THE EFFECT OF NON-FUNDED INCOME ON THE RISK OF COMMERCIAL BANKS IN KENYA

OMWANCHA ISAAC FELIX

A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER IN BUSINESS ADMINISTRATION (FINANCE), IN THE FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

NOVEMBER, 2021

DECLARATION

This research project is my original work and has not been presented to any other university for the award of a degree or any other ward.

Signed Isaac ..... **Date** 12/11/2021 .....

OMWANCHA ISAAC FELIX **D61/84345/2016**

This research project has been submitted with my approval as the University

Supervisor:

Signed …  …….. Date 17/11/2021 ……

DR. DUNCAN ELLY OCHIENG (PhD, CIFA.CPA)

Senior Lecturer Department of Finance and Accounting

Faculty of Business and Management Sciences, University of Nairobi

DEDICATION

I dedicate this work to my family, my wife Margret and sons Jayson and Carson who have supported me and been patient with me as a pursed this program. Special thanks for support as I worked to complete this project.

ACKNOWLEDGEMENT

Special thanks to my supervisors Dr. Duncan Elly for dedication to this work and timely corrections and suggestions that were monumental to the work. I thank the University of Nairobi for the opportunity given to me to pursue post-graduate studies and specifically, the faculty of business and management sciences. Lastly, to God the Almighty, for unending grace and mercies without which, it could have been impossible to complete this work.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

ICT	Information & Communication Technology
KDIC	Kenya Deposit Insurance Corporation
MTP	Modern Portfolio Theory
NPL	Non-Performing Loans
OBS	Off- Balance Sheet
OMO	Open Market Operation
REPO	Repurchase Agreements

ABSTRACT

Non-funded income for banks is measured from activities arising from the revenue generated from various fees charged, penalty charges, the sale of assets, and the leasing of property. Non-funded income is not affected by financial and economic cycles, and in most instances, it is uncontrolled by regulation or laws. The study examined the effect of non-funded interest income on the risk of Kenyan commercial banks. The study adopted a descriptive research design. Kenyan commercial banks were the target population. The study relied on secondary data for its findings. The data was analyzed with the help of SPSS version 24. Non-funded income does contribute to generating the overall profitability of commercial banks due to the effect it has on increasing revenue streams for commercial bank operations. The correlation shows non-funded income and risk had a moderately positive correlation in commercial banks in Kenya as indicated by an r value of 0.609. A strong correlation r= 0.817, was established between the return on assets and capital adequacy. Level of efficiency and bank size were found not to have a correlation with risk of commercial banks. This was indicated by r values of 0.007 and 0.183 respectively. The results underscore the important role played by key risk indicators. The ANOVA analysis showed the independent variables significantly predict risk of commercial banks (dependent variable). This is indicated by $F(5, 199) = 10.227$, $p<0.05$. The established causal effect of non-funded income on risk underscores the need by commercial banks to diversify their operations into other non-core business activities as a means of generating more revenue. In order to increase their profitability, it is important for commercial banks to diversify their operations to include non-core activities that contribute to minimizing their levels of risk. This will act as important risk mitigation strategies for commercial operators of banks.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Client loans and advances have traditionally been the primary sources of income for banks, followed by non-funded income, but non-funded income has historically been insignificant. Declining interest rate margins, exacerbated by enactment of the Kenyan interest rate capping law in 2016, have forced commercial banks into exploring other revenue sources. This has led to diversification of operations into trading and non-trading activities. The capping of interest rates in Kenya at first yielded some negative effects. Macroeconomic indicators revealed infringement of the Kenyan Central Bank's independence, complicated monetary policy conduct, reduced commercial banks' financial intermediation and reduced lending to the private sector (CBK, 2018).

Commercial banks had to diversify their operations to sustain their income and bank profitability. Diversification is founded on the portfolio theory, which postulates that individuals can considerably reduce non-systematic risk by diversifying their investment portfolios (Uzhegova, 2010). The risks of banks are reduced through product mix and diversification of operations because the income generated from non-funded sources is not significantly correlated with earnings derived from funded activities. Diversification stabilizes working income and increases the probability of having more stable earnings, reducing the risk of a bank (Olweny & Shipho, 2011).

Banks have increased their products and services in response to fast-changing business environments, according to Lepetit, Nys, Rous, and Tarazi (2008). In response to rising

competition and demand for better services and products from corporate enterprises and individuals, banks have changed their focus to non-funded income-generating activities. According to Nachane and Ghosh (2007), increasing commercial banks' off-balance-sheet (OBS) activity is an essential part of financial innovation. Although these actions are not wholly novel, their scope and extent have greatly expanded. As a result, while core banking activities have remained similar over time, the services and products provided to customers have changed significantly (Smith, Staikouras, & Wood, 2003).

Many researchers, notably Demirgiic-Kunt and Huzing (1999), indicate institutions with a high level of non-funded income are much less profitable than banks with a lower level of non-funded income. In addition, those relying deposits to support operations are less lucrative than their counterparts. Investors and analysts are drawn to finance income streams because of their diversification, earnings potential, growth potential, and market insulation. Recent accounting data indicates that a bank's risk grows due to increased reliance on non-funded income streams and higher volatility in earnings, though the average amounts generated have not succeeded (Stiroh, 2006).

