BASEL III FRAMEWORK AND MARKET RISK MANAGEMENT OF COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

I, the undersigned declare that this research project is my original work and affirm to the best of my knowledge that it has never been presented for any academic award in any university.

Signed________________________________ Date 1st December 2021____________________________

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D61/10709/2018

This research project has been presented for examination with my approval as the appointed supervisor.

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DEDICATION

I dedicate this research project to my family members who are always my pillars of inspiration. May God bless you.

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ABBREVIATIONS

APT – Asset Pricing Theory

BCBS – Basel Committee of Banking Supervision

BCP – Basel Core Principle

BIS – Bank of International Settlements

CAMP – Capital Asset Pricing Model

CBK – Central Bank of Kenya

DFK – Degree of Financial Leverage

ES – Expected Shortfall

FRTB – Fundamental Review of the Trading Book

GMM – Generalized Method of Moments

IFE – International Fisher Effect

IFE – International Fisher Effect

LCR – Liquidity Coverage Ratio

LIC – Low Income Countries

OECD – Organization for Economic Co-operation & Development

SIB – Systematically Important Bank

SPSS – Statistical Package for Social Sciences

ABSTRACT

The purpose of this study was to establish the role of Basel III framework on market risk management of commercial banks in Kenya and to determine the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya. The study ought to find out the challenges commercial banks face in regards to the implementation of Basel III framework on market risk management. A descriptive survey design was applied to a population of 42 commercial banks in Kenya. The target population comprised of 42 risk managers employed at the head offices from all the 42 commercial banks. The response rate was 74% (31 out of 42 banks). Primary data was collected using questionnaires which were distributed to the 42 banks and later picked up after the respondents had answered them. Descriptive analysis was used to analyze quantitative data while content analysis was used to analyze qualitative data. The study findings asserted that market risk management under Basel III framework is very important to commercial banks in Kenya since it leads to enhanced market risk management techniques. The study also revealed that majority of the commercial banks in Kenya have commenced the implementation of Basel III framework on market risk management, even though they face challenges with regards to high implementation costs, technology and systems infrastructure and model development and validation issues. The study recommends that commercial banks in Kenya should continue with the pursuit of enhanced market risk management guidelines under Basel III framework by complying and adhering to guidelines enforced by the Central Bank of Kenya. Compliance with the Basel III framework guidelines on market risk management will lead to improved market risk management, thus commercial banks in Kenya will be able to absorb shocks and vulnerabilities that arise from market risk.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The Basel Banking Accords are international standards issued by the Basel Committee on Banking Supervision (BCBS). They refer to international regulations that commercial banks must adhere to. These accords were established by the Bank of International Settlements (BIS), in Basel, Switzerland. The BCBS establishes rules and specific guidelines and also makes recommendations on best practices in the banking industry. The accords aim to ensure financial stability for international banks by increasing their risk absorbing capability. One of the objectives of Basel III framework is to improve the market risk management methods for commercial banks. To implement this, Basel III framework introduced a minimum amount of capital for market risk known as capital adequacy ratio. This ratio represents the minimum amount of capital that commercial banks should maintain as a percentage of their risk weighted-assets. The purpose of this capital is to enable commercial banks to avoid being insolvent. During the 2008 global financial crisis, commercial banks encountered serious losses in their trading books which called for the need to enhance the global market risk framework. The Basel committee introduced Basel 2.5 in order to improve the Basel III market risk management and thus increase the overall level of quality capital (BIS 2010).

The Fisher Effect theory is of importance in the formulation of monetary policies by the central banks. It explains how money supply affects the expected rate of inflation and nominal rate of interest. The theory is also applicable in measuring portfolio returns and in currency markets. Agency theory explains the relationship between the ownership and agents of firms. This theory also explains the difference in interests between the managers and the owners or shareholders (Smith, 2013). This theorem

explains that better hedging policies can have a significance influence on an organization's value. Shiftability theory of bank liquidity refers to an approach to keep banks liquid by supporting the shifting of their assets. A bank's liquidity determines by how quickly it can "shift" its assets for cash. This theory is highly relevant when banks are faced with economic shocks and need to convert easily their assets into cash (Ekaterina & Claire, 2019).

Concerns for prudent financial regulations have been raised since the global financial crisis in 2008 (Lilius, 2012). In Kenya, poor market risk management by commercial banks has previously caused financial distress. Commercial banks in Kenya are prone to financial distress caused by poor market risk management, and thus Basel III framework should be implemented to strengthen their overall risk management techniques (Kariuki, 2013). The banking industry in Kenya is highly competitive, and banks must put in place better risk management techniques to manage any uncertainties in the market. Commercial banks are prone to various market and non-market risks in performing their operations. These risks expose banks to uncertainties that not well taken care of can lead to major losses (Jayadev,2013).

1.1.1 Basel III Framework

Basel III framework is a set of globally agreed standards formulated by the Basel Committee on Banking Supervision (BCBS) after the 2008 financial crisis. The standards intend to enhance the surveillance and general risk management of commercial banks (BIS, 2010). The Basel III accord is a key component of the BCBS response after the 2008 global financial crisis. It addresses a number shortfalls that Basel II framework did not address adequately by way of enhancing them to improve the resilience of the global financial system (BIS 2010).

The purpose of Basel III is to improve the quality of tier1 and tier 2 capital and improved liquidity that will improve banks' risk absorption capability and minimize the use of public funds for recapitalization. Market risk in the banking industry normally occurs as a result of capital markets trading activities. It is due to the uncertainty of equity markets, credit spreads, interest rates and commodity prices. Banks increase their exposure to such uncertainties if they are massively involved in capital markets trading. The major market risk problems in the Kenyan banking industry include: insufficient capital base for covering losses, insufficient transparency of capital structure and inadequate capital buffers (Kombo, 2014).

The main features of Basel III are; enhancement of risk capture, increased quality of capital, improved bank liquidity, constrained bank leverage and limit on procyclicality (BIS, 2010). The objective of Basel III framework is to compel banks to be cautious and resilient by improving their risk mitigating techniques (BIS, 2010a). In order to reduce market risk, Basel III framework introduces an enhanced leverage ratio. In today's global business environment, international coordination has become very important even for the commercial banks. Application of the Basel III framework across countries will allow for consistent comparisons by investors and lending institutions thereby supporting market confidence.

1.1.2 Market Risk Management

Market Risk Management refers to techniques and guidelines that are used to identify, measure, monitor and report and control market risk (Johnson, 2008). Market risk management is concerned with the management of interest rate risk, foreign exchange rate risk, and price variation risk on equities and commodities. Market Risk

Management ensures that commercial banks are not exposed to unacceptable losses outside of their risk appetite. According to the fundamental review of the trading book, banks can either use the internal models approach or the standardized approach in calculating the minimum amount of capital required for market risk (BIS, 2010). In order to use the internal models approach, a bank must qualify a profit and loss attribution and back-testing (BIS, 2010b).

The techniques for effective market risk management differ across different institutions. Institutions that engage themselves in more complex activities in their operations require adequate market risk management processes to monitor, analyze and report the relevant risks to the institution's senior management (CBK Report, 2013). Value-at-Risk (VaR) is a model statistic for measuring market risk on the bank's trading book. It is used to calculate a value-at-risk based capital charge. The goal of VaR is to estimate the risk of loss from an investment, at a pre-defined confidence interval (Johnson, 2008).

1.1.3 Relationship between Basel III and Market Risk

In Basel III framework, banks should maintain and observe a minimum amount of capital charge required for market risk (BIS, 2019). Basel III framework proposed changes in some key elements of market risk measurement which include; changes in the boundary of the banking book and the trading book, changes to the Internal Models Approach (IMA); this entails the adjustment of capital requirements to address calibration issues for trading desks and risks that fall short of processes to assess modellability; and changes to the Standardized Approach (SA), which explains

a refined measurement method for foreign exchange risk, options and index index instruments (BIS, 2019).

