –A Revised Framework. *Bank for International Settlements,* Basel, Switzerland.

Beams, J. D., Brown, R. M., & Killough, L. N. (2003). An experiment testing the determinants of non-compliance with insider trading laws. *Journal of Business Ethics*, *45*(4), 309-323.

Beattie, A. (2022a). How Did Nick Leeson Contribute to the Fall of Barings Bank? Retrieved from https://www.investopedia.com/ask/answers/08 /nick-leeson-barings-bank.asp

Beattie, A. (2022b). How Did John Rusnak Lose $691M in a Bank Fraud? Retrieved from https://www.investopedia.com/ask/answers/09/john-rusnak.asp

Bin, L. and Xi'an, J. (2016), Impact of Information Disclosure Violation on Firm Value in Chinese Listed Firms. *Journal of Applied Business Research*, 32(3), 903-916.

Bouheni, F.B. (2013). The effects of supervision on banking performance: European evidence. Paper presented at International Conference Governance & Control in Finance & Banking: A New Paradigm for Risk & Performance Paris, France.

Bunn, A., & Guthrie, R. (2009). Occupational Health and Safety in the Banking Industry. *The Finance Industry, 11*(2), 79-89.

Caballero, R. (2006). *The Macroeconomics of Specificity and Restructuring*. Yrjo Jahnsson Lectures. Cambridge, MA: MIT Press.

Carmen R. & Carmen P. (2013). *Social Innovation: New Forms of Organization in Knowledge–Based Societies*. Pp.101-102. USA: Routledge.

Central Bank of Kenya, (2004). *Risk Management Survey on Kenya's Banking Sector. Financial Institutions Supervision Department*, Nairobi: Government printer.

Central Bank of Kenya, (2011). Risk Management Survey for the Banking Sector. Retrieved from https://www.centralbank.go.ke/798511310_3% Risk Management Survey.

Central Bank of Kenya, (2013). *Overview of Central Bank of Kenya Risk Based Supervisory Framework.* Bank Supervision Department, Nairobi: Government printer.

Central Bank of Kenya, (2017). Annual Supervision Annual Report. Bank Supervision Department, Nairobi: Government printer.

Central Bank of Kenya, (2019). Annual Supervision Annual Report. Bank Supervision Department, Nairobi: Government printer.

Central Florida Computer Engineering (2011). The Impact of Network and or Server Downtime Retrieved from http://www.cfcecorp.com/blog/2011 /03/the-impact-of-network-and-or-server-downtime /

Chakrabarty, K. (2013). Frauds in the Banking Sector: Causes, Cures and Concerns. *Inaugural address, National Conference on Financial Fraud*. New Delhi: ASSOCHAM.

Chelangat, B. (2014). The Effect of Fraud on Financial Performance of Deposit Taking Savings and Credit Co-operative Societies in Kenya. Retrieved from http://erepository.uonbi.ac.ke/bitstream/handle/11295/746.

Chen, K.Y., & Elder, R.J. (2007). *Fraud Risk Factors and the Likelihood of Fraudulent Financial Reporting: Evidence from statement on Auditing Standards No. 43 in Taiwan* (p. 28). Working Paper. National Taiwan University and Syracuse University, 36.

Chernobai, A. S., Rachev, S. T., & Fabozzi, F. J. (2008). *Operational Risk: a guide to Basel II capital requirements, models, and analysis* (Vol. 180). New York: John Wiley & Sons.

Corporate Finance Institute (2020). Basel Accords. Retrieved from https://corporatefinanceinstitute.com/resources/knowledge/finance/basel-accords/

Chumo, J. C. (2013). *The Effects of Regulatory Compliance on Financial Performance of Deposit Taking Saccos, A Case Study f South Rift Region* Unpublished MBA research project, Nairobi: University of Nairobi.

Cohen, M. (1996). Theories of Punishment and Empirical Trends in Corporate Criminal Sanctions. Managerial and Decision Economics. *Wiley Online Library*, 17(4), 399-411.

Creswell, J.W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. United States of America: Sage publications.

Cummins, J.D., Wei, R., & Xie, X. (2007). Financial sector integration and information spill overs: Effects of operational risk events on US banks and insurers.

David, B. (2014). Why do bank IT systems keep failing Monday 27 January 2014 https://www.theguardian.com/money/2014/jan/27/bank-it-systems-keep-failing-lloyds-rbs-natwest

Deloitte, (2013). Financial Crimes Survey Report 2013: Where is the exposure? Retrieved from https://www.google.com/Deloite Financial Crimes Survey Report 2013.

Deloitte, (2014). Global survey on reputation risks. Retrieved from *https://www2.deloitte.com/content/Deloitte/risk/global-risk-management-survey*

Deloitte, (2015). Operating in the New Normal: Increased regulatory and Heightened Expectations. *Deloitte University Press,* UK. Retrieved from http://dupress.com/articles/global-risk-management-survey-financial-services/

Deloitte, (2017). Global risk management survey, (10th Ed) Heightened uncertainty signals new challenges ahead. Retrieved June 21, 2018, from https://www.google.com/search/global+operational+risk+management+report-+deloitte&oq-ab.1.0.33i21k1.10880.

Derek W., Jeffrey R., Nancy L., and Jeffrey J. (2014) Antecedents and Consequences of Perceived Gender Discrimination in the Audit Profession. Auditing: *A Journal of Practice & Theory, 33*(3). 1-32. Retrieved from https://doi.org/10.2308/ajpt-50737

Dudovskiy J. (2022). The Ultimate Guide to Writing a Dissertation in Business Studies: A Step-by-Step Assistance (6th Ed), New Delhi, India.

Elffers, H., Van Der Heijden, P., & Hezemans, M. (2003). Explaining regulatory non-compliance: A survey study of rule transgression for two Dutch instrumental laws, applying the randomized response method. *Journal of Quantitative Criminology*, *19*(4), 409-439.

Elliott, D. J. (2009). *Quantifying the effects on lending of increased capital requirements*. Pew Financial Reform Task Force Project Briefing Papers, No. 7: United States of America.

Emerson Network Power (2010), Ponemon Institute Study Quantifies Cost of Data Center Downtime, Retrieved from http://emersonnetworkpower .com/PonemonInstituteStudyQuantifiesCostofDataCenter/Downtime.aspx.

Ernst and Young (2018). Global Fraud Survey. Retrieved from https://fraudsurveys.ey.com/ey-global-fraud-survey-2018/the-outlook-for-fraud-and-corruption.

Fiedler, F., Hersey, G., Blanchard, V. & Yetton, N. (2016). Summary of contingent theory, Value based management. Retrieved from http://www.valuebasedmanagement.net/methods_contingency_theory.html

Flore, C., Degryse, H., Kolaric, S. & Schiereck, D. (2018). Forgive Me All My Sins: How Penalties Imposed on Banks Travel Through Markets. Retrieved from https://ssrn.com/abstract=3178589.