Commercial banks in Kenya strive to increase income streams by diversifying their operations to venture into non-funded income operating in an environment with unique and numerous challenges. The (CBK 2017) report on bank supervision showed that banks are at risk of emanating from their activities, cyber-crime, money laundering, ownership, control conflicts, and macroeconomic effects, thus making the industry one of the most regulated in recent years. As such, this study critically looked into the specific risk-bearing factors that affect risk in commercial banks' day-to-day operations and the measures that commercial banks are using to mitigate such risks.

1.1.1 Non-Funded Income

Feldman & Schmidt, (1999) opinioned that financial institutions derive non-funded income from operations to enable them to create revenue and stay profitable when default rates in issued loans increase. Non-funded income for banks is measured from activities arising from the revenue generated from various fees charged, penalty charges, the sale of assets, and the leasing of property. Non-funded income is not affected by financial and economic cycles, and in most instances, it is uncontrolled by regulation or laws. Large financial institutions generate significant profits from non-funded income, especially on the service charges they charge on customer accounts. Thus, the non-funded income that a bank can produce has impact on risk and gains of commercial banks (Bolda & Verma, 2007).

Studies have shown varied results on how non-funded income is measured against various commercial banks' operations. According to Mishkin (2007), non-funded income is majorly derived from fees that banks charge for the services they offer. These services include transaction costs, fees charged on account maintenance, deposits, checks, and inactivity fees. Financial institutions levy charges to generate revenue streams and maintain required liquidity levels when default rates spike or change the macroeconomic environment. Traditionally held assumptions that revenue generated by fee-based products is more reliable than the revenue generated by loan-based products and that non-funded revenue streams mitigate an institution's operational risk (Mishkin, 2007).

1.1.2 Risk

Risk can be defined as the likelihood of occurrences, events, actions, or indecision in a bank's failure to meet its main objectives or inability to perform core functions and fail to mitigate unanticipated outcomes. Commercial banks are constantly confronted with multifaceted levels of risk in their day-to-day operations, some of which are unavoidable. Their operations have been carefully organized to reduce the risks associated with their banking operations. According to Rogers (1998), banks' engagement in unconventional (funded income) banking operations varies according to the market in which they operate for various reasons, including variances in risk tolerance. Banks consider risk an essential factor in their operations because it affects both the current financial index and future ventures. The risk level is determined by its ability to absorb unanticipated losses (Goddard, Molyneux, & Wilson, 2004).

Credit, liquidity, market, political, and operational risk are the most significant risks that Kenyan commercial banks face. The traditional method of assessing credit risk and the number of defaulted loans is loan provision. The risk exposure of a bank is represented by the ratio of requirements put aside to cover bad loans to total assets. Unexpected loan demands and unexpected deposit withdrawals are two manifestations of liquidity risk to which banks are vulnerable, and both are significant risks. Banks with more liquid assets are more likely to meet these unexpected demands (Rogers & Sinkey, 1999). Furthermore, banks with highly liquid assets can generate higher profits while riskier (Goddard et al., 2004).

1.1.3 Non-Funded Income and Risk

Contrary to popular belief, the available literature on the influence of non-funded revenue on commercial bank risk yields inconclusive findings. Increasing non-funded income to funded income ratios for commercial banks, according to a study done by Saunders, Schmid, and Walter

(2014), is positively associated with greater profitability and a reduced risk profile. Banks with a high amount of non-funded revenue, as revealed by Nguyen, Vo, and Nguyen (2015), have lower risk profiles than banks with a high level of funded income, according to their findings. Based on his research, Stiroh (2006) showed that banks that rely substantially on non-funded revenue have lower average returns on equity and are riskier when assessed in terms of market betas and return volatility.

The available research on the influence of non-funded revenue on commercial bank risk yields conclusions that are incongruent with one another. Increasing non-funded income to funded income ratios for commercial banks, according to a study done by Saunders, Schmid, and Walter (2014), is positively associated with greater profitability and a reduced risk profile for the banks. Banks with a significant degree of non-funded revenue, like Nguyen, Vo, and Nguyen (2015) revealed, have lower risk profiles than banks with a high level of funded income. Stiroh (2006) showed that banks that rely substantially on non-funded revenue had lower average returns on equity and are riskier as evaluated by market betas and return volatility.

However, empirical studies have revealed that, on average, neither point of view is correct (Jin & Young-Jae, 2009). According to Kohler, Düllmann, Herrmann, and Memmel (2013), banks that focus on retail business activities such as savings, cooperative activities, and traditional banking activities become more stable in the long run. This is because they are perceived as less risky as their non-interest income increases. On the other hand, investment banks become riskier, indicating that larger banks that concentrate on investments must increase the number of financed income streams to decrease volatility and enhance the stability of their earnings. Therefore, non-funded revenue has a substantial influence on a bank's profitability and, as a result, is a contributing aspect to commercial banks' exposure to risk.