One of the objectives of Basel III framework is to improve the market risk management methods for commercial banks. To implement this, Basel III framework introduced a minimum amount of capital for market risk known as capital adequacy ratio. This ratio represents the minimum amount of capital that commercial banks should maintain as a percentage of their risk weighted-assets. The purpose of this capital is to enable commercial banks to avoid being insolvent (BIS, 2010). Basel III framework also introduced a new liquidity ratio for market risk. This ratio shows the financial position of a commercial banks in terms of its total debts and total assets. It is calculated by dividing tier 1 capital by the total assets and it should at least 3%.

1.1.4 Commercial Banks in Kenya

A commercial bank refers to an institution that offers financial services to the general public and other organizations. The main functions of commercial banks are accepting customer deposits, money remittances, provision of credit facilities and any other financial services. Commercial banks in Kenya face both external and internal challenges such poor supervision by the CBK, a slow judicial process in handling bank fraud cases and political patronage by politicians. The banking industry in Kenya comprises 42 commercial banks, 13 microfinance institutions and 1 mortgage finance institution (CBK Annual Report, 2020).

Basel III will enhance the risk absorption ability of commercial banks and shocks resulting from financial and economic crisis. Basel III introduced an improved leverage ratio to reduce market risk affecting commercial banks globally. It also introduced an improved liquidity coverage ratio (LCR) that ensures availability of

quality liquid assets that are easily convertible into cash. Basel III framework aims to provide a strong global banking system where banks would be able to absorb shocks and vulnerabilities in the market. (Matthieu, 2011).

Globally, commercial banks enable growth and economic development by giving out loans to certain priority sectors of the economy (Godana, 2012). However, there are concerns with regards to market risk and how it affects the performance of commercial banks. Commercial banks do not have adequate control over market risk since it is an external force (Namasake, 2016). Therefore commercial banks in Kenya are affected by market risk, which is the main objective of this study.

1.2 Research Problem

In recent years, several studies have been conducted on the adoption of Basel III framework. A lot of emphasis has been put on the benefits as well as the challenges facing commercial banks in the adoption of Basel III framework. Gottschalk (2012) conducted a research on the adoption of Basel III in low-income countries in sub-Saharan Africa and found out that developing economies are adopting a cautious approach towards Basel III implementation. Jangra (2019) asserted that even though implementation of Basel III leads to enhanced risk management systems and transparency in disclosure of financial information, it requires high capital amounts for effective implementation. As different countries continue to debate on the Basel III framework implementation deadlines, discussions of Basel III are changing from compliance to application of global best practices. In truth, while Basel III framework on market risk management is an overdue step in the right direction, a lot still needs to be done and on the corporate governance level where business models and risk strategies are being established (Pascal, 2014).

In Kenya, three commercial banks have previously been put under receivership by the Central Bank of Kenya on its regulatory practices. In 2015, Dubai Bank was placed under receivership due to capital and illiquidity problems. In the same year, Imperial Bank went under due to inconsistencies and mismanagement of funds by the bank. In 2016, Chase bank went under receivership due to its inability to meet its short-term and long-term financial obligations. These commercial banks went under majorly due to poor risk management techniques. Similarly, major banks such as Equity bank and KCB have opted to seek other markets by opening branches in other countries such as Uganda, Tanzania, Rwanda, South Sudan and Democratic Republic of Congo (Dzato, 2017).

Nicolae (2011) also did a study on modelling the market risk under Basel III accord. The study aimed to measure market risk by Value-at-Risk and Expected Shortfall (ES) methods, using parametric methods, non-parametric and Monte Carlo simulations. Results of his study showed that the application of internal models approach (IMA) by banks, applying Value at Risk or Expected Shortfall methods posed a challenge in their growth. Radu (2012) did a research on market risk management under of Basel III and compared different methodologies of Value at Risk estimation. Ghati (2009) also did a research on an evaluation of the preparedness of the Kenyan commercial banks towards Basel II implementation. Her findings showed that commercial banks in Kenya were willing to enact Basel II since it would least to a host of benefits such as enhanced risk management and assessment. Even though the Basel III accord intend bring along a lot of benefits, enacting them requires high capital costs, which reduces the profit margins of a bank. Adoption of Basel accords in countries having inadequate resources could result to inappropriate

diversion of capital from more critical avenues. This research therefore seeks to analyze market risk management methods used by commercial banks in Kenya towards meeting Basel III requirements for market risk management as one of its objectives. What is the rloe of Basel III framework on market risk management of commercial banks in Kenya?

1.3 Research Objective

i. To establish the role of Basel III framework on market risk management of commercial banks in the Kenya.

ii. To determine the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya.

1.4 Value of the Study

Results from this study will help determine if market risk management under Basel III has an effect on commercial banks in Kenya. It will also help commercial banks in making informed decisions relating to market risk management in line with the Basel III framework. This study will also assist commercial banks in adapting to the dynamic business environment.

The results of this research will assist future researchers and academicians with additional knowledge on the effects of Basel III framework on market risk and its effects on commercial banks in Kenya. It will introduce important relationships that require more research specifically in regards to Basel III implementation.

The study will also provide insights on enhancement of growth and performance of policy formulation for commercial banks in Kenya. This would therefore help policy makers such as Central Bank of Kenya in the review of existing policies for market risk management.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter entails literature review on similar research studies that have been done previously and are related to this topic of study. It presents relevant theories related to the topic of study, empirical reviews of previous literature under Basel accords and an in-depth literature on Basel III.

2.2 Theoretical Review

The purpose of this review is to examine previous theories that already exist and the relationships between them and their relevance to the current topic of study.

2.2.1 International Fisher Effect Theory

The International Fisher Effect (IFE) states that the nominal rate of interest less the expected rate of inflation equals the real rate of interest. This theory is of importance in forex trading. Irving Fisher (1930) introduced the theory of interest rates. He noted that foreign exchange rates fluctuate. The theorem also states that exchange rate fluctuations occur as due to the equilibrium of interest changes. On the contrary, Irving Fisher argues that actual interest rates across different countries occur because of possible arbitrage opportunities involving the financial and capital markets. Therefore, this theory explains why actual interest rate differential among two countries tend to replicate.

The Fisher Effect theory is of importance in the formulation of monetary policies. It explains how money supply affects the inflation rate and nominal rate of interest. The theory is also applicable in measuring portfolio returns and in currency markets. If the International Fisher Effect theory holds, highly volatile currencies should depreciate

in value while currencies with low interest rates should appreciate in value (Madura, 2010).

2.2.2 Asset Pricing Theory

Mossin (1966), Linter (1965) and Sharpe (1964) introduced this theory. Eventually they later came up with the capital asset pricing model (CAPM). Namasake (2016) asserts that systematic risk and risk free rate of interest are the major determinants in the determination of the intrinsic value of an asset. This theory ascertains that the market is imperfect hence commodities are mispriced in the short-term. Nonetheless, market activities normally correct this error.

Commercial banks should propose a risk premium equivalent to the general market risk premium in order to protect themselves from various risks incurred from loans. The theory assumes that commercial banks will diversify their portfolios as well as choose their suitable risk profile based on the market risk premiums (Fama and French 2004).

Ahmad and Ariff (2007) assert that the pricing of commercial bank loans depends on the risks that such loans attract. According asset pricing theory, liquidity risk and credit risk are the main risks that can pose a major impact on the pricing of the commercial bank's loan. This theory clearly brings out the relationship between fluctuating interest rates and market risk premium which determines the type of a risk a commercial banks faces when pricing her loans.