Forkuoh, S. & Li, Y. (2015). Electricity power insecurity and SMEs growth: a case study of the cold store operators in the Asafo market area of the Kumasi metro in Ghana. *Open Journal of Business and Management*, *3*(03), 312-325.

Fraud vigilant (2015, May 12) sh115m stolen by Tech-savvy Fraudsters in one month retrieved from: http://www.fraud-vigilance.com/?p

Garson, G.D. (2016). *Validity and Reliability*, Asheboro, NC: Statistical Associates.

Gbegi, D. & Adebisi, J. (2013). The New Fraud Diamond Model: How can it Help Forensic Accountants in Fraud Investigation in Nigeria? *European Journal of Accounting, Auditing and Finance Research, 1*(4), 129-138.

Ghasemi, A., & Zahediasl, S. (2012). Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489. http://doi.org/10.5812/ijem.3505.

Gikonyo, F. (2014). The Rose Wanjiru. Retrieved from http:// kenyalaw.org/caselaw /cases/view/99164/ civil case 433of 2014, Kenya law.

Gikundi, N.M., Alala, O. & Wabwile, E.S (2014). Effects of Operational Risks in the Lending Process of Commercial Banks' Profitability in Kakamega Town. *International Journal of Business and Management Invention, 3*(5), 1-17.

Gitau, E and Njenga, S. (2016). Effect of Financial Fraud on the Performance of Commercial Banks: A Case Study of Tier 1 Banks in Nakuru Town, Kenya. International Journal of Economics, Commerce and Management, United Kingdom, 4(12), 142.

Githecha, D. (2013). The Effects of Fraud Risk Management Strategies on the Financial Performance of Commercial Banks in Kenya. Retrieved from http://erepository.uonbi.ac.ke/handle/11295/59331

Graham, L. (2016). Digital Disruption is shaking up Banking and Real Estate. Retrieved from http://www.cnbc.com/2016/04/22/digital-disruption-is-shaking-up-banking-and-real-estate.html

Graybeal, L. (2017). Using Contingency Management Theory. Business.com. Retrieved from https://www.business.com/articles/using-contingency-management-theory.

Greg, N. (2009). *Risk: Toward Basel III: Best Practices and Issues in Modeling, Management, and Regulation*, United Kingdom: Willy Finance.

Gudmundsson, R. Ngoka, K. & Odongo, T. (2013). *The Role of Capital Requirements on Bank Competition and Stability: The Case of the Kenyan Banking Industry*. Nairobi: Kenya Bankers Association.

Gujarati, D., Porter, D. and Pal M. (2020). Basic Econometrics (6th Ed.). Boston: McGraw-Hill.

Gupta, S. C. (2014). *Fundamentals of statistics*. Gupta I. Himalaya.

Harris, C. (2011), *IT Downtime Costs $ 26.5 Billion in Lost Revenue,* Information Week, Retrieved from http://www.informationweek.com/it-downtime-costs-$265-billion-in-lost-revenue/d/d-id/1097919?

Haruna, M., Makama, L. & Ripiye, W. (2015). Impacts of Control Activities on Fraud Prevention and Control in the Bursary Departments of Tertiary Institution: A Critical Study and Appraisal of Kwararafa University Wukari, Taraba State Nigeria. *The International Journal of Business and Management, 3*(11), 328.

Higginbotham (2021) understanding the many aspects of operational risk. Retrieved from https://www.higginbotham.com/blog/understanding-the-many-aspects-of-operational-risk/

Hooper, M.J. & Pornelli, C. (2010). *Deterring and detecting financial fraud: A platform for action.* Retrieved from: http://www.thecaq.org/docs/reports-and-publications/deterring-and-detecting financial-reporting-fraud-a-platform-for-action.pdf?

Hosono K. & Miyakawa D. (2014), *Natural Disasters, Firm Activity, and to Banks,* Vox Cepr's policy Portal. Retrieved from: http://voxeu.org/article/natural-disasters-firm-activity-and-damage-banks.

Hosono, K., Miyakawa, D., Uchino, T., Hazama, M., Ono, A., Uchida, H. & Uesugi, I. (2012), Natural Disasters, Damage to Banks, and Firm Investment, RIETI Discussion Paper 12-E-062.

Hull C. John (2018). *Risk Management and Financial Institutions*, Wiley publishers, Hoboken, New Jersey.

Ijaola, I. A., Omolayo, O. H., Akerele, A. O., Osas, E. F., & Sonibare, S. A. (2021). Perceived Implications of Non-Compliance with Safety Practices in Construction Projects: Construction Professionals' Awareness Level. International Journal of Real Estate Studies, 15(1), 16–26. https://doi.org/10.11113/intrest.v15n1.5

IMF (2005), Implementation of Basel II: Implication for World Bank and IMF, Retrieved from http://www.imf.org/external/np/pp/eng/2005/072205.htm#ftn10

Investopedia (2016). *Creative Destruction Theory*, Retrieved from http://www.investopedia.com/terms/c/creativedestruction.asp

Iskyan, K. (2016) how a guy making $66,000 a year lost $7.2 billion for one of Europe's biggest banks, Stansberry Churchouse Research. Retrieved from https://www.businessinsider.com/how-jerome-kerviel-lost-72-billion-2016-5?r=US&IR=T

Ismaila, Y. and Damola, E. (2018), Regulatory Non-Compliance and Performance of Deposit Money Banks in Nigeria, *Journal of Financial Regulation and Compliance*, 26(3), 425-441.

Kahle, K. M., & Stulz, R. M. (2013). Access to capital, investment, and the financial crisis. *Journal of Financial Economics*, *110*(2), 280-299.

Kanas, A. (2005). Pure contagion effects in international banking: The case of BCCI's failure. *Journal of Applied Economics*, *8*(1), 101-123.

Karpoff, J. M. (2012). *Reputation and the invisible hand: a review of empirical research*. Working Paper, Washington: University of Washington.

Karpoff, J., Lott, R. and Wehrly, W. (2005). The Reputational Penalties for Environmental Violations: Empirical Evidence. The Journal of Law & Economics, 48(2), 653-675. Retrieved from https://www.jstor.org/stable/10. 1086/430806

Kashyap, A. K., Stein, J. C., & Hanson, S. (2010). *An analysis of the impact of 'substantially heightened' capital requirements on large financial institutions*. Chicago: University of Chicago.

Kaunyu, J. (2017). The effect of financial fraud on the financial performance of state corporations in Kenya. Retrieved from http://erepository.uonbi. ac.ke /handle/11295/102250

Kenneth, A. (2012). *Global Financial Crisis and Basel Standards.* Cambridge: Cambridge University Press.

Kenya Law (2003). Samuel Kamau Macharia & another v Kenya Commercial Bank Limited & 2 others Case. Retrieved from http://kenyalaw.org/caselaw/cases/ view

Kenyon, W., & Tilton, P. D. (2006). *Potential red flags and fraud detection techniques. A guide to forensic accounting investigation*, New Jersey: John Wiley and Sons, Inc.

Kigen, P.M., Muchai, C., Kimani, K., Mwangi, M., Shiyayo, B., Ndegwa, D., & Shitanda, S. (2014). *Kenya Cyber Security Report 2014*. Nairobi: Serianu Limited.