1.1.4 Commercial Banks in Kenya

As defined by the Central Bank of Kenya (CBK), a commercial bank is an organization that conducts or plans to execute banking services on behalf of customers. Deposit takeover, loans, money transfers, transfers, storing assets, and other banking operations are examples of available services (CBK 2010). Kenya's commercial banks are essential participants and drivers of the country's economic development. There are three statutes that administrate the banking business in Kenya; the CBK Act, the Banking Act, and the Companies Act. The Central Bank of Kenya is in charge of the formulation and implementation of monetary policy, determining the liquidity and solvency of commercial banks, and guaranteeing the efficient functioning of commercial banks. Kenya's traditional banking activities have seen a steady decline over the years. Even though the reduction is not significant, sponsored income activities are on the rise in the business. And this coincides with worldwide improvements in the banking industry, which has seen institutions gradually increase commissions and fees over time (Busch & Kick, 2009).

In total, 42 commercial banks have been licensed by the CBK. In Kenya, there are three public-sector commercial banks: the Consolidated Bank of Kenya Limited (CBL), the Development Bank of Kenya Limited (DBL), and the National Bank of Kenya Limited (NBK). Forty commercial banks, 24 locally owned commercial banks with one mortgage financing firm, and 15 foreign-owned commercial banks are present (over 50 percent stake). Top-tier banks in Kenya are comprised of six financial institutions with depositors and assets in the hundreds of billions of dollars range. Tier 2 banks are ranked 14th, and Tier 3 banks are ranked 21st. (Source: CBK 2017).

The CBK controls commercial banks reserves and inflation levels in the economy in addition to other roles such as; Open Market Operation (OMO) that involve the selling and buying of government securities to or from commercial banks as a way of achieving required amount of bank reserves. This is normally carried out together with Repurchase Agreements (REPO). These are agreements between commercial banks and the CBK to allow for purchase or sell of government securities within a specific time period (CBK, 2014).

The banking industry in Kenya has had several problems in recent years, including the receivership of commercial banks Imperial Bank, Dubai Bank, and Chase Bank. This is even though Kenya's financial institutions and markets are rapidly growing and diverse. Risk plays a big part in the failure of some institutions, according to a thorough investigation of the reasons for their failures.

Financial activities that drive banks performance and practices have greatly influenced non-funded income and profitability which must be reported in financial statements and tax obligation. Thus banks strive to mitigate risks while maintaining survival and profitability objectives.

1.2 Research Problem

The need for mitigating risk in commercial banks in recent years have increased since some banks are under statutory management and or forced into liquidation. Some of the failures by banks can be attributed to unidentified risks within the industry. The profitability of firms is essential to company managers today putting the existing intense competition and customer expectation changes into perspective. Managers have been forced to establish more effective

ways of attracting investors and ensuring their companies remain in profitable business operations (Demirgiic & Huizinga, 1999).

Locally various studies have been done on non-funded income. Kamau (2014) investigated the influence of cashless transactions and financial trading revenue on non-funded income in commercial banks and discovered a positive relationship between the two variables. Kiweu (2012) in his findings recognized existence of a positive correlation between non-funded income and funded income. Tchouassi (2012) examined technologies of mobile banking on performance of banks. Existing empirical research findings continue to yield conflicting results. Several recent local studies, like those by Kiweu (2012) and Teimet, Paul, and Shem (2011), have focused primarily on how the diversification of risk affects performance. However, these studies fail to reveal exactly what determines non-funded income, and its effect on risk of commercial banks.

A detailed understanding of the effect of non-funded income on risk is required to explain all of the risk elements that banks face from income-generating activities, focusing on non-funded income. A rigorous analysis of the influence of non-funded revenue on commercial bank risk is necessary to identify the underlying risk factors required to assess the present status, conceptual challenges, and gaps to give a thorough report filling the gaps in this area. This research studied published financial information for all the forty two commercial banks registered by Central Bank of Kenya (CBK) and inferences were drawn on the effect of non-funded on risk.

1.3 Objective of the Study

To examine the effect of non-funded interest income on the risk of Kenyan commercial banks

1.4 Value of the Study

It is projected that the findings of this study are of interest to researchers at academic institutions that specialize in the Kenyan banking industry. This study's findings add to the current body of information about the consequences of non-funded income on commercial banks' risk in Kenya. As a result of this research, a forum for conversations and debates among policymakers, academics, and professionals can be developed and a foundation for future research in related areas.

Several aspects of the verdicts of this study are helpful to policymakers in their decision-making. The government of Kenya would have a distinct guide and point of reference for the framework of rules on non-funded revenue. This study also helps the CBK, as it gives insight into the role of legal, procedural, and regulatory requirements on the risk of commercial banks, which is useful in the future. The findings of this research can be utilized to inform the creation of new policy and legal frameworks in the future.

Because this study collects, combines, and analyzes data from numerous commercial banks and present its findings, bank managers have a reference point that aids them in making informed decisions on non-funded income and risk of the institutions they run. The analysis also helps investors make sound investment decisions on bank stability, profitability, and risk in the banking sector as propagated by the Modern Portfolio Theory (MTP).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two discusses literature related to the study and covers both theories supporting the study and empirical reviews of previous studies. A presentation of the conceptual framework for the study is also presented.

2.2 Theoretical Review

This study adopts the Modern Portfolio Theory, Arbitrage Pricing Theory, and Agency Theory.