2.2.3 Liquidity Preference Theory

This theory was introduced by Keynes in 1936. According to this theory, demand for money depends on three main motives: transactions, precautionary and speculative. All these motives answer one question: "Why do people hold money?" First, the transaction motive includes people's necessity to hold some amount of money to carry out everyday transactions. Second, the precautionary motive explains that individuals prefer to have the amount for unexpected expenses besides the transaction costs. Third, the speculative motive shows that people prefer to hold money as a store of wealth. In addition, they want to retain liquidity (Mishkin, 2013). To satisfy all motives, individuals prefer short-term securities with low returns (or even cash) instead of long-term securities. Long-term securities have greater uncertainty and risk. That is why, if an individual decides to take this type of investment, they will expects a higher return from it (Ekaterina & Claire, 2019)

2.2.4 Shiftability Theory of Bank Liquidity

This theory was advanced by M.G Mouton in 1918. It refers to an approach to keep banks liquid by supporting the shifting of their assets. A bank's liquidity determines by how quickly it can "shift" its assets for cash. This theory is highly relevant when banks are faced with economic shocks and need to convert easily their assets into cash. This theory is directly connected with LCR implementation because it makes the availability of the high liquid assets mandatory for all banks. To deepen this theory, Dodds (1982) explained that banks could not only hold liquidity through marketable assets but could also find liquidity by borrowing (Ekaterina & Claire, 2019)

2.3 Empirical Review

Nicolae (2011) studied modelling the market risk under Basel III accord. The study aimed to measure market risk by Value-at-Risk and Expected Shortfall (ES) methods, using parametric methods, non-parametric and Monte Carlo simulations. Results of the study showed that the application of internal models approach (IMA) by banks, applying Value at Risk or Expected Shortfall methods posed a challenge in their growth. Radu (2012) did a research on market risk management in the context of Basel III framework. He analyzed market risk by comparing different methodologies of Value at Risk estimation. To determine the value-at-risk, three types of methods were applied: parametric, historical method and the Monte-Carlo simulation. From the study, the best results were obtained with the historical simulation with volatility adjustment.

Gottschalk and Griffith-Jones (2012) conducted a research on the adoption of Basel III in low-income countries (LIC). Their main concern was the economies' views on Basel III, their progress on implementation and the challenges they faced in doing so. They also discussed the possible effects of Basel III adoption in emerging economies' banking industries. They found that most developing economies adopted a cautious approach towards Basel III framework implementation. According to their study, they found out that several low income countries felt that they have previous tasks to complete with regards to Basle II before they adopt Basle III (Dickson, Meeme, Maina & Muriithi, 2016).

Muriithi (2016) studied the impact of market risk on the financial performance of commercial banks in Kenya. The study measured market risk by foreign exchange

exposure, interest rate risk and degree of financial leverage. The study recommended that commercial banks in Kenya should establish better ways of measuring market risk. Cornelia (2012) explained that changes in commodity price fluctuations will appreciate and depreciate depending on the daily marketplace occurrences.

Similar studies have been conducted on the adoption of the Basel III framework globally such as that provided by (Bilal & Salim, 2016). Alexander (2013) studied the effectiveness of risk management systems under Basel III framework. The findings revealed that Basel III framework had both benefits and challenges in its adoption. He asserted that improved capital adequacy was a major benefit from the adoption of Basel III framework.

Gottschalk and Griffith (2006) conducted a study on the implantation of Basel II in low-income economies. They found out that even though Basel II improved the resilience of the global financial system, it had some challenges in the adoption process. They conducted surveys in 8 emerging economies in Africa namely; Kenya, Uganda, Tanzania and Zambia. Their findings showed that adoption of Basel II in developing countries was faced by challenges such as inadequate human skills and the necessary resources required for ensuring proper adoption. Technical capacities and lack of reliable data to test the Basel framework models efficiently were also some of the challenges faced.

The advantages of adopting Basel III included enhanced risk management systems, transparency in disclosure of financial information, and balanced risk-returns (Boora & Jangra, 2019). The disadvantages of enacting Basel III included higher costs for

maintaining capital, lack of adequate funds and data collection, analysis and reporting issues (Tanna, 2016). Those studies asserted that concluded that knowledge and awareness of the Basel III framework, effective organizational management, availability of efficient capital and human resources were necessary for the Basel III implementation.

2.5 Market Risk Management

Commercial banks are exposed to market risk and they have well-defined risk management techniques that they apply to mitigate failure and losses that might arise from market risk. The portfolios of securities or equities are always exposed to market risk. The CBK defines the market risk management infrastructures that are applicable to commercial banks in Kenya. The CBK has a board of directors and senior management oversight body that formulates and approves market risk management policies. Such policies are well- defined procedures for limiting market risk losses. It is the responsibility of every commercial bank to put in place adequate infrastructure to monitor, analyze and report market risk periodically (CBK report, 2013).

2.5.1 Interest rate risk

This refers to the potential for investment losses as a result of fluctuations in the interest rates. The value of an investment depreciates with an increase in the interest rates. Interest rate risk can be reduced by hedging (Lucian, 2016).

2.5.2 Foreign Exchange Risk

This is the risk that the financial position of a business will be affected by the fluctuation in the currencies exchange rates. There are three types of foreign exchange

risk namely; transaction risk, economic risk and translation risk. Ionescu, (2003) found out that the foreign exchange risk impacts the banking operations in foreign currency.

2.5.3 Price Risk

This is the risk that the value of a commodity or investment will reduce to a lower level. This may be attributed to poor business management strategies, price changes and earnings volatility. Major factors affecting price risk are earnings volatility and poor business management practices (CBK Report, 2013).

2.6 Summary of Literature Review

The concept and importance of various theories to this research has been examined. The empirical review entails the contributions of various researchers that have attempted to explain similar relationships to this study. From the empirical literature review, most studies have examined other aspects of Basel III implementation such as liquidity risk, credit risk, systemic and operational risk. Several studies have been cited on Basel III framework implementation specifically on the benefits and challenges incurred. It is apparent from the empirical studies that the effect of Basel III implementation on market risk management is a controversial topic which needs further investigation and hence the need for this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails the methodology that was be used in data collection, analysis and presentation. The chapter contains the research design, population, data collection and data analysis.

3.2 Research Design

This study adopted a descriptive research design. Wairi (2011) defines descriptive research design as a scientific way involving describing and observing the behaviour of a theme devoid of affecting it in any way. Descriptive studies evaluate features related to the population under study (Cooper & Schindler, 2014). A descriptive research design is preferred as it allows for the detailed examination of relations of the variables under study. Descriptive analysis was used to analyze quantitative data while content analysis was used to analyze qualitative data collected from the questionnaires.

3.3 Population

This refers to a group of subjects with common characteristics. The target population consisted of forty two (42) commercial banks that operate in Kenya as shown in appendix I. The target respondents include 31 risk managers out of a total targeted number of 42. This translated to a 74% response rate. The study used a census survey to get views and opinions of all the respondents on Basel III framework and market risk management of Kenyan commercial banks.

3.4 Data Collection

This study relied on primary data which was collected through questionnaires that were designed in semi-structured format to allow the respondents to express their views without undue limitation. The questionnaires were divided into four sections. Section A was designed to collect the respondents' general information on the commercial bank and the respondents work experience in the banking industry. Section B was designed to collect data on market risk management for commercial banks in Kenya. Section C covered Basel III framework implementation. Finally, section D covered the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya and possible recommendations for effective implementation of Basel III framework on market risk management. A total of 31 respondents were positive on the survey, which translated to a response rate of 74%. Kenya.

3.6 Data Analysis

This is the mechanism of modelling data collected to discover useful information from it for effective decision making. The purpose of data analysis is to clean the data and present it in a meaningful manner that can be used to make informed decisions relating to a subject of study. (Kombo, 2014). This study was guided by the two objectives which are; to establish the role of Basel III framework on market risk management of commercial banks in Kenya and to determine the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya. Descriptive statistics was used to measure quantitative data, which was analyzed using Microsoft Excel. Tables and figures were used to illustrate the data. Content analysis was used to analyze qualitative data and

inferential statistics was used to investigate if relationships exist between Basel III framework and market risk management.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the findings of the research study. The findings of the research are in line with the research objectives, which were to establish the role of Basel III framework on market risk management of commercial banks in Kenya and to determine the challenges faced in the implementation of Basel III accord on market risk management of commercial in Kenya.

4.1.1 Response rate

Questionnaires were distributed to forty two (42) commercial banks that operate in Kenya. Thirty one (31) out of forty two (42) respondents responded fully to the survey, translating to a response rate of 74%.

4.1.2 Institutions with independent risk departments

Results from the data collected indicated that 80% of the banks (25 out of 31) had independent risk departments that managed the various risks within their institutions.

Table 1: Distribution of institutions with risk departments

Institution	Frequency	Percentage
With Independent risk department	25	80
Without Independent risk department	6	20
Total	**31**	**100**

Source: Primary data

4.1.3 Basel III framework awareness and Implementation

The study ought to determine the awareness level of commercial banks in Kenya as well as those that have commenced implantation of Basel III framework, as shown in table 2.