Kimani, M. (2013). Gone in 12 months: How fraudsters stole $17m from Kenya's Banks. *The East African,* Retrieved from http://www.the eastafrican.co.ke/news/How-fraudsters-stole-17m-from-Kenya-s-banks/2558

Kinoti, S. (2018). Internal Fraud Poses Risk to Business Growth- PWC Report. Citizen Digital. Retrieved September 15, 2018, from https://citizentv. co.ke/business/internal-fraud-poses-risk-to-business-growth-pwc-report-

Kiragu, D., Gikiri, L. & Iminza W. (2015). Bank Size and Occupational Fraud Risk: Empirical Evidence from Commercial Banks in Kenya. *European Journal of Business Management, 2*(1), 189-404.

Kirat, T. and Rezaee, A. (2015). Do Financial Markets React to Regulatory Sanctions? An Event Study of the French Case. Retrieved from, http://dx.doi.org/10.2139/ssrn.2614396.

Komu, N. (2015, October 2). University Students Arrested in Equity Bank sh30m Robbery case. *Daily Nation.* Retrieved from http://www.nation.co.ke/news/University-students-arrested-in-Equity-Bank-robbery/-/1056/2920976/-/k8xm5xz

Koster, H. & Pelster, M. (2017). Financial Penalties and Banks' Systemic Risk. The Journal of Risk Finance, 19(2), 154-173. Retrieved from https://doi.org/10.1108/JRF-04-2017-0069

Kothari, C. (2019). *Research Methodology: Methods and Techniques*, New Delhi, (4th Ed), New Age International Publishers, New Delhi. India.

Klynveld Peat Marwick Goerdeler (2016). Global profiles of the fraudster: Technology enables and weak controls fuel the fraud. Retrieved from https://home.kpmg .com/ke/en/home/insights/2016/05/global-profiles-of-the-fraudster.html

Klynveld Peat Marwick Goerdeler. (2018). Growing pains: East Africa CEOs outlook. Retrieved from https://assets.kpmg.com/content/ dam/kpmg/ke/pdf/2018-east-africa-ceo-outlook.pd.

LexisNexis, (2014). True Cost of Fraud Annual Report: Post-Recession Revenue Growth Hampered by Fraud as all Merchants Face Higher Cost. LexisNexis, US.

Lind, E., Jerald, G. & Kimberly, S. (2000). The Winding Road from Employee to Complainant: Situational and Psychological Determinants of Wrongful-Termination Claims. *Administrative Science Quarterly* 45(3), 557-590. Retrieved from https://doi.org/10.2307/2667109.

Lozano-Vivas, A., & Pasiouras, F. (2010). The impact of non-traditional activities on the estimation of bank efficiency: international evidence. *Journal of Banking & Finance, 34*(7), 1436-1449.

Majanja, D. (Judge). (2014). *The Manfred Walter case.* Retrieved from http://kenyalaw.org/caselaw/cases/view/97855/petition 293 0f 2013 Kenya law.

Makai, J. & Olweny, T. (2016). Corporate Governance and Financial Growth of Savings and Credit Co-operative Societies: A case of SACCOs in Kirinyaga County, Kenya. *International journal of Economics, Commerce and Management, 4*(8), 395-430.

Martinez, H. (2009). How much does downtime really cost? *Info Management Direct, August, 6*.

Maxfield, J. (2014). *The complete List: Bank of America's Legal Fines and Settlement Since 2008.The Motley Fool.* Retrieved from http://www.fool.com/investing/general/2014/the-complete-list-bank-of-americas-legal-fines-and.aspx.

Mccoy, K. (2015). Citizens Bank to pay $35m in penalties and restitution. *USA Today*. Received from http://www.siliconinvestor.com/ readmsgs.aspx?

McKenna, F. (2016), Ten Best Practices you should have at your Bank to Stop Internal Fraud. Retrieved from https://frankonfraud.com/ internal-fraud/10-best-practices-you-should-have-at-your-bank-to-stop-internal-fraud/

McNulty, E. & Akhigbe, A. (2014). Bank Litigation, Bank Performance and Operational Risk: Evidence from the Financial Crisis. Retrieved from http://dx.doi.org/10.2139/ssrn.2463373

Morrison, J. (2022). Assessing Questionnaire Reliability. Retrieved from https://select-statistics.co.uk/blog/assessing-questionnaire-reliability/

Morss, E.R. (2014). The Criminal Acts of Large Banks: Are Substantial Fines/Penalties Enough? Retrieved from http://www.morssglobalfinance.com.

Mpiana, C. (2017). Effects of Corporate Scandals on Financial Performance of Selected Firms Listed at Nairobi Securities Exchange. Retrieved from http://erepo.usiu.ac.ke/handle/11732/3505

Mugenda, O.M. & Mugenda, A.G. (2013). *Research Methods: Quantitative and Qualitative Approaches*, Nairobi: Acts Press.

Murdock, H. (2008). The Three Dimensions of Fraud: Auditors Should Understand the Needs, Opportunities, and Justifications that Lead Individuals to Commit Fraudulent Acts. *Internal Auditor*, *Academic One File*, 81. Retrieved from http://go.galegroup.com/ps/anonymous?id=GALE=googleScholar

Murphy, D.L., & Tibbs, S.L. (2010). Internal controls and the cost of fraud: An empirical investigation. *Journal of Corporate Treasury Management*, *3*(2), 68-74.

Mutai, E. (2016, August 4). Three Banks Fined Sh3m for National Youth Service Cash Transfers. *Business Daily.* Retrieved from http://www.businessdailafrica.com/Three-banks-fined-Sh3-million-in-connection-with-NYS-scandal

Mutegi, M. (2015, May 27). Power Surge Disrupts StanChart ATM and Online Banking Services. *Business Daily Africa.* Retrieved from http://www.businessdailyafrica.com/Corporate-News/Power-surge-disrupts-StanChart-ATM-and-online-banking-services/

Mwangi, K. (2014). *The Effect of Risk Management on Financial Performance of Commercial Banks in Kenya.* Unpublished MSc. Thesis, Nairobi: University of Nairobi.

Naceur, S.B., & Omran, M. (2011). The effects of bank regulations, competition, and financial reforms on banks' performance. *Emerging markets review*, *12*(1), 1-20.

Namusonge, G.S. (2010). *Business Statistics: Concepts and Applications*. Beau Bassin, Mauritius: VDM Publishing House Ltd.

Ndung'u, N. (2007). *Implementation of Basel II, Risk Management Framework within Banks and the Prevention of Financial Crime*, Nairobi: Central Bank of Kenya.

Ndurya, M. (2015, November 4) How Imperial's founders siphoned billions from the bank. *Daily Nation*. Retrieved from: http://www.nation.co.ke /news/How-founders-siphoned-billions-from-banks/1056-2942198-9/index.html

Njenga, N. & Osiemo, M. (2013). Effect of Fraud Risk Management on Organization Performance: A Case of Deposit-taking Microfinance Institutions in Kenya. *International Journal of Social Sciences and Entrepreneurship*, *1*(7), 490-507.