2.2.1 Modern Portfolio Theory

Markowitz (1952) pioneered this theory that most investors are risk cautious and would want to avoid taking unnecessary risks. Investors want to take the smallest amount of risk and desire the highest possible returns from the risk taken. The modern portfolio theory (MTP) says that

investors must avoid judging their investments based only on expected risk and return on individual securities. The theory supports holding the most efficient portfolio by holding all the securities available as a way of decreasing risk (Markowitz, 1959).

MTP gives investors two options. First, there is a likelihood of history repeating itself implying use of past data is possible when making decisions on investments. Second, all assets are not prone to fluctuations. When grouping assets together, rational investors should avoid making the mistake of assuming that they all have the same characteristics. Initially, it was not possible for investors to link stock portfolio and the risk associated with it before the proposition of the Modern Portfolio Theory because random initiation of portfolios was the norm (O'Neill, 2000).

Modern portfolio theory contains a mathematical proposition of the diversification criteria when making investments to collectively select investments of lower-risk assets rather than take each asset individually. Therefore, choosing both types of assets in a collective manner can theoretically reduce the overall risk than when the assets are chosen individually thus reducing portfolio's overall variance by grouping assets whose returns are not strongly correlated. On the other hand, critics feel that the modern portfolio theory is inapplicable in the real world since its base measurements are rather projections and predictions. This means that investors have to use historical measurements of assets' returns and volatility; these are bound to change and are missing in the MTP equation.

As a result of this theory, this study is supported because it guides the researcher by optimizing the correlation of different types of risks and performance by composing asset portfolios based on risk, individual returns, and covariance with other assets, among other factors. When considering different due returns, the theory provides for various predicted outcomes that are

beneficial in assessing data and drawing conclusions using the risk factor 'beta' to quantify a portfolio's exposure to systematic risk found in the market.

2.2.2 Arbitrage Pricing Theory

Based on asset pricing theory, Ross (1976) established this theory and applied it to valuation models. It is defined as a single-period mold in which an investor take that the stochastic features of return on capital assets are compatible with a factor structure. Arbitrage Pricing Theory (APT) defines this model. It is possible to model the expected return on financial assets and investments using a linear correlation model that includes various macroeconomic variables. The returns of a unit asset and the return of a portfolio are predicted by a linear combination of several macroeconomic independent variables.

In this theory, if equilibrium prices do not provide arbitrage possibilities across static portfolios of assets, predicted returns on investments are nearly directly proportional to the loading variables instead of the opposite. The beta coefficient in the model reflects a change in the correlation between two variables. As an alternative to this theory, which has been shown to be inapplicable on several empirical and theoretical grounds, arbitrage pricing theory was developed. It also requires fewer assumptions when applied outside of research, which makes it a more practical option. Both models have a linear connection between the expected returns on different asset classes and their covariance with other non-systematic factors.

The CAPM model contains typical fluctuations in yield from one variable, and the actual returns vary by an additional random disturbance from the standard variables. This leads to the notion that there are two components of the CAPM model in which one is systemic, and the other is random. However, the random variable may be diversified, leaving investors with systemic risk.

Its major drawback is that it fails to specify systematic factors thus analysts will have to regress past collection returns against other macroeconomic factors like real GDP improvements, inflation fluctuations, term structure variations and risk premium changes.

It is necessary to have at least two variables in the Arbitrage Pricing Theory (APT), one of which must not be a market value. The APT model, which is based on a linear returns process, preserves the results of the CAPM model while also incorporating new information. The APT is vital to the current study since it allows for examining a wide range of factors, which aid in assessing the relationship between non-funded revenue and the risk of commercial banks.

2.2.3 Agency Theory

A contract in which one party acts on behalf of another is known as an agency contract (Jensen & Meckling, 1976). The theory centers on the company and includes managers who are shareholder agents. All decision-making processes are overseen by the managers, who are also known as principal agents, to improve efficiency and reduce waste.

Agency theory has for a long time explained financial performance for many firms. This theory assists in explaining the link between managers who are principals and shareholders who are owners of the firm. The principals hire and maintain the best agents to take care of their organizations. The theory assumes that managers will act prudently and rationally to maximize returns. The agents also possess wide knowledge and have the capacity of serving their organizations objectives (Moldoverau and Martin, 2001). However, criticisms have been levied against the agency theory that it presupposes incompatibility since the observation that human

obligations and autonomy are rationally mismatched with fundamental determinism (Rowe, 1982)

This theory explains shareholders wealth maximization by managers of commercial banks. The managers mitigate commercial banks against the risks they are exposed to through increasing the generation of non-funded income that improves bank profitability. This in turn maximizes the wealth of the shareholders who are the principal owners of the banking institutions.

2.3 Determinants of Risk

Various variables influence the risk of commercial banks in several different ways. It is possible to split them into two broad categories: banking and macroeconomic factors. Unique banking features unique to each bank include bank size, capital sufficiency, credit risk, liquidity risk, and operational efficiency (Bogale, 2019). The risk that trade banks face is significantly influenced by macroeconomic factors such as inflation rates, foreign currency rates, real GDP, loan rates, and so on (Bogale, 2019). Mujuka (2018), on the other hand, advises that risk determinants in commercial banks are not generally relevant since individual nations are subject to a wide range of macroeconomic situations, financial systems, and operational environments.