Table 2: Basel III awareness

Institution	Yes	No	Total
Institution aware of Basel III framework	28	3	31
Institutions that have commenced implementation of Basel III framework	21	10	31

Source: Primary data

The results from table 2 indicate that 90% (28 out of 31) of the banks had an awareness of Basel III framework and 68% (21 out of 31) of the banks have already started the implementation of Basel III framework.

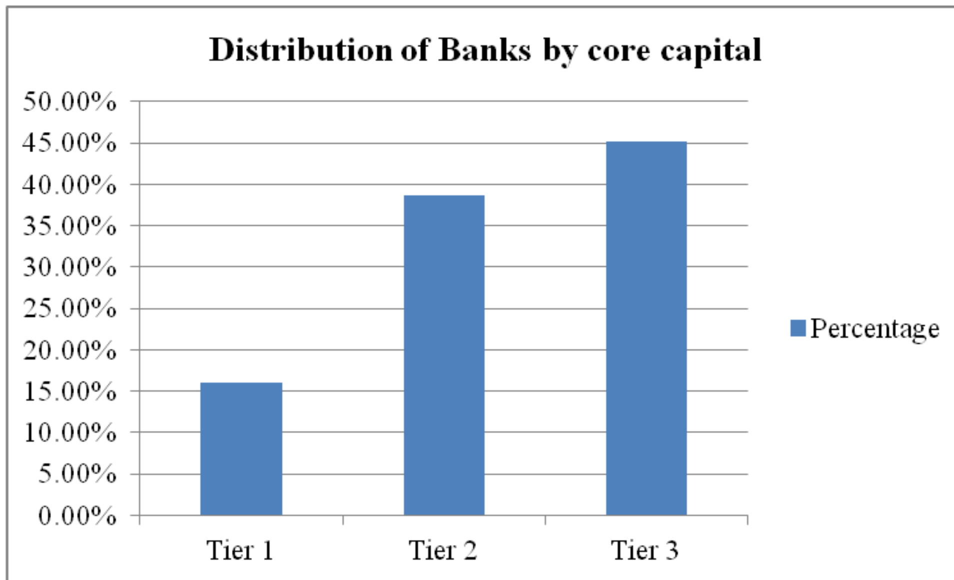
4.1.4 Core Capital

The results of the institutions' core capital are as shown in table 3

Table 3: Institutions' core capital

Core Capital (Ksh. Billion)	Frequency	Percentage
Tier 1	5	16.1%
Tier 2	12	38.7%
Tier 3	14	45.2%
Total	**31**	**100%**

Source: Primary data



Source: Primary data

Figure 1: Core capital

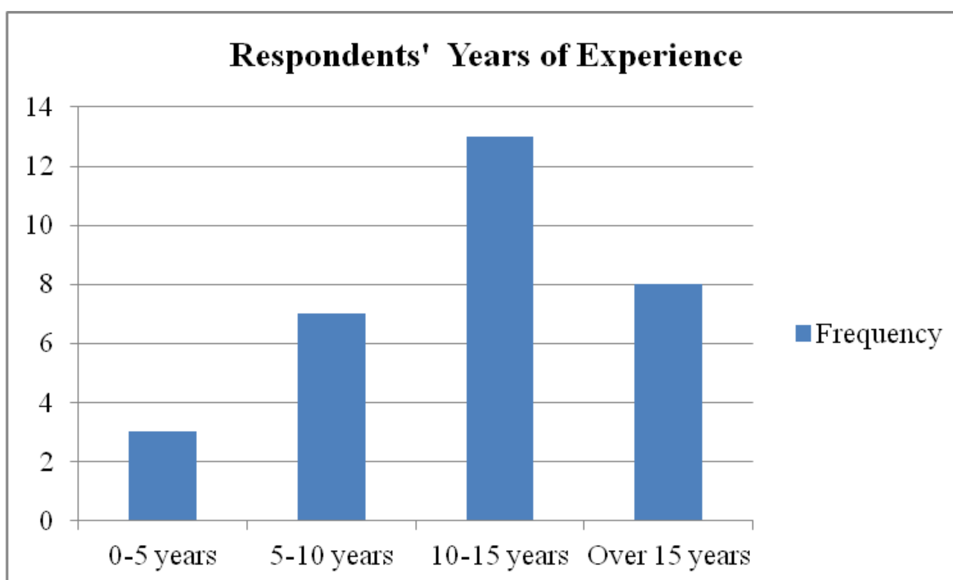
The results asserted that 45% (14 out of 31) of the banks fall under tier 3, 39% (12 out of 31) of the banks are tier 2 banks and 16% (5 out of 31) are tier 1 banks.

4.1.5 Respondents' total work experience

Table 4: Work Experience

Duration	Frequency	Percentage
0-5 years	3	9.70%
5-10 years	7	22.60%
10-15 years	13	41.90%
Over 15 years	8	25.80%
Total	**31**	**100.00%**

Source: Primary data



Source: Primary data

Figure 2: Years of Experience

The results indicate that 42% of the respondents have a work experience in the banking industry of between 10 to 15 years, 26% have over 15 years of experience, 23% have between 5 to 10 years of experience and 10% have less than 5 years of work experience in the banking industry.

From the above results, most of the respondents have adequate years of work experience in the industry, therefore they have a better understanding of the role of Basel III framework on market risk management of commercial banks in Kenya.

4.2 Importance of Market Risk Management

The study sought to determine the extent to which market risk management is important to commercial banks and the results were analyzed on a Likert scale and the results are as displayed in table 5.

Table 5: Importance of Market Risk Management

Extent	Frequency	Percentage
Very great extent	17	54.8
Great extent	10	32.3
Moderate extent	4	12.9
Little extent	0	0
No extent	0	0
Total	**31**	**100**

Source: Primary data

The results from table 5 depicted that majority of the respondents asserted that market risk management is important to commercial banks in Kenya. 55% of the respondents indicated that market risk management is important to a very great extent, 32% agreed that it is important to a great extent and only 4% agreed that it is important to a little extent.

4.6.1 Market Risk Measurement Methods

Respondents were asked the various methods they apply in measuring market risk within their banks and the results are as shown in table 6.

Table 6: Market Risk Measurement Methods

	Method	No. of Institutions
a)	Stress-testing	19
b)	Back-testing	17
c)	Value-at-risk	24
d)	Expected shortfall	20

e) Trend analysis	28
f)Standard deviation	7

Source: Primary data

Majority of the commercial banks used more than four methods to measure their market risk.

The study also sought to find out the degree to which the market risk management methods are important to Kenyan commercial banks as illustrated below.

Table 7: Importance of market risk management

Method		A very great extent	A great extent	A moderate extent	A little extent	No extent	Total	Mean	Standard deviation
a)	Stress-testing	19	10	2	0	0	31	4.5484	4.0640
b)	Back-testing	17	9	5	0	0	31	4.3871	3.9267
c)	Value-at-risk	20	7	4	0	0	31	4.5161	4.0481
d)	Expected shortfall	15	8	7	1	0	31	4.1935	3.7503
e)	Trend analysis	20	8	2	1	0	31	4.5161	4.0401
f)	Standard deviation	11	15	1	4	0	31	4.0652	3.5831

Source: Primary data

Results from table 7 revealed that stress-testing is the most important market risk measurement method used to a great extent as illustrated by an average of 4.5484, value-at-risk and trend analysis to a great extent as illustrated by an average of 4.5161, while back-testing, expected shortfall and standard deviation methods are important to a moderate extent as illustrated by means of 4.3871, 4.1935 and 4.0652 respectively.