Nwankwo, O. (2013). Implications of Fraud on Commercial Banks Performance in Nigeria. *International Journal of Business and management*, *8*(15), 144-150.

Oana, R. (2013). Systemic Risk in the Banking Sector. *The USA Annuals of Economics and Public Administration*, *13*(17), 177-181.

Olongo, F. (2013). *The Effects of Financial Fraud and Liquidity on Financial Performance of Commercial Banks in Kenya*. Unpublished, MBA project, Nairobi: University of Nairobi.

Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, *3*(1), 237.

Osborne, H. (2014). Why do Banks' IT system Keep Failing? The Guardian Magazine. Retrieved from https://www.theguardian.com/ money/2014/jan/27/bank-it-systems-keep-failing-lloyds-rbs-natwest.

Ozun, A. (2007). Effects of the Basel II Accord on the Integration Process of the Emerging Markets into the EU Markets. *Banks and Bank Systems*, *2*(3), 73-81.

Park, Y. S., Konge, L. and Artino, A. (2019). The Positivism Paradigm of Research. Academic Medicine. Retrieved from, https://www.researchgate.net/publication/337693284_The_Positivism_Paradigm_of_Research/citation/download

People's Bank of China, (2015). Establishing China Green Financial System: Establish the Legal Liability of Financial Institutions. *People's Bank of China Research Bureau.* United Nations Environmental Programme.

Perlin, M. (2012). Downtime, outages and failures-understanding their true costs. Retrieved from https://www.evolven.com/downtime-outages-and-failures-understanding-their-true.

Pettinger, T. (2018). Free Market Justification for Creative Destruction Creative Destruction. Retrieved from https://www.economicshelp.org/ blog/20255/ economics/creative-destruction/

Plunus, S., Gillet, R. & Hubner, G. (2012). Reputational Damages of operational loss on the Bond market: Evidence from the financial Industry. *International Review of Financial Analysis*, 2466-73.

Price Waterhouse Coopers (2014) *Global Economic Crime Survey: A Threat to Business Globally*. Retrieved from https://www.PWC+global+economic+ crimesurveyreport2014

Price Waterhouse Coopers-Kenya (2016). CMA Sensitization Seminar: Fraud Risks Posed by ICT. Retrieved from https://www.cma.or.ke/index php?option=com_ phocadownloadrisks

Price Waterhouse Coopers-India (2015) *Current Frauds Trends in the Financial Sector*. Retrieved from https://www.pwc.in/assets/pdfs/current-fraud-trends-in-the-financial-sector.pdf

Ragnar G., Kethi N. & Odongo M. (2013). *The Role of Capital Requirements on Bank Competition and Stability: The Case of the Kenyan Banking Industry*, Nairobi: Kenya Bankers Association.

Rasha, K. & Andrew H. (2012). The New Fraud Triangle. *Journal of Emerging Trends in Economics and Management Sciences*. 3(3): Retrieved from https://www.google.comRashaandTheNewFraudTriangleJournal EmergingTrends+in+Economics+and+Management+Sciences.

Raymond, N. (2015). BNP Paribas sentenced in $8.9 billion accord over sanctions violations. *Reuters*. Retrieved from http://www.reuters.com /article/us-bnp-paribas-settlement-sentencing-idouskbn0nm41k20150501.

Register, M., Hall, C., Baillairge, A. & Crumby, D. (2007). Wind Hazard Insurance: No Longer Just a Technical Exception Federal Deposit Insurance Corporation, USA: Retrieved from htmlhttps://www.fdic.gov/regulations /examinations /supervisory/insights/

Response Rates and Responsiveness for Surveys, Standards, and the *Journal* Jack E. Fincham

Rika, J. (Judge). (2013). *Termination of Employment on the Ground of Pregnancy case*. In Appendix to the Journal of the National Council for Law Reporting (Kenya Law). Retrieved from http://kenyalaw.org/caselaw/cases/ view/90648/

Robinson, J., Xue, Y., & Yu, Y. (2011). Determinants of Disclosure Noncompliance and the Effect of the SEC Review: Evidence from the 2006 Mandated Compensation Disclosure Regulations. *The Accounting Review, 86*(4), 1415-1444. Retrieved from http://www.jstor.org/stable/23045607

Rose, A., Gbadebo, O. & Shu-Yi, L. (2007). Business Interruption Impacts of a Terrorist Attack on the Electric Power System of Los Angeles: Customer Resilience to a Total Blackout.

Rothman, P. (2012), Cyber Terror Rages in the Banking Sector. Retrieved from http://www.securityinfowatch.com/blog/10796084/cyber-terror-rages-in-the-banking sector.

Sandler, T. (2013). The analytical study of terrorism Taking stock. *Journal of Peace Research, 51*(2), doi: 257-2710022343313491277.

Saunders, M., Lewis, P. and Thornhill, A. (2012) Research Methods for Business Students. Pearson Education Ltd., Harlow.

Schafer, D., Binham, C. & Scannell, K. (2014). Financial and Market Regulation: Regulators slap $4.3bn fines on six banks in global forex probe. *Financial Times.* Retrieved from www.latimes.com/la-fi-bank-fine-foreign-exchange-jpmorgan-citibank.

Schneider, H. (2017). Creative Destruction and the Sharing Economy: Uber as Disruptive Innovation. Retrieved from https://www.elgaronline.com/View/9781786433428/10_chapter3.xhtml.

Seuraj, S. & Watson, P. (2012). Banking Regulation: Does Compliance Pay in Emerging Economies? Evidence from Trinidad & Tobago. *Journal of Social and Economic Studies, 61*(4), 131-144.

Sekaran, U. & Bougie, R. (2016). *Research Methods for Business: A skill Building Approach* (7th Edition). United Kingdom: John Wiley and Sons.

Shank, L. (2014). Three Reasons Why Employees Commit Fraud and how you can Stop them, Retrieved from: https://www.applegrowth.com/three-reasons-why-employees-commit-fraud-and-how-you-can-stop-them.

Sledzik, K. (2013). *Schumpeter's View on Innovation and Entrepreneurship Management Trends in Theory and practice (ed) Stefan Hittmar,* Zilina: University of Zilina and Institute of Management by University of Zilina.

Sombers Associates, & Highleymam, W. (2007). Availability Benchmark, Retrieved from www.availabilitydigest.com/private/0206/benchmarking.

Song, C, & Han, S. (2017). Stock Market Reaction to Corporate Crime: Evidence from South Korea. *Journal of Business Ethics, 143*(2), 323-351. Retrieved from http://eds.b.ebscohost.com/eds/detail/detail

Spss Tests.com (2015). How to test validity of a questionnaire, Retrieved from http://www.spsstests.com/2015/02/how-to-test-validity-questionnair e.html.

Stacy, E. & Hammond, S. (2014). The Rising Costs of Non-compliance: From the End of a Career to the End of a Firm. *Thomson Reuters,* United States. Retrieved from https://risk.thomsonreuters.com.