2.3.1 Non-Performing Loans

In the financial industry, non-performing loans (NPLs) are credit facilities that have been extended to customers but have not been paid through in the next ninety (90) days (Guy, 2011). They are significant sources of credit risk in commercial banks. According to Michael et al. (2006), when NPLs are aggregated on loan portfolios, they harm operational efficiency in commercial banks, which extends to increasing the risk levels, profitability, and liquidity of commercial banks. According to (Hou 2007), NPLs are a significant cause of commercial bank

insolvency, with a multiplier effect that harms the entire economy. Banks must anticipate some level of risk mitigation strategies and implement them as an all-inclusive function in day-to-day operations to contain the phenomenon. Non-performing loans have gotten the world's attention because they are increasingly causing banking sector crises that eventually lead to bank failures. This factor has seen some Kenyan banks placed in receivership.

2.3.2 Liquidity

Liquidity means how fast that the commercial banks' assets can be cashed when it is deemed necessary or its fair value. This implies that it is the swiftness of an asset to be turned into cash that enables banks to respond and meet any obligation without using its reserves. Banks must balance the levels of liquidity they can hold at any particular moment in order to avoid incurring too much opportunity costs of other income generating activities. Commercial banks then trade off return and liquidity because failure results to liquidity risks.

Typically, liquidity risk refers to the likelihood of a commercial bank experiencing a loss due to its failure to make financial obligations as they occur while avoiding substantial expenses or losses. It happens when the assets tied to the mitigation of any eventuality that may arise are insufficient. The market allows commercial banks to meet their liquidity requirements. These mitigations are frequently indeterminate, which is why they continue to pose a risk to commercial banks. When commercial banks realize liquidity risk as an actual occurrence, they identify it as a potential risk and design their portfolio to mitigate the identified risk (Santomero, 1997).

2.3.3 Interest Rates

Essentially, this is the interest rate at which commercial banks lend money to their customers. The Central Bank of Kenya (CBK) has also set this rate as the rate at which commercial banks can borrow money from the CBK. In 2016, the CBK introduced interest rate capping and issued guidelines for the ceiling rates which commercial banks could set when providing credit. This has had a variety of consequences for the operationalization and long-term stability of Kenya's commercial banks. However, the researcher will highlight the extent to which interest rates are viewed as determinants of risk in commercial banks for this study. Collectively, the rising and falling of interest rates pose risk to commercial banks as the cost of credit affects the clients' ability to repay loans.

Li (2003) came up with a conclusion that the economic surrounding any organization while it is undertaking its core functions is highly volatile and unpredictable. Interest rate changes affect long term contracts banks have obligated with stakeholders. Jimenez and Saurian (2005) argued that high-interest rates, considerable GDP growth, and an accommodating credit policy that encourages borrowing are all factors that influence the aggregate of defaulted loans in the banking industry. So, interest rates affect both credit risk and market risks for businesses.

2.4 Empirical Studies

The connection between unfunded income and bank performance was investigated by Saunders et al. (2014).The study chose a sample of 10341 banks in the US that covered the year 2002 to 2013. The research established that having more non-funded income is linked with increased profitability in the banks studied. Banks that could generate more non-funded income were perceived to be less risk to get insolvent, and the Z-score was used to measure this risk.

Kohler et al. (2013) analyzed non-funded income amount on risk in the banking industry in German. The study employed linear and quartile regression as estimators and established that the non-funded income effect of risk depended on the type of business model that a bank had adopted. According to the study's findings, banks have a lower risk profile when their income is more diverse, and they avoid a high reliance on funded or non-funded income sources.

Amankwaa et al. (2014) analyzed the non-funded income of Ghanaian commercial banks and identified standard variables with banks that generate significant non-funded income. The study established that banks that were smaller in size were more involved in generating non-funded income and that higher funded income, deposits, and risk exposure were all common factors affecting all Ghana banks.

Zribi and Boukelbene (2011) studied the factors that influence bank credit risk in Tunisia, which was considered an emerging market from 1995 to 2008. They found that when analyzing credit risk, the paper took into account both macroeconomic and microeconomic variables that were likely to impact it. This research evaluated many structural developments in the Tunisian banking system, including globalization, deregulation, and the Internet of Things. The empirical data indicated that public ownership enhanced Tunisian banks' appetite for credit risk. Return on assets was positively correlated with credit risk but negatively correlated with capital sufficiency.

Njenga (2014) conducted a study to determine the determinants that affect non-funded income on banks' bottom line incomes. With the study's findings, which employed panel data from 2003 to 2012, the non-funded revenue of Kenyan commercial banks is impacted by bank efficiency, bank size, macroeconomic factors, and technological progress. Bank efficiency and scope were shown to have a beneficial effect on non-funded income, but inflation, GDP, and ATM growth negatively affected non-funded payments.

Kaberia (2013) examined the sources of income for Kenyan commercial banks from 2007 to 2011. The researchers utilized a regression model to identify the income sources that impacted banks' risk. They discovered that funded income, commissions, trading income, foreign exchange, and non-funded income all impacted banks' risk. Wahome (2010) researched the risk assessment processes utilized by Kenyan commercial banks and estimated their exposure level. Between 2004 and 2010, a study of 44 commercial banks in Kenya was conducted, with questionnaires distributed to the banks. The SPSS v. 24-factor analysis was used to compare the study outcomes. According to the study's results, several commercial banks in Kenya have developed operational techniques that minimize credit risks.