4.6.2 Types of Market Risks

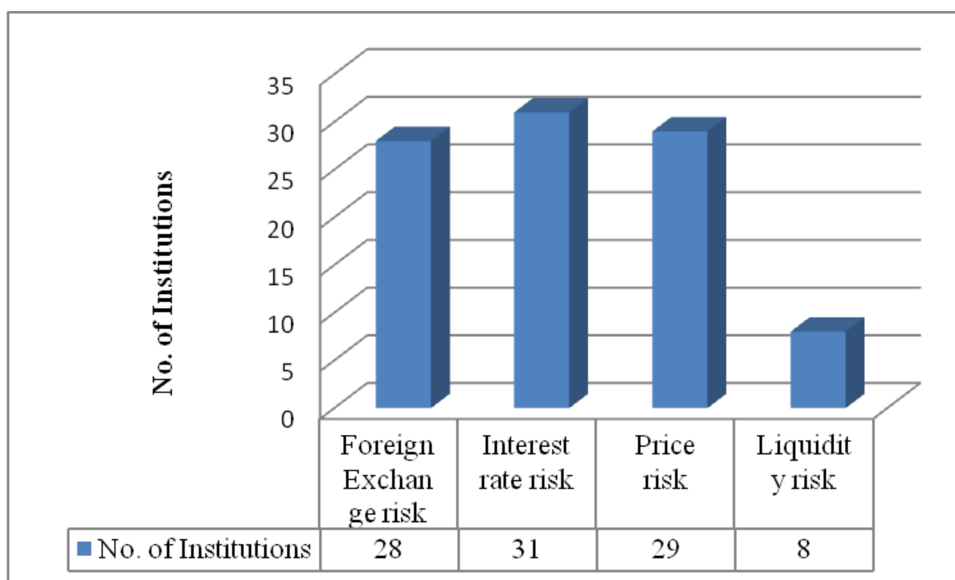
Respondents were asked to indicate the different market risks that their institutions are exposed to and the results are as shown in table 8 below.

Table 8: Types of market risks

	Risk	**No. of Institutions**
a)	Foreign Exchange risk	28
b)	Interest rate risk	31
c)	Price risk	29
d)	Liquidity risk	8

Source: Primary data

All commercial banks are exposed to interest rate risk and majority of them are also exposed to foreign exchange rate risk and price risk, as depicted in table 8.



Source: Primary data

Figure 3: Types of Market Risks

The results from figure 3 indicate that majority of the commercial banks are exposed to interest rate risk, foreign exchange rate risk and price risk.

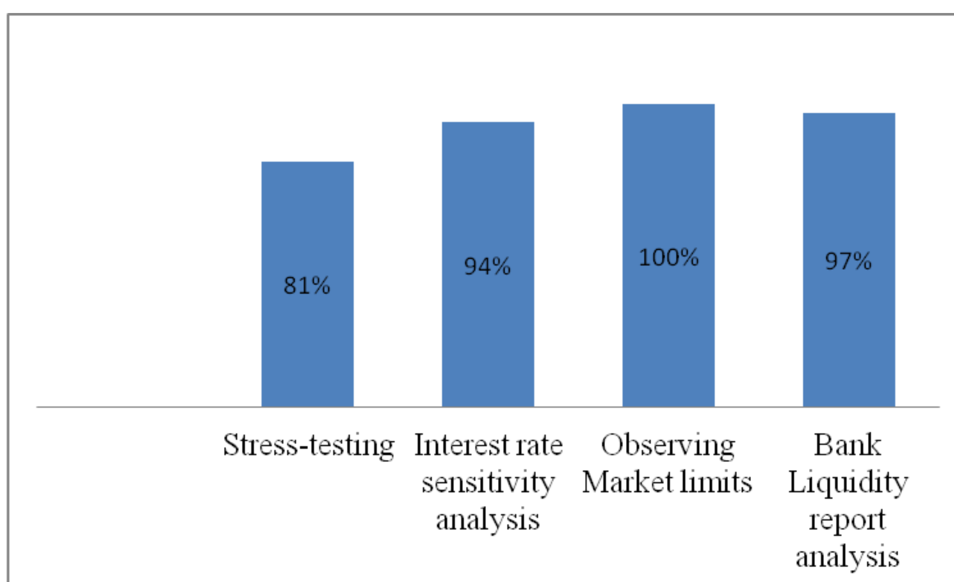
In addition, respondents were also asked how they monitor market risk and the findings are as shown in table 9.

Table 9: Market Risk Monitoring

	Method	**No. of Institutions**	**Percentage**
a)	Stress-testing	25	81%
b)	Interest rate sensitivity analysis	29	94%
c)	Observing Market limits	31	100%
d)	Bank Liquidity report analysis	30	97%

Source: Primary data

Figure 4.4: Market Risk Monitoring



Source: Primary data

Figure 4: Market Risk Monitoring

Analysis of the risk monitoring methods showed that all the banks used observing market limits (100%), 97% of the banks relied on bank liquidity analysis report, 94% relied on interest rate sensitivity analysis and 81% used stress-testing.

4.6.3 Capital Allocation for Market Risk

Respondents were asked if they allocate capital for market risk management and the results are as shown in table 10.

Table 10: Capital Charge for Market risk

	Yes	No	Total
Institutions	19	12	31

Source: Primary data

From the results in table 10, 61% (19 out of 31) of the respondents indicated that they allocate capital for market risk while 39% (12 out of 31) indicated that they do not allocate capital for market risk management.

Respondents were also asked the type of method they use in assessing the capital charge for market risk as shown in table 11.

Table 11: Capital allocation approaches

	Approach	**No. of Institutions**
a)	Internal Models Approach	14
b)	Standardized Approach	0
	Total	**31**

Source: Primary data

Only 14 out of 31 commercial banks used the internal models approach in allocating capital for market risk management.

4.7 The Role of Basel III framework on Market Risk Management

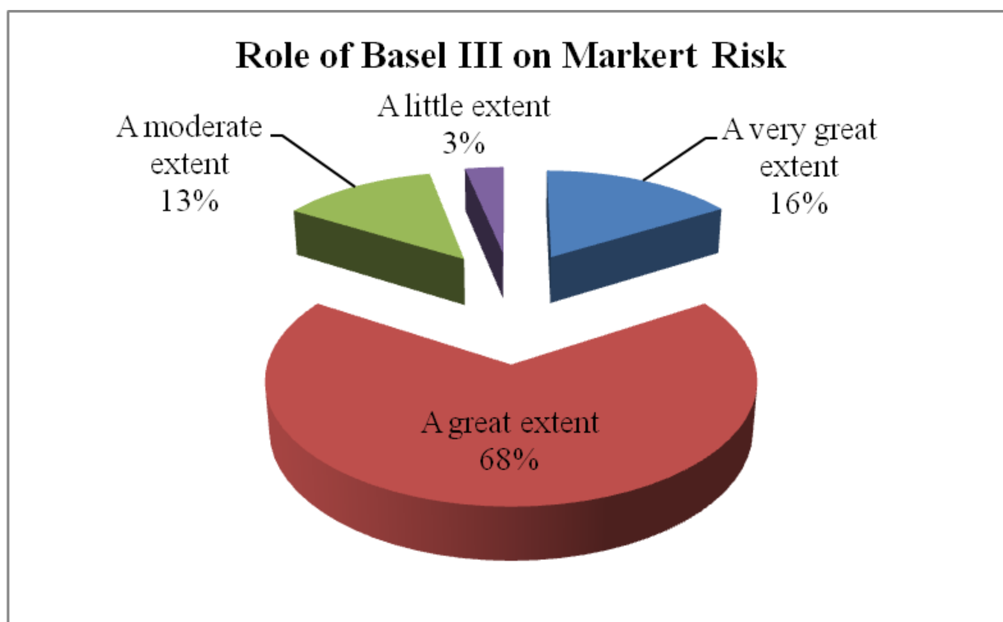
Table 12: Role of Basel III framework

	Extent	**Frequency**	**Percentage**
a)	very great extent	5	16.1
b)	great extent	21	67.7
c)	moderate extent	4	12.9
d)	little extent	1	3.3
e)	No extent	0	0
	Total	**31**	**100**

Source: Primary data

Respondents' views on on the role Basel III framework in market risk management was captured and analyzed on a Likert scale and the results were tabulated as shown in table 12.

68% (21 out of 31 banks) asserted that adoption of Basel III framework will be beneficial to a great extent, 16% expect to benefit to a very great extent and 13% expect to benefit to a moderate extent. These results depict that most commercial banks are positive about the adoption of Basel III accord on market risk.