Statistics Solutions, (2018). Advancement Through Clarity: Paired Sample T-Test, Retrieved from: https://www.statisticssolutions.com/manova-analysis-paired-sample-t-test/

Steenis, V. (2015). Bank litigation costs. *The Financial Times*. Retrieved from https://next.ft.com/content/.

Stone, B, Scibilia, B., Pammer, C., Steele, C. & Keller, D. (2016). Understanding t-tests: 1 - sample, 2-sampleand paired t-test. Retrieved from http://blog.minitab.com/blog/adventures-in-statistics-2/understanding-t-tests

Takmaz, S. & Keles, E. (2018). Do Stock Prices React to Illegal Corporate Behaviors? The Turkish Case. *Journal of Business Research Turk, 9*(10), 245-258.

The Oxford Academic Symposium on Reputation September 2010, Cambridge University Press. Retrieved from http://www.sbs.ox.ac. uk/sites/default/files/ CCR/Docs /2010 Symposia-WP-Karpoff.pdf

Tina, P. (2015). Assessing the Financial Impact of Downtime. *Network Computing the Meta Group and Contingency Planning Research*, US: Ecessa Corporation.

Uchenna, C., & Agbo, J. (2013). Impact of Fraud and Fraudulent Practices on the Performance of Banks in Nigeria. *British Journal of Arts and Social Sciences, 15*(I), 12-29.

Urban Mike (2010). Six Steps to Reduce Online Fraud, Retrieved from https://www.bankinfosecurity.com/6-steps-to-reduce-online-fraud-a-2375

Van den Broek, S., Kemp, R. G., Verschoor, W. F., & de Vries, A. C. (2012). Reputational penalties to firms in antitrust investigations. *Journal of Competition Law and Economics*, *8*(2), 231-258.

Vona, I.W. (2008). *Fraud Risk Assessment: Building a Fraud Audit Programme*. Hoboken, New Jersey: John Wiley and Sons, Inc.

Vousinas, G. L. (2019). Advancing theory of fraud: The S.C.O.R.E. Model. Journal of Financial Crime, 26 (1), 372 – 381. Retrieved from https://ssrn.com/abstract=3163337.

Wallace, J., Edwards, B., Mondore, S., & Finch, D. (2008). Employee Discrimination Claims and Employee-initiated Lawsuits: Does Procedural Justice Climate Moderate the Claims-Disputes Relationship? *Journal of Managerial Issues, 20*(3), 313-326. Retrieved from http://www.jstor.org/stable/ 40604613

Wasileski, G., Rodríguez, H. & Diaz, W. (2011). *Business Closure and Relocation: A Comparative Analysis of the Loma Prieta Earthquake and Hurricane Andrew*. USA: Blackwell Publishing.

Weil, D. (2001). Assessing OSHA Performance: New Evidence from the Construction Industry. *Journal of Policy Analysis and Management, 20*(4), 651-674.

Yiannaki, S. (2009). Regulatory Failure and the Subprime Credit Crunch: The Importance of Basel II Regulation/Supervision. *The ICFAI University Journal of Banking Law*, *2*(4), 102-114.

Yuan, Q. & Zhang, Y. (2014). Do Banks price Litigation Risk in Debt Contracting? Evidence from Class Action Lawsuits. University of Melbourne, Australia. Retrieved from https://www.google.com/YuanandZhangY.

Yusuf, I. and Ekundayo, D. (2018), Regulatory non-compliance and performance of deposit money banks in Nigeria, Journal of Financial Regulation and Compliance, 26(3), 425-441. https://doi.org/10.1108/JFRC-04-2017-0041

Zaid, A. (2015). Correlation and Regression Analysis. The Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC), Ankara-Turkey.

Zeidan, M. (2013). Effects of Illegal Behavior on the Financial Performance of US Banking Institutions. *Journal of Business Ethics, 112*(2), 313-324. Retrieved from http://www.jstor.org/stable/23327207.

APPENDICES

Appendix I: Research Questionnaire

The objective of this study is to examine the effects of Basel II operational risk management on financial performance of commercial banks in Kenya. This questionnaire is expected to collect the necessary data that will assist in achieving the objective of this study. All the information obtained through this questionnaire will be treated as confidential in that no information will be released to anyone other than being used for the purpose of the study. The success of this study will highly depend on your cooperation which is called upon and highly appreciated. Your name and that of the institution will not appear anywhere in this report.

PART A

Background Information

1. Please tick your gender. Male ☐ Female ☐
2. In which age group do you lie? Less than 30 ☐ 31-40 ☐
3. 41-50 ☐ 51-60 ☐
4. a) Please tick your job title. Security officer ☐ operations manager ☐

   Auditor ☐ others (specify)……..

   b) For how long have you worked in bank in the position you have indicated above?

   Less than 1 year ☐ 1-5 years ☐ 6-10 years ☐ 11-15 years ☐

   16 and more ☐

5. What is your highest academic level attained.

   Diploma ☐ Bachelor degree ☐ Masters Degree ☐

   Others (specify)…….....

B: EFFECTS OF OPERATIONAL RISK

A. Effects of Fraud

1. On a scale of 1-5 where 1 is strongly agree and 5 is strongly disagree, please rate your perception on causes of fraud in a bank.

Fraud in my bank is caused by:	**Strongly agree 1**	**Agree 2**	**Neither agree nor disagree 3**	**Disagree 4**	**Strongly disagree 5**
Poor staff remuneration					
Poor record keeping					
Weak internal controls					
Greed by staff					
Work place frustrations					
Urgent financial need (debt, medical, gambling, alcohol)					
Need to cover someone's poor performance					
Access to information and money					
Lack of punishment					
Others (specify)……					

2. On a scale of 1 – 5 where 1 is never and 5 is very frequently; please rate the fraud risks that have been experienced by your bank in the last six years.

Type of Fraud Risk	**Fraud Event**	**Never 1**	**Rarely 2**	**Sometime 3**	**Frequently 4**	**Very Frequently 5**
Unauthorized Activity	Transactions not reported (intentional)					
	Mismarking of position (intentional)					
Theft and fraud	Fraud/credit fraud / worthless deposits					

	Theft / robbery/ embezzlement					
	Misappropriation of assets					
	Malicious destruction of assets					
	Forgery					
	Cheque kiting					
	Account take-over / impersonation / etc.					
	Tax non-compliance / evasion (wilful)					
	Bribes / kickbacks					
	Insider trading (not on firm's account)					
External Fraud	Theft/Robbery					
	Forgery					
	Check kiting					

3. To what extent do you agree with the following statements about the effect of fraud on the financial performance of your bank?

Fraud in my Bank	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
Reduces profitability					
Reduces return on assets (ROA)					
Lowers return on Equity (ROE)					
Increases the operating expenses					
Disrupts banks operation					
Reduces consumer confidence					
Destabilizes the economy					
It can bring down a bank					
Others (specify)…….					