2.5 Conceptual Framework

A conceptual framework comprises variables that are being investigated in this study. According to Mugenda (2009), capturing the main variables that explain an occurrence with the aid of a pictorial or graphical representation is the process of capturing the main variables that explain an occurrence. This framework demonstrates how variables are related to one another or how variables can be induced to relate holding circumstances that can be changed. Moreover, according to Mugenda (2009), the most significant variables under investigation can be divided into dependent and independent variables. Independent variables are forecasters, as they predict the extent to which a change will be deemed to occur on another variable, and dependent variables are the influenced changes that can be quantified, the author claims.

When it comes to commercial banks, the risk is mostly determined by the ability of the bank's managers and senior management to predict and plan for the occurrence of risk through non-funded income. This study specifically seeks to ascertain the influence of non-funded income on

the risk of Kenyan commercial banks. The variables that are independent and dependent on each other are as follows:

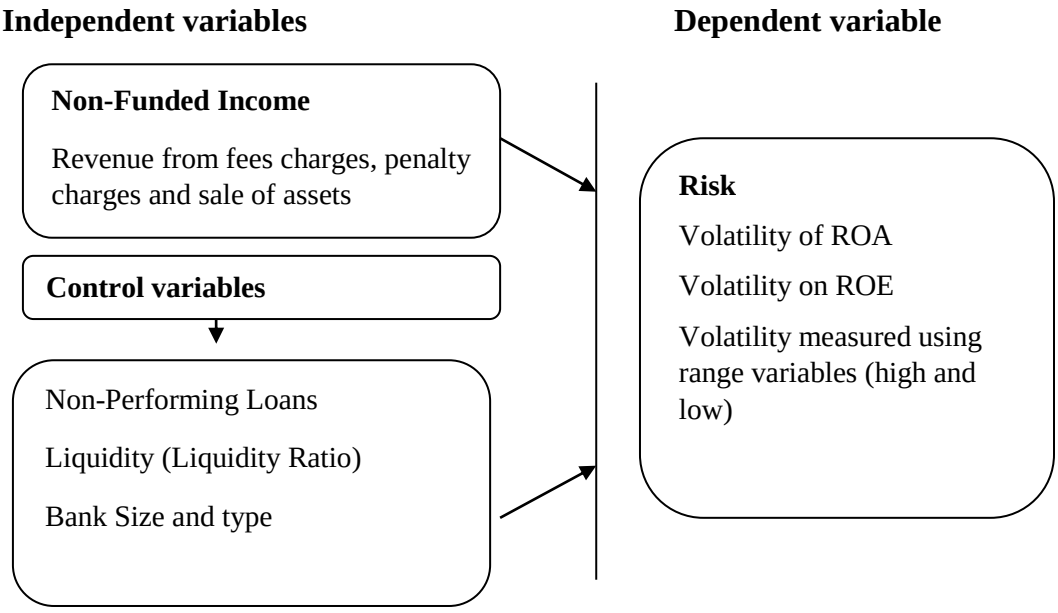

Fig 2.1: Conceptual Model. Source (Author, 2021)

2.5.1 Summary

Various research conducted by scholars, academicians, and authors on non-funded income on commercial bank risk in Kenya has yielded conflicting results. The theoretical review examines many theories proposed to explain diverse hypotheses. Markowitz's modern portfolio theory underlined that investors are risk-averse and choose low commitments with high rewards. Arbitrage pricing theory shows a mathematical representation of risk and the expected return, while the agency theory focuses on managers who are agents of shareholders and enhance principal agent relationship that works to meet business objectives. This study also looks at the determinants of risk where no-performing loans, liquidity and interest rates are the major

determinants because commercial banks operate in a sector that is volatile, uncertain and highly regulated; thus, need for understanding risk.

Finally, empirical research, both global and local studies indicate varying results on the influence of non-funded income on commercial bank risk. Little information is available about the precise effects of the problem under investigation. That is why this research study aims to identify, examine, and analyse the influence of non-funded revenue on the risk of commercial banks in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used for the study. The research design, target demographics, sampling, data collecting techniques, data sources, data processing, and data presentation are all covered in this chapter.

3.2 Research Design

The research design organizes data collection and analysis (Cooper and Schindler, 2006). The study therefore found the descriptive design to be appropriate. This research design enables the researcher to use various types of data as well as human experiences. From multiple perspectives, researchers can examine the variables in their studies (Mugenda & Mugenda, 2009). A second reason for choosing this design was because it allowed the researcher to analyze the key constructs of the study while not interfering with how each variable of the study related to the others.

3.3 Target Population

Cooper and Schindler (2006) define the target population as the complete collection of variables, persons, elements, or units from which a researcher wishes to conclude. All Kenyan commercial banks were the target population. According to the CBK database of regulated commercial banks, Kenya has 42 banks (CBK, 2021). All operating commercial banks were studied for five years data period, except for Dubai and Imperial Bank- which were closed by the Central Bank of Kenya.

3.4 Data Collection

The study relied on secondary data for its findings. Secondary data is defined as previously collected information that is used by someone other than the person who originally collected it, according to Mugenda and Mugenda (2009). The availability and accessibility of secondary data for six years between 2015 and 2019 was used in this study. The main sources of secondary data to be studied were from the CBK's annual supervision reports and the financial statements. Thus quantitative data that was useful in drawing conclusions and making recommendations was collected.