Source: Primary data

Figure 5: Role of Basel III on market risk

Results from figure 5 indicate that majority of commercial banks in Kenya are willing to implement the Basel III framework on market risk since it enhances the market risk management.

4.7.1 Basel III framework implementation costs

Table 13: Implementation Costs

	Cost	Not Critical	Least Critical	Critical	Quite Critical	Very Critical	Total	Mean	Standard Deviation
a)	Model development	0	0	1	9	20	31	4.483871	4.071934
b)	Model validation	0	0	2	5	24	31	4.709677	4.219769
c)	Staff training	0	0	15	10	6	31	3.709677	3.262692
d)	Database development and maintenance	0	0	4	3	24	31	4.645161	4.17365
e)	Outsourcing	0	19	6	3	3	31	2.677419	2.341767

Source: Primary data

From table 13, majority of the respondents indicated that model validation, database development and maintenance and model development are very critical costs to be incurred in the implementation on Basel III accord on market management as shown by mean scores of 4.7097, 4.6452 and 4.4839 respectively. Staff training and outsourcing are the least costs as illustrated by average scores of 3.7097 and 2.6774 respectively.

4.7.2 Features of Basel III framework

Table 14: Features of Basel III framework

	Features of Basel III	Not Critical	Least Critical	Critical	Quite Critical	Very Critical	Total	Mean	Standard Deviation
a)	Enhancement of risk capture and management	0	0	4	5	22	31	4.580645	4.111353
b)	Increase in the level and quality of capital	0	0	6	10	15	31	4.290323	3.83532
c)	Improved bank liquidity	0	0	3	5	23	31	4.645161	4.165914
d)	Constrained bank leverage	0	0	10	6	15	31	4.16129	3.733026
e)	Limit on procyclicality	0	10	7	4	10	31	3.451613	3.162278

Source: Primary data

From table 14, majority of the respondents asserted that improved bank liquidity, enhancement of risk capture and management, increase in the level of quality capital and constrained bank leverage are very critical features of Basel III framework that have a great impact on the commercial banks as illustrated by average scores of 4.6452, 4.5806, 4.2903 and 4.1613 respectively. Limit on procyclicality had the least effect as shown by the lowest mean score of 3.4516.

4.7.3 Benefits of Implementation of Basel III framework

Table 15: Benefits of Basel III

	Benefits	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total	Mean	Standard Deviation
a)	Improved risk management	0	0	0	25	6	31	4.193548	3.680813
b)	Improved risk pricing	0	0	3	15	13	31	4.322581	3.843721
c)	Improved market discipline	0	0	10	19	2	31	3.741935	3.25279
d)	Promote safety and soundness	0	0	9	20	2	31	3.774194	3.282407
e)	Enhanced risk assessment	0	0	1	5	25	31	4.774194	4.272946

Source: Primary data

Results from table 15 illustrates that a greater number of the respondents strongly agreed that commercial banks would benefit from enhancement of risk assessment, improved risk pricing and improved risk management as shown by mean scores of 4.774, 4.3226 and 4.1935 respectively. Other respondents also agreed that commercial banks would benefit from promotion of safety and soundness and improved market discipline as indicated by averages of 3.7742 and 3.7419 respectively.

4.7.4 Content Analysis on the role of Basel III framework on Market Risk Management of Commercial Banks in Kenya

From the open ended questions, majority of the respondents asserted that Basel III framework is an overdue step in the right direction in the banking industry since it enhances prudent market risk management strategies. Majority of the respondents explained that some of the benefits commercial banks would gain from the implementation of Basel III framework on market risk include improved risk

management, enhanced risk assessment, improved risk pricing and improved disclosure of financial information to the general public.

The extent to which implementation of Basel III framework on market risk management would be beneficial to commercial banks in Kenya was also sought for. The responses were analyzed on a Likert scale as illustrated in table 12. 81% asserted that commercial banks would benefit to great extent from the implementation of Basel III framework on market risk management.

It is worth noting that the benefits from the implementation of the framework exceed the challenges faced since most commercial banks have commenced the adoption of Basel III framework on market risk management.

4.8 Challenges faced in the implementation of Basel III framework on Market Risk Management of Commercial banks in Kenya.

Table 16: Challenges of Basel III

	Challenges	**Not Critical**	**Least Critical**	**Critical**	**Quite Critical**	**Very Critical**	**Total**	**Mean**	**Standard Deviation**
a)	Data collection and reporting	0	0	2	4	25	31	4.741935	4.250237
b)	Model development & validation	0	0	6	5	20	31	4.451613	4.00000
c)	Technology and system infrastructure	0	0	2	3	26	31	4.774194	4.280488
d)	Basel III accord awareness	0	0	15	5	11	31	3.870968	3.454777
e)	Human skills & resources	0	0	18	5	8	31	3.677419	3.25279
f)	Implementation costs	0	0	1	3	27	31	4.83871	4.33292
g)	Availability of reliable data	0	0	1	5	25	31	4.774194	4.272946

Source: Primary data

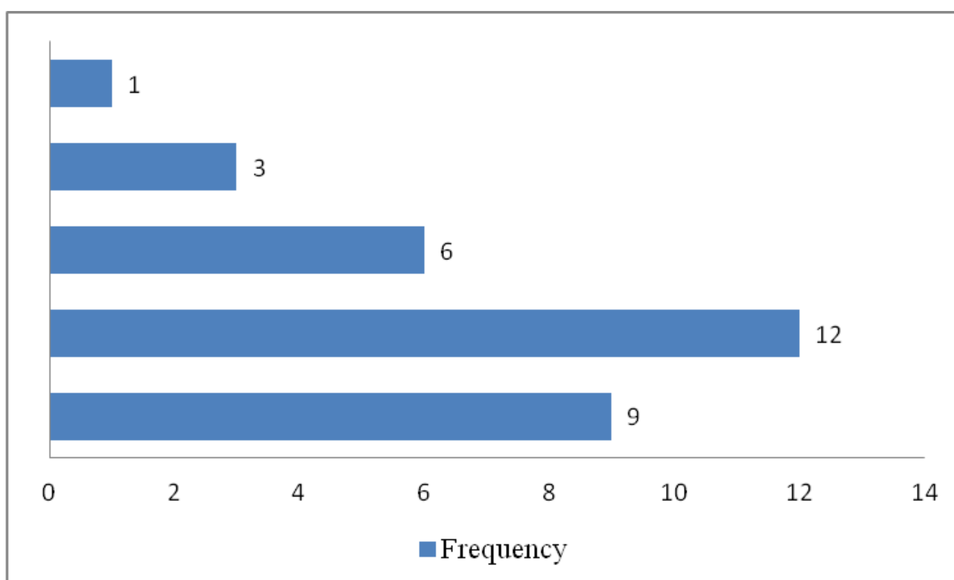
Results from table 16 show the extent of the challenges faced in the adoption of Basel III framework on market risk management. Majority of the respondents indicated that implementation costs, technology and system infrastructure, availability of reliable data and data collection and reporting are very critical challenges that hinder implementation of Basel III framework on market risk as depicted by mean scores of 4.8387, 4.7742, 4.7742, 4.7419 and 4.4516 respectively. Basel III awareness and availability of human skills and resources are the least challenges with averages of 3.8710 and 3.6774 respectively.

4.8.1Measures taken to ensure compliance with Basel III framework on Market Risk Management

Table 17: Measures of compliance

	Extent	Frequency	Percentage
a)	very great extent	9	29
b)	great extent	12	39
c)	moderate extent	6	19
d)	little extent	3	10
e)	No extent	1	3
Total		**31**	**100**

Source: Primary data



Source: Primary data

Figure 6: Measures of compliance

Results from table 17 indicate that majority of the respondents (39%) asserted that commercial banks have commenced the adoption of measures towards compliance with market risk management under Basel III framework to a great extent, 29% to a very great extent, 19% to a moderate extent and 10% to a little extent. Only 3% had taken no step towards compliance with market risk management in regards to Basel III framework.