4. On average how much fraud related losses did your bank typically experience in the following years?

Cost of Fraud	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Less than sh1M						
Sh1-2M						
Sh2-4M						
Sh4-6M						
Sh6-8M						
More than sh10M						
Others (specify)……						

5. The statements below show magnitude of change of fraud since the implementation of Basel II. On a scale of 1-5 where 1 is strongly disagree and 5 is strongly agree.

After my bank adopted Basel II regulations	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**disagree**	**Strongly disagree**
Fraud has decreased with more than 10%					
Fraud has decreased with 5% - 10%					
Fraud has decreased with 1% - 5%					
Fraud has remained at the same level					
Fraud has increased with more than 10%					
Fraud has increased with 5% - 10%					
Fraud has increased with 1% - 5%					
Others (specify)……					

6. What would you say has caused the **decrease** in the frauds you have indicated in 5 above?

Fraud in my bank has decreased as a result of:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**disagree**	**Strongly disagree**
staff training and education					
Enhanced methods to authenticate customer and/or validate customer account					

Basel II implementation					
Enhanced internal controls and procedures					
Adopted or increased use of risk management tools offered by Basel II					
financial service provider e.g. account alerts, positive pay					
Enhanced fraud monitoring system					
Others (specify)……..					

7. What would you say has caused the **increase** in the frauds you have indicated in 5 above?

Fraud in my bank has increased as a result of:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Basel II implementation					
Employee job dissatisfaction					
Lack of operational guidelines					
Poor internal control					
Others (specify)					

B. Regulatory Non-Compliance Costs

8. To what extent do you support the following statements describing the types of regulatory non-compliance in your bank?

The most common types of Regulatory non-compliance in my bank are:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Guideline violation and fiduciary breaches					
Failure to investigate client per guidelines					
Exceeding client exposure limits					
Suitability / disclosure issues (Know your customer,					
Breach of privacy					
Account churning					
Misuse of confidential information					
Others (specify)……					

9. To what extent do you support the following statements describing the causes of regulatory non-compliance in your bank?

Regulatory non-compliance penalty in my bank is caused by;	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Lack of heavy penalties					
Lack of awareness					
The penalties are less than the profit gained after violating the rule					
Poor governance					
Others (specify)……					

10. To what extent do you agree with the following statements about the effect of regulatory non-compliance penalties in your bank?

Regulatory non-compliance penalties in my bank have led to;	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Reduced return on assets					
Reduced profitability					
Reduced return on equity					
Damaged reputation					
Loss of customers and investors					
Branch closure					
Required to increase capital or liquidity					
Firing of senior management					
Increased cost of recruiting and retaining high staff					
Increased regulation scrutiny					
Others (specify)……					

11. On average how much cost relating to regulatory non-compliance penalties did your bank experience during the year;

Cost of regulatory non-compliance penalties in my bank	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Less than Sh0.5M						
Sh0.5-2M						
Sh2-4M						
Sh4-6M						
Sh6-8M						
Sh8-10M						
More than Sh10M						
Others (specify)						

C. Business Disruptions and Utility Outages

12. To what extent do you support the following statements describing the causes of business disruption and utility outages in your bank?

Business disruption and utility outages in my bank are caused by:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Technical failure					
Planned maintenance and upgrading					
Huge web traffic					
Use of traditional/ old networks					
Power related outages					
Equipment failure					
Human error					
Fraud related activities					
Others (specify)…….					

13. To what extent do you agree with the following statements about the effect of business disruption and utility outage in your bank?

Utility outage and system failure in my bank has led to;	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Lost business from customers (both short term and long term)					
Employee time diverted from other tasks to get the IT systems running again					
Employee overtime expenses					
Cost on valuable lost data					
Additional repair costs that may go on even after service has been restored					
Damaged goodwill and reputation					
Marketing cost to win back customers					
Reduced return on assets					
Reduced profitability					
Reduced return on equity					
Others (specify)……					

14. On average how much cost relating to business disruption and utility outage did your bank experience during the year:

Cost of business disruption & utility outage	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Less than Sh10M						
Sh11-20M						
Sh21-30M						
Sh31-40M						
Sh41-50M						
Sh51-60M						
Sh61-100M						
More than Sh100M						
Others (specify)						

D. Costs of Operational Risks Legal Liability

15. To what extent do you support the following statements describing the causes of operational risk legal liability in your bank?

Operational risk legal liability in my bank is caused by:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Illegal operations in customer account					
Illegal debt recovery and security enforcement					
Breach of mandate					
Negligence					
Others (specify)……					

16. To what extent do you support the following statements describing the type of cost likely to be incurred by your bank in case of operational risk lawsuit?

Operational risk law suits are likely to result to:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Lawyer's fees					
Reputational damage					
Deviation of management resources					
Settlement fees					
Increase in directors' liability insurance premium					
Others (specify)……					

17. On average how much cost relating to operational risk law suits did your bank typically experience in the year:

Cost of operational risk law suit	2011	2012	2013	2014	2015	2016
Less than Sh1M						
Sh1-5M						
Sh6-10M						
Sh11-15M						
Sh16-20M						
More than Sh20M						
Others (specify)						

E. Employment Practices and Workplace Safety Non-compliance Cost

18. To what extent do you support the following statements describing the source of employment practices and work place safety non-compliance in your bank?

The employment practices and workplace non-compliance in my bank arises from:	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Employee discrimination (gender, tribe, health, etc)					
Violating workers compensation rules					
Violating worker health & safety rules					
General liability (slips, falls, etc)					
Wrongful termination					
Management failure in compliance					
Others (specify)……					

19. To what extent do you support the following statements describing the cost likely to be incurred by your bank in case of non-compliance with employment practices and workplace safety?

Lack of compliance with employment practices and workplace safety in my bank will result to:	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly Disagree**
Fines and penalties					
Cost of enhancing safe working environment					
Damages awarded to employees					
Medical expenses					
Lawyers fees					
Economic costs					
compensation for lost interest subsidized mortgage					
salary in lieu of notice					
severance pay on excellent service					
Cost of lawsuits					
Others (specify)……					

20. On average how much cost relating to non-compliance with employment practices and workplace safety did your bank typically experience in the year;

Cost of non-compliance with employment practices and workplace safety	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Less than Sh1M						
Sh1-4M						
Sh5-8M						
Sh9-12M						
Sh13-16M						
Sh17-20M						
Sh21-25M						
More than Sh25M						
Others (specify)						

Thank you for taking the time to complete this questionnaire. Your responses are extremely appreciated.

Appendix II: Secondary Data Collection Schedule

S/N	Name of Bank	Year	Profit before tax Sh'000'	ROA %	ROE %
1		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
2		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
3		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
4		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
5		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
6		2016			
		2015			
		2014			
		2013			
		2012			
		2011			
7		2016			
		2015			
		2014			
		2013			
		2012			
		2011			

Appendix III: List of Commercial Banks in Kenya

The following were the licensed commercial banks operating in Kenya as of June 2017.