3.5 Data Analysis

Application of statistical and logical techniques in the description and illustration, recapping and condensing, and evaluating data is what data analysis is all about. Data analysis is the study of data. SPSS was used to analyze the data, which was then presented in the form of graphs, tables, and charts, with explanations as appropriate. SPSS version 24 was used as part of the data analysis. A correlation matrix was used to test for multi-collinearity in the data set under consideration.

3.5.1 Analytical Model

Descriptive and inferential statistics, as well as quantitative data analysis, was employed. Descriptive statistics were utilized in this study to establish the type of causal link between the linear regression models, as indicated below:

$Y = \beta_0 + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 X_3 it + \acute{\varepsilon}$

Where Y= dependent variable (risk of commercial banks)

X_1 =Non-funded income

X_2= Interest Rates

X_3 = Liquidity

E=error term

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

Key research findings and discussions are made in chapter four. It covers the quantitative data analysis and the analysis from the correlation on the type of relationship among the variables of

the study. Tables are used to present the findings. A discussion of the finding is then presented, which summarizes the main findings of the study.

4.2 Rate of Response

All listed banks were targeted for this study and the data was therefore extracted from their financial statements.

4.3 Study Variables Statistics

The type of relationship among the variables is illustrated by the descriptive statistics in table 4.1. These include values showing the mean, maximum, minimum and standard deviation from the data collected. A summary of these covers the descriptive statistics for bank profitability variables which are measured using liquidity, bank size, return on assets, efficiency, capital adequacy and non-funded income.

Table 4.1: Summary of Variables Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation (S.D.)
Liquidity	200	.00	11.02	.8271	1.2284
Bank Size	200	.00	17.94	13.6825	1.5379
Return on Assets	200	-.19	5.86	2.3934	1.8162
Efficiency	200	.00	78.56	42.5793	13.7961
Capital Adequacy	200	.00	1.08	.1768	.1075
Non-funded Income	200	-.67	1.83	.6271	2.3762
Valid N	200				

Source: Data Analysis Findings

The above analysis of the data indicates that the mean value on the liquidity is 8.3. The acceptable rule is to have a ratios of 2 to 1 and 1 to 1 in the ratios showing liquidity. However, this indicated that a majority had good liquidity ratios and that only a small number fell behind timelines for their financial obligations. The Return on Assets (ROA), is 2.40% with a standard deviation of 1.816. Further, the non-funded income was 0.63%, an indication that a majority of

the commercial banks did diversify their business operations to generate income outside their activities. Non-funded income does contribute to generating the overall profitability of commercial banks due to the effect it has on increasing revenue streams for commercial bank operations.

The results further indicate that banks have a mean size of 13.7%. This is indicates that most have sufficient resources derived from their operations and wide branch networks. This also allows them to diversify their operations into other income generating activities. The capital adequacy of commercial banks was 0.18% indicating that a majority of the commercial banks ensured their financial systems and efficiencies were stable and sound.

4.4 Correlation Statistics

The correlation analysis measured the type of relationship between the variables of the study that were investigated. This was to ascertain whether there was positive or negative correlation based on the Pearson product-movement correlation coefficient (*r*). The analysis of the type of correlation enabled an assessment of what type of relationship existed between the variables of the study prior to further analyzing the raw data. The conventional rule in correlation analysis is that a figure above 0.7 indicates presence of strong correlation, 0.4 but less than 0.7 indicates fair/moderate correlation while a figure less than 0.4 but above 0 reveals existence of weak correlation.

The use of correlation analysis was also for the determination whether multicollinearity existed between the independent variables of the study. A high correlation ($r>0.9$) between the independent variables indicates presence of multicollinearity. This negatively affects the

regression model often leading to poor regression model analysis. A summary of the correlation analysis is presented in table 4.2 below.

Table 4.2: Summary of Correlation Statistical Analysis

	Liquidity	**Bank Size**	**Return on Assets**	**Efficiency**	**Capital Adequacy**	**Non-funded Income**
Liquidity	1					
Bank Size	.079	1				
Return on Assets	-.362	.183	1			
Efficiency	-0.34	-.188	.007	1		
Capital Adequacy	-.295	.286	.817	.206	1	
Non-funded Income	-.197	.925	.609	.429	.918	1

Source: Data Analysis Findings

A summary is presented in table 4.2 above showing correlation analysis for non-funded income and risk of commercial banks. The correlation shows positive correlation linking non-funded income and risk in examined banks in Kenya as indicated by an *r* value of 0.609. A strong correlation *r*= 0.817, was established linking ROE and capital adequacy. This underscored the important role of capital adequacy in mitigating risk in commercial banks. Level of efficiency and bank size were found not to have a correlation with risk of commercial banks. This was indicated by *r* values of 0.007 and 0.183 respectively. From the correlation analysis, significant values were determined to be relationship between non-funded income and return on assets (0.609), capital adequacy was significantly affected by non-funded income (0.918) and bank size significantly influenced on funded income generation (0.925).The results underscore the important role played by key risk indicators in Kenyan banks.