4.8.2 Resources for Basel III framework Implementation

Table 18: Resources for Basel III

Resource	Yes	No	Total
Technology	14	17	31
Capital	12	19	31
Human skills	10	21	31
Data	15	16	31
Time	20	11	31
Average	**14**	**17**	**31**

Source: Primary data

From table 18, the results indicate that an average of 14 commercial banks have the necessary resources for effective adoption of Basel III framework on market risk management, translating to 45% of the banks, while 17 commercial banks lack the necessary resources for effective adoption of Basel III accord on market risk.

4.8.3 Content analysis on Challenges facing the Implementation of Basel III framework on market risk management of commercial banks in Kenya.

In regards to the open ended questions, most of the respondents stated that proper allocation of capital for market risk management is a core element in the implementation of market risk management under Basel III framework. Majority of the respondents asserted that availability of technology; adequate time and capital are the core critical resources for the implementation of the new market risk management under Basel III framework. However, the respondents also explained that even though Basel III accord on market risk management would improve the overall market risk management for commercial banks in Kenya, its implementation requires high amounts of capital which impacts the competitiveness of the commercial banks.

4.8.4 Chapter Summary

The objectives of this research project were to establish the role of Basel III framework on market risk management of commercial banks in Kenya and to determine the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya. This chapter entailed the presentation of the research findings. Results are illustrated in tables and figures. Descriptive statistics has been used to generate the means, standard deviations, frequencies and percentages.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter entails the summary of the study, conclusions and recommendations for further research with regards to the study objectives.

5.2 Summary of the Study Findings

The first objective was to establish the role of Basel III framework on market risk management of commercial banks in Kenya. The study found out that implementation of Basel III framework increases the overall market risk management strategies for commercial banks in Kenya, thereby enhancing the resilience in banking industry. The study also asserted that Basel III framework on market risk management will lead to improved risk management, improved market discipline, enhanced risk assessment methods and promote safety and soundness of the Kenyan banking industry.

Majority of the commercial banks agreed that implementation of Basel III framework will be beneficial in better market risk identification, analysis, reporting and continuous monitoring. The study however noted that implementation of market risk framework under Basel III is capital intensive since high capital amounts are required in model development, model validation and database development and maintenance.

The second objective was to determine the challenges faced in the implementation of Basel III framework on market risk management of commercial banks in Kenya. The study results revealed that most commercial banks faced implementation challenges to great extent in the implementation costs, model development and validation, data collection and reporting, technology and system infrastructure and Basel III framework awareness. Generally, majority of the respondents asserted that implementation is the major challenge affecting commercial banks to a great extent

since a lot of capital is required in purchasing, installation and control of the necessary infrastructure for market risk management.

These findings are in sync with those of the Basel Committee on banking supervision (2010b) that asserted that commercial banks in different countries will be affected by high cost of capital in the implementation process.

5.3 Conclusions

5.3.1 The Role of Basel III framework on Market Risk Management

The research established that implementation of Basel III framework positively influences how Kenyan commercial banks manage their market risk since it leads to improved market risk management and control. The study concludes that market risk management is a very important aspect for the banking industry in Kenya. The research outcome asserted that many of the banks use trend analysis, value-at-risk, expected shortfall, stress-testing and back-testing as the major methods of measuring market risk. 20 out of 31 commercial banks (65%) rely on expected shortfall as a market risk measurement method. This approach is in line with the Basel committee on banking supervision (BCBS) recommendations of replacing value-at-risk with expected shortfall as the main method for measuring market risk. The study findings concludes that implementation of Basel III framework positively influences the market risk management of the Kenyan commercial banks.

5.3.2 Challenges faced in the Implementation of Basel III framework on Market Risk management of Commercial banks in Kenya

In conclusion, commercial banks in Kenya still face quite a number of setbacks in the adoption of Basel III framework on market risk. The most dominant challenge across the majority of commercial banks is implementation costs since high capital amounts

are required in the implementation process. Other challenges faced by the commercial banks included technology and system infrastructure, model development and validation problems as well as data collection and reporting issues.

Only an average of 14 out of 31 commercial banks had the technology needed for the effective adoption of Basel III framework on market risk management. The research concluded that commercial banks in Kenya still face quite a number of challenges in regards to implementing Basel III framework on market risk management.

5.4 Recommendations

From the study findings, commercial banks in Kenya still face a number of challenges in implementation of Basel III framework on market risk management. This calls for a need for a better awareness of Basel III framework since it was rated moderate with a mean score of 3.8709. The study recommends that the CBK should enhance the awareness of Basel III framework has imposing mandatory guidelines that commercial banks must adhere to in regards to Basel III framework implementation on market risk.

Commercial banks in Kenya also face challenges with technology and systems infrastructure, model development and validation and data collection and reporting issues. This study recommends that banks in Kenya should develop accurate and timely systems infrastructure that are essential in managing market risk exposure while ensuring data integrity, confidentiality and consistency.

This study also recommends that commercial banks should set aside capital charge against market risk so that they can address uncertainties that may arise as a result of market risk. In addition, the study recommends that commercial banks should train

their human resource personnel about the recommendations of Basel III accord on market risk management

Commercial banks should perform stress-tests routinely to measure the vulnerability of losses arising market risk operations. This helps in monitoring interest rates fluctuations, commodity prices, foreign exchange fluctuations and equity exposures.

Even though commercial banks in Kenya still face challenges in regards to the implementation of Basel III framework on market risk management, it was observed that majority of the banks have already commenced the implementation process for market risk management.

5.5 Study Limitations

A few institutions were non responsive on information disclosure from the questionnaires due to confidentiality issues in providing sensitive information. This resulted to a response rate of 74% (31 out of 42 commercial banks).

5.6 Suggestions for further research

Basel III framework is based on three pillars which are minimum capital requirements, supervisory review and market discipline. This study has only analyzed market risk management under Basel III framework. Therefore further research should be done on operational risk under Basel III framework since the banking industry has been dynamic in recent times.

Further research can also be conducted on the impact of Basel III accord on the banking industry in Kenya.

REFERENCES

Adam, M., Taufik, T., & Prathama, A. E. (2015). Bank liquidity-stress testing and Basel 3 implementation in Indonesia. *Economic Journal of Emerging Markets*, 12-23.

Ahmed, S. U., Ahmed, S. P., Islam, N., & Ullah, W. (2015). Impact of Basel II Implementation on the Financial Performance of Private Commercial Banks of Bangladesh. *European Journal of Economics, Finance and Administrative Sciences*, 73-84.

Akter, R., Ahmad, S., Kulsum, U., Hira, N. J., Akhter, S., & Islam, M. S. (2019). A Study on the Implementation of Basel 3: Bangladesh Perspective. *Academy of Strategic Management Journal*, 1-10.

BCBS. (2010). *Basel III: a global regulatory framework for more resilient banks and banking system.* Basel committee on banking supervision;.

Belk, P. (2010). The management of foreign exchange Risk UK Multinationals: An Empirical investigation. *Accounting and Business Research*, 45.

BIS. (2010). *Basel Committee on Banking Supervision (2010a). Basel III: A global regulatory framework for more resilient banks and banking systems.* Basel: Bank for International Settlements.

BIS. (2010). *Basel Committee on Banking Supervision (2010b). Basel III: International framework for liquidity risk measurement, standards and monitoring*. Basel: Bank for International SettlementS.

BIS. (2010). *Basel Committee on Banking Supervision (2010c). Results of the Comprehensive Quantitative Impact Study.* Basel: Bank for International Settlements.

BIS. (2013, December 2). *A brief history of the Basel Committee.* Retrieved from BIS: www.bis.org

CBK. (2012). *Bank supervision Annual Reports.* Nairobi: Central Bank of Kenya.

CBK. (2013). *Bank supervision Annual Reports.* Nairobi: Central Bank of Kenya.

CBK. (2014). *Bank Supervision Annual reports.* Nairobi: Central Bank of Kenya.

CBK. (2015). *Bank supervision Annual Reports.* Nairobi: Central Bank of Kenya.

Dzato, R. (2012, May 12). *Ghana goes Basel II- Key Challenges and Opportunities.* Retrieved from http://www.fepinternational.org/Ghana%20Goes%20Basel%20II-Article.pdf

Hull, J. (2012). *Risk Management and Financial Institutions.* New Jersey: John Wiley & Sons.