S/N	Name of the Bank	Location (Physical Address)	Date Licensed	Branches	Tier
1.	African Banking Corporation Limited (ABC)	ABC Bank House, Woodvale Groove, Westlands, Nairobi	8th December 1994	11	3
2.	Bank of Africa Kenya Limited	Re-Insurance Plaza, Ground Floor - Taifa Road, Nairobi	30th April 2004	34	2
3.	Bank of Baroda (K) Limited	Baroda House, Koinange Street, Nairobi	1st July, 1953	12	2
4.	Bank of India	Bank of India Building, Kenyatta Avenue, Nairobi	5th June, 1953	5	2
5.	Barclays Bank of Kenya Limited	Barclays Westlands, Waiyaki Way, Westlands, Nairobi	1916	106	1
6.	CfC Stanbic Bank Limited	CFC Stanbic Centre, Chiromo Road, Westlands	1st June 2008	28	2
7.	Charterhouse bank limited (under statutory management)	Longonot Place, 6th Floor, Kijabe Street, Nairobi	1998	10	3
8.	Chase Bank (K) (In Receivership)	Riverside Mews, Riverside Drive, Nairobi	1st April, 1991	39	2
9.	Citibank N.A Kenya	Citibank House, Upper Hill Road, Upper Hill, Nairobi.	1st July, 1974	3	2
10.	Commercial Bank of Africa Limited	CBA Building, Mara / Ragati Road, Upper Hill	1st January, 1967	36	1
11.	Consolidated Bank of Kenya Limited	Consolidated Bank House, 6th Floor, Koinange Street, Nairobi.	18th December 1989	18	3
12.	Co-operative Bank of Kenya Limited	Co-operative House, 4th Floor Annex, Haile Selassie Avenue, Nairobi	1st July, 1968	142	1
13.	Credit Bank Limited	Mercantile House, Ground Floor, Koinange Street, Nairobi	30th November, 1994	15	3

14.	Development Bank of Kenya Limited	Finance House, 16th Floor, Loita Street, Nairobi	20th September 1996	3	3
15.	Diamond Trust Bank Kenya Limited	DTB Centre, Mombasa Road, Nairobi	15th November, 1994	51	2
16.	Equatorial Commercial Bank Limited	Equatorial Fidelity Centre, Waiyaki Way, Westlands, Nairobi.	23rd June, 1995	13	3
17.	Equity Bank Kenya Limited	Equity Centre, 9th Floor, Hospital Road, Upper Hill, Nairobi	31st December, 2014	174	1
18.	Family Bank Limited	Family Bank Towers, 6th Floor, Muindi Mbingu Street, Nairobi	1st May 2007	78	2
19.	Fidelity Commercial Bank Limited	I.P.S Building. 7th Floor, Kimathi Street, Nairobi	1st April, 1996	14	3
20.	First Community Bank Limited	Prudential Assurance Building, 1st Floor, Wabera Street, Nairobi	29th April, 2008	18	3
21.	Giro Commercial Bank Limited	Eldama Park, Eldama Ravine Road, Off Peponi Road, Westlands, Nairobi	17th December, 1992	8	3
22.	Guaranty Trust Bank (K) Ltd (formally Fina)	Sky Park Plaza, Woodvale Close, Westlands, Nairobi	13th January, 1995	15	3
23.	Guardian Bank Limited	Guardian Centre, Biashara Street, Nairobi	17th December, 1992	11	3
24.	Gulf African Bank Limited	Geminia Insurance Plaza, Kilimanjaro Avenue, Upper Hill, Nairobi	12th September, 2007	17	3
25.	Habib Bank A.G Zurich	Habib House, Koinange Street, Nairobi.	1st July, 1978	6	3
26.	Habib Bank Limited	Exchange Building, No.17, Koinange Street, Nairobi	2nd March, 1956	4	3
27.	Imperial Bank Limited (in Receivership)	Imperial Court, Westlands Road, Westlands, Nairobi	8th January, 1996	28	2
28.	I & M Bank Limited	I & M Bank House, 2nd Ngong Avenue, Off Ngong Road, Nairobi	27th March, 1996	33	2
29.	Jamii Bora Bank Limited	Jamii Bora House, Koinange Street, Nairobi	2nd March, 2010	26	3
30.	KCB Bank	Kencom House, 8th	1st	193	1

	Kenya Limited	Floor, Moi Avenue, Nairobi	November, 2015		
31.	Middle East Bank (K) Limited	Mebank Tower, Milimani Road, Milimani, Nairobi	28th November, 1980	5	3
32.	National Bank of Kenya Limited	National Bank Building, 2nd Floor, Harambee Avenue, Nairobi	1st January, 1968	73	2
33.	NIC Bank Limited	N.I.C House Masaba Road, Upper Hill, Nairobi.	28th September, 1995	31	2
34.	Oriental Commercial Bank Limited	Apollo Centre, 2nd Floor, Ring Road, Westlands, Nairobi	8th February, 1991	9	3
35.	Paramount Bank Limited	Sound Plaza Building, 4th Floor, Woodvale Grove, Nairobi	5th July, 1995	7	3
36.	Prime Bank Limited	Prime Bank Building, Chiromo Lane/Riverside Drive. -Junction, Westlands, Nairobi.	1st March, 1992	18	2
37.	Sidian Bank Limited	7th Floor K-Rep Centre, Wood Avenue, Kilimani, Nairobi	23rd March, 1999	25	2
38.	Spire Bank (Formarly-Equatorial Commercial Bank Limited)	Ecobank Towers, Muindi Mbingu Street, Nairobi.	23rd June, 1995	33	2
39.	Standard Chartered Bank Kenya Limited	Standard Chartered Building-Westlands Road- Chiromo Lane, Westlands, Nairobi	1910	42	1
40.	Trans-National Bank Limited	Transnational Plaza, City Hall Way, Nairobi	8th January, 1985	19	2
41.	UBA Kenya Bank Limited	Apollo Centre, 1st Floor, Ring Road / Vale Close, Westlands, Nairobi	25th September, 2009	4	3
42.	Victoria Commercial Bank Limited	Victoria Towers, Mezzanine Floor, Kilimanjaro Avenue, Upper Hill, Nairobi	11th January, 1996	3	3

(Source: CBK, 2017)

Appendix IV: Basel Member Countries, Observers and Supervisory Group

Institutions represented on the as at 2015:

Argentina	Central Bank of Argentina
Australia	Reserve Bank of Australia; Australian Prudential Regulation Authority
Belgium	National Bank of Belgium
Brazil	Central Bank of Brazil
Canada	Bank of Canada; Office of the Superintendent of Financial Institutions
China	People's Bank of China; China Banking Regulatory Commission
European Union	European Central Bank; European Central Bank Single Supervisory Mechanism
France	Bank of France; French Prudential Supervision and Resolution Authority (ACPR)
Germany	Deutsche Bundes bank; Federal Financial Supervisory Authority (BaFin)
Hong Kong SAR	Hong Kong Monetary Authority
India	Reserve Bank of India
Indonesia	Bank Indonesia; Indonesia Financial Services Authority
Italy	Bank of Italy
Japan	Bank of Japan; Financial Services Agency
Korea	Bank of Korea; Financial Supervisory Service
Luxembourg	Surveillance Commission for the Financial Sector
Mexico	Bank of Mexico; National Banking and Securities Commission (CNBV)
Netherlands	Netherlands Bank
Russia	Central Bank of the Russian Federation
Saudi Arabia	Saudi Arabian Monetary Agency
Singapore	Monetary Authority of Singapore
South Africa	South African Reserve Bank
Spain	Bank of Spain
Sweden	Sveriges Riksbank; Finansinspektionen
Switzerland	Swiss National Bank; Swiss Financial Market Supervisory Authority
Turkey	Central Bank of the Republic of Turkey; Banking Regulation and Supervision Agency
United Kingdom	Bank of England; Prudential Regulation Authority
United States	Federal Reserve Bank of New York

Country Observers

Chile	Central Bank of Chile / Banking and Financial Institutions Supervisory Agency
Malaysia	Central Bank of Malaysia
United Arab	Central Bank of the United Arab Emirates

Supervisory Groups, International Agencies and Other Bodies

Basel Consultative Group
Bank for International Settlements
European Banking Authority
European Commission
International Monetary Fund

Appendix V: Types of Basel II Operational Risk Events

Event-Type Category (Level 1)	Definition	Categories (Level 2) Activity	Examples (Level 3)
1. Internal fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity/discrimination events, which involves at least one internal party.	Unauthorized Activity	Transactions not reported (intentional) Trans type unauthorized (w/monetary loss) Mismarking of position (intentional)
		Theft and Fraud	-Fraud / credit fraud / worthless deposits -Theft / extortion / embezzlement / robbery -Misappropriation of assets -Malicious destruction of assets -Forgery -Cheque kiting -Smuggling -Account take-over / impersonation / etc. -Tax non-compliance / evasion (wilful) -Bribes / kickbacks -Insider trading (not on firm's account)
2. External fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent the law, by a third party	Theft and Fraud	-Theft/Robbery -Forgery -Cheque kiting
		Systems Security	Hacking damage Theft of information (w/monetary loss)
3. Employment Practices and Workplace Safety	Losses arising from acts inconsistent with employment, health or safety laws or agreements, from payment of personal injury claims, or from diversity / discrimination events	Employee Relations	Compensation, benefit, termination issues, Organized labour activity
		Safe Environment	General liability (slips and falls, etc.) Employee health & safety rules events Workers' compensation
		Diversity	All discrimination types

		& Discrimin ation	
4. Clients, Products & Business Practices	Losses arising from an unintentional or negligent failure to meet a professional obligation to specific clients (including fiduciary and suitability requirements), or from the nature or design of a product.	Suitability, Disclosure & Fiduciary	-Fiduciary breaches / guideline violations -Suitability / disclosure issues (Know your customer, KYC, etc.) -Retail consumer disclosure violations -Breach of privacy Aggressive sales Account churning -Misuse of confidential information -Lender Liability
		Improper Business or Market Practices	Antitrust Improper trade / market practices Market manipulation Insider trading (on firm's account) unlicensed activity, money laundering
		Product Flaws	Product defects (unauthorized, etc.) Model errors
		Selection, Sponsorsh ip & Exposure	-Failure to investigate client per guidelines. -Exceeding client exposure limits.
		Advisory Activities	Disputes over performance of advisory activities
5. Damage to Physical Assets	Losses arising from loss or damage to physical assets from natural disaster or other events.	Disasters and other events	Natural disaster losses Human losses from external sources (terrorism, vandalism)
6. Business disruption and system Failures	Losses arising from disruption of business or system Failures	Systems Hardware	-Software -Telecommunications -Utility outage / disruptions
7. Execution, Delivery & Process Managemen	Losses from failed transaction processing or process management, from relations with trade	Transactio n Capture, Execution & Maintenan	-Miscommunication -Data entry, maintenance or loading error -Missed deadline or

t	counterparties and vendors	ce	responsibility -Model / system mis-operation -Accounting error / entity attribution error -Other task mis-performance -Delivery failure -Collateral management failure -Reference Data Maintenance
		Monitoring and Reporting	-Failed mandatory reporting obligation -Inaccurate external report (loss incurred)
		Customer Intake and Documentation	Client permissions / disclaimers missing Legal documents missing / incomplete
		Customer Account management	-Unapproved access given to accounts -Incorrect client records (loss incurred) -Negligent loss or damage of client assets
		Trade Counterparties	-Non-client counterparty misperformance -Misc. non-client counterparty disputes
		Vendors & Suppliers	-Outsourcing -Vendor disputes
8. Relationship Risks	Non-proprietary losses to a firm and generated through the relationship		Reimbursement to clients, Penalties paid

(Source: BCBS, QIS 2 - Operational Risk Loss Data – 4 May 2001)

Appendix VI: Frequencies Variables Analysis

Employee discrimination

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	1	3.8	3.8	3.8
	Agree	3	11.5	11.5	15.4
	Neither agree nor disagree	1	3.8	3.8	19.2
	Disagree	11	42.3	42.3	61.5
	Strongly disagree	10	38.5	38.5	100.0
	Total	26	100.0	100.0	

Violation of worker's compensation rules

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	1	3.8	3.8	3.8
	Agree	8	30.8	30.8	34.6
	Neither agree nor disagree	4	15.4	15.4	50.0
	Disagree	7	26.9	26.9	76.9
	Strongly disagree	6	23.1	23.1	100.0
	Total	26	100.0	100.0	

Violation of worker health and safety rules

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	1	3.8	3.8	3.8
	Agree	9	34.6	34.6	38.5
	Disagree	10	38.5	38.5	76.9
	Strongly disagree	6	23.1	23.1	100.0
	Total	26	100.0	100.0	

General liability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	6	23.1	23.1	23.1
	Neither agree nor disagree	7	26.9	26.9	50.0
	Disagree	6	23.1	23.1	73.1
	Strongly disagree	7	26.9	26.9	100.0
	Total	26	100.0	100.0	

Wrongful termination

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	2	7.7	7.7	7.7
	Agree	8	30.8	30.8	38.5
	Neither agree nor disagree	9	34.6	34.6	73.1
	Disagree	2	7.7	7.7	80.8
	Strongly disagree	5	19.2	19.2	100.0
	Total	26	100.0	100.0	

Management failure in compliance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly agree	3	11.5	11.5	11.5
	Agree	4	15.4	15.4	26.9
	Neither agree nor disagree	5	19.2	19.2	46.2
	Disagree	10	38.5	38.5	84.6
	Strongly disagree	4	15.4	15.4	100.0
	Total	26	100.0	100.0	

2015

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than Sh1M	11	42.3	42.3	42.3
	Sh.5-8M	5	19.2	19.2	61.5
	Sh.13-16M	1	3.8	3.8	65.4
	17-20M	3	11.5	11.5	76.9
	More than Sh25M	1	3.8	3.8	80.8
	NIL	5	19.2	19.2	100.0
	Total	26	100.0	100.0	