Kamau, A. W. (2009). *Efficiency in the Banking sector: An empirical investigation of commercial Banks in Kenya.* Nairobi: University of Nairobi.

Omondi, O. (2015). Basel Accords on Risk Management. *A Survey of Kenya's Commercial Banks*.

Singh, K. (2013). *The relationship between foreign exchange trade and financial performance of commercial banks in Kenya.* Nairobi: University of Nairobi.

Wachiaya, J. (2011). *A Survey of market risk management techniques of commercial banks in Kenya and their suitability in mitigating financial loss.* Nairobi: University of Nairobi.

APPENDICES

APPENDIX I: LIST OF COMMERCIAL BANKS IN KENYA

1. Equity Bank Ltd

2. Ecobank Kenya Ltd

3. Co-operative Bank of Kenya Ltd

4. Chartered House Bank Ltd

5. Development Bank of Kenya Ltd

6. Dubai Bank Ltd

7. Bank of India

8. Diamond Trust Bank (K) Ltd

9. Credit Bank Ltd

10. Spire Bank Ltd

11. Family Bank Ltd

12. Bank of Baroda (K) Ltd

13. Citibank N.A Kenya

14. Barclays Bank of Kenya Ltd

15. Chase Bank Ltd

16 CFC Stanbic Bank (K) Ltd

17. Bank of Africa (K) Ltd

18. NCBA Bank Kenya

19. African Banking Corporation Ltd

20. Consolidated Bank of Kenya Ltd

21. Victoria Commercial Bank Ltd

22. Trans - National Bank Ltd

23. Prime Bank Ltd

24. Standard Chartered Bank (K) Ltd

25. Middle East Bank (K) Ltd

26. Oriental Commercial Bank Ltd

27. Kenya Commercial Bank Ltd

28. Paramount Universal Bank Ltd

29. Sidian Bank Ltd

30. UBA Kenya Ltd

31. National Bank of Kenya Ltd

32. I&M Bank Ltd

33. Habib Bank A.G. Zurich

34. Guardian Bank Ltd

35. Kingdom Bank Ltd

36. Gulf African Bank Ltd

37. Habib Bank Ltd

38. Giro Commercial Bank Ltd

39. Guaranty Trust Bank Ltd

40. First Community Bank Ltd

41. Imperial Bank Ltd*

42. Fidelity Commercial Bank Ltd

Source: research findings

RESEARCH QUESTIONNAIRE

This questionnaire is designed to collect data on the effects of Basel III framework implementation of market risk management of commercial banks in Kenya. Kindly answer all the questions by ticking in the appropriate box or filling in the spaces provided. Data collected shall only be used for academic purposes only, and thus shall be treated with utmost confidentiality. Your cooperation will be highly appreciated.

A. INSTITUTION DETAILS AND BIO DATA

Designation of respondent: ____

1. Does your institution have an independent risk department?

Yes ☐ No ☐

2. If yes, does the department manage market risk?

Yes ☐ No ☐

3. Is the department aware of Basel III framework?

Yes ☐ No ☐

4. If yes, has the institution commenced Basel III framework implementation?

Yes ☐ No ☐

5. What is the core capital of your institution? (*Tick appropriately)*

a) Tier 1: Balance sheet of more than Ksh 40 billion ☐
b) Tier 2: Balance sheet of between Ksh10 billion to Ksh 40 billion ☐
c) Tier 3: Balance sheet of less than Ksh 10 billion ☐

6. What is your total work experience in the banking industry? (*Tick appropriately)*

0-5 years ☐

5-10 years ☐

10-15 years ☐

Over 15 years ☐

B. MARKET RISK MANAGEMENT FOR COMMERCIAL BANKS IN KENYA

1. To what extent do you think market risk management is important to commercial banks in Kenya? (*Tick appropriately)*

A very great extent	A great extent	A moderate extent	A little extent	No extent

2. How does your institution measure market risk?

Method		***(Tick appropriately)***
a)	Stress-testing	
b)	Back-testing	
c)	Value-at-risk	
d)	Expected shortfall	
e)	Trend analysis	
f)	Standard deviation	
g)	Others *(specify)…………………………*	

3. To what extent do you think the following market risk measurement methods are important to commercial banks in Kenya? (*Tick appropriately)*

Method		**A very great extent**	**A great extent**	**A moderate extent**	**A little extent**	**No extent**
a)	Stress-testing					
b)	Back-testing					

c)	Value-at-risk					
d)	Expected shortfall					
e)	Trend analysis					
f)	Standard deviation					
g)	Others *(specify)*					

4. What type of market risk is your institution exposed to? (*Tick appropriately)*

a) Foreign exchange risk ☐
b) Interest rate risk ☐
c) Price risk ☐
d) Others *(specify)*

5. How does your bank monitor market risk? *(Please specify)*

a) Stress testing ☐
b) Interest rate sensitivity analysis ☐
c) Observing market limits ☐
d) Bank liquidity analysis report ☐

6. Does your institution allocate capital for market risk management? (*Tick appropriately)*

Yes ☐ No ☐

7. Which method does your institution use in assessing the capital charge for market risk? (*Tick appropriately)*

☐

a) Standardized Approach

b) Internal Models Approach ☐

c) Others *(specify)*………………………………………………………….

C. THE ROLE OF BASEL III FRAMEWORK IMPLEMENTATION

1. To what extent do you expect your institution to benefit from the implementation of Basel III framework on market risk management? (*Tick appropriately)*

A very great extent	A great extent	A moderate extent	A little extent	No extent

2. To what extent do you expect to incur the following implementation costs for the Basel III framework on market risk management? (*Tick appropriately)*

Cost		Not critical	Least critical	Critical	Quite critical	Very critical
a)	Model development					
b)	Model validation					
c)	Staff training					
d)	Database development and maintenance					
e)	Outsourcing					
f)	Others *(specify)*					

3. To what extent do the following features of Basel III affect commercial banks in Kenya? (*Tick appropriately)*

	Feature	Not critical	Least critical	Critical	Quite critical	Very critical
a)	Enhancement of					

	risk capture and management					
b)	Increase in the level and quality of capital					
c)	Improved bank liquidity					
d)	Constrained bank leverage					
e)	Limit on procyclicality					
f)	Others *(specify)*					

4. To what extent does your organization expect to benefit from Basel III implementation? (*Tick appropriately)*

Benefit		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
a)	Improved risk management					
b)	Improved risk pricing					
c)	Improved market discipline					
d)	Promote safety and soundness					
e)	Enhanced risk assessment					
f)	(*Tick appropriately)*					

4. Do you think that Basel III framework implementation on market risk management of commercial banks in Kenya is an overdue step in the right direction?

Yes ☐ No ☐

5. If yes, state the reason(s)..

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D. CHALLENGES FACED IN THE IMPLEMENTATION OF BASEL III FRAMEWORK ON MARKET RISK MANAGEMENT OF COMMERCIAL BANKS IN KENYA.

1. To what extent do you expect the following challenges in the implementation of Basel III framework on market risk management? (*Tick appropriately)*

	Challenge	**Not critical**	**Least critical**	**Critical**	**Quite critical**	**Very critical**
a)	Data collection and reporting					
b)	Model development & validation					
c)	Technology and system infrastructure					
d)	Basel III accord awareness					
e)	Human skills & resources					
f)	Implementation costs					
g)	Availability of reliable data					
h)	Others *(specify)*					

2. To what extent has the bank taken measures to ensure compliance with market risk management under Basel III framework? (*Tick appropriately)*

A very great extent	A great extent	A moderate extent	A little extent	No extent

3. Does your bank have the following resources for effective implementation of Basel III framework? (*Tick appropriately)*

	Yes	No	
a)	☐	☐	Technology
b)	☐	☐	Capital
c)	☐	☐	Human skills
d)	☐	☐	Data
e)	☐	☐	Time
f)			Others *(specify)*

3. In general what other information would you like to share about the effects of Basel III framework on market risk management of commercial banks in Kenya?

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4. What do you think should be done to ensure effective implementation of Basel III framework on market risk management of commercial banks in Kenya?

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THANK YOU FOR YOUR CONTRIBUTION.