4.5 Model Summary

A regression model analysis was important in order to determine what type of association existed among the main variables that were under investigation. The summary of the model is as indicated in table 4.3.

Table 4.3: Summary of Regression Model

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.486	.236	.216	1.05716

a. Predictors: (Constant-k), Capital Adequacy, Non-funded Income, Liquidity, Bank size, Efficiency
Source: Data Analysis Findings

The analysis above indicates an R value of 0.486. This is the multiple correlation value which indicates presence of a causal effect. The adjusted R square (R^2) is 0.236 meaning 23.6% of risk can be explained using independent variables. This means that the independent variables of the study explain 76.4% of the variability in the dependent variable.

4.5.1 ANOVA

The study used ANOVA to ascertain the goodness of fit of the regression model adopted. Table 4.4 summarizes the findings of the ANOVA analysis.

Table 4.4: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	168.029	5	33.286	10.227	.000[b]
Residual	649.447	193	2.944		
Total	817.476	197			

a. D'.Variable (ROE)

b. (Constant-k), Capital Adequacy, Non-funded Income, Liquidity, Bank size, Efficiency [predictors]

Source: Data Analysis Findings

Based on the ANOVA analysis, the model indicated that the independent variables significantly predict risk of commercial banks (dependent variable). This is indicated by F (5, 199) = 10.227, $p<0.05$. This also indicates the goodness of fit of the regression model for the study. This support the finding non-funded income has a positive causal effect on risk.

4.6 Coefficients and Regression Equation

In order to test the direction of the correlation between non-funded income and risk of commercial banks, the study did a test of the coefficients. Results of the analysis are presented in table 4.5 below. The coefficients include the standardized coefficients and the unstandardized coefficients for the independent variables (predictors) used for the study. These were; (Constant-k), Capital Adequacy, Non-funded Income, Liquidity, Bank size and Efficiency. Through this coefficients, the study also develops the regression equation. A summary of the model coefficient is presented in table 4.5 below.

Table 4.5: Summary of Models of Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.539	.649		-.588	.411
	Capital Adequacy	.588	.752	.039	.592	.005
	Non-funded Income	2.893	.627	.502	4.992	.000
	Liquidity	-.391	.071	-.638	-3.772	.000
	Bank Size	.147	.044	.183	2.336	.005
	Efficiency	.006	.003	.029	.394	.739

a. Dependent Variable: Risk

Source: Data Analysis Findings

Based on the model of coefficients summarized in Table 4.5 above, a regression model was developed using the unstandardized coefficients. This is summarized as:

$Risk = -.539 + 2.893X_1 + .147X_2 + .588X_3 + .006X_4 + e$

The regression model above can be explained as:

An increase in non-funded income by a single unit reduces risk by a value of 2.893. An increase in capital adequacy, efficiency and the size of the bank by one unit results in reduction of commercial bank risk by 0.588, 0.006 and 0.147 respectively. This underscores the important role of the independent variables on the dependent variables as shown by the effects of an increase per unit of an independent variable on the dependent variable.

4.7 Interpretation and Discussion of Findings

According to main results from data analysis, risk in banks can be mitigated through diversification of revenue streams to include non-funded income. A majority of the banks have diversified their operations to include non-funded income into their revenue generations as a way of minimizing bank risk. Further, results established presence of a moderately positive link between non-funded income and risk in commercial banks in Kenya which was indicted by an *r* value of 0.609. The established causal relationship reiterates the need for commercial banks to diversify their business activities in order to tap into other income streams as a way of minimizing their exposure to business risk and protecting profits.

A strong correlation *r*= 0.817, was established between ROE and capital adequacy. This underscored the important role of capital adequacy in mitigating risk in commercial banks. Level of efficiency and bank size were found not to have a correlation with risk of commercial banks.

This was indicated by *r* values of 0.007 and 0.183 respectively. The results underscore the important role played by key risk indicators.

Regression model established the type of correlation between the variables that were under investigation. The regression model showed that the adjusted R square (R^2) is 0.236 meaning 23.6% of risk in banks is explained study's main independent variables. Based on the ANOVA analysis, the model indicated that the independent variables significantly predict risk of commercial banks (dependent variable). This is indicated by $F(5, 199) = 10.227$, $p<0.05$.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five summarizes the findings of the study based the objectives, gives a conclusion of and makes recommendations of the study. The summary and conclusion is based on the results and discussion in chapter four and its relation to literature in chapter two.

5.2 Summary of Findings

Non-funded income does contribute to generating the overall profitability of commercial banks due to the effect it has on increasing revenue streams for commercial bank operations. The Return on Assets (ROA), is 2.40% with a standard deviation of 1.816. Further, the non-funded income was 0.63%, an indication that a majority of the commercial banks did diversify their business operations to generate income outside their activities. The capital adequacy of commercial banks was 0.18% indicating that a majority of the commercial banks ensured their financial systems and efficiencies were stable and sound.

The correlation shows a correlation between risk and non-funded income as indicated by an *r* value of 0.609. A strong correlation *r*= 0.817, was established between ROA and capital adequacy. This underscored the important role of capital adequacy in mitigating risk in commercial banks. Level of efficiency and bank size were found not to have a correlation with risk of commercial banks. This was indicated by *r* values of 0.007 and 0.183 respectively. The results underscore the important role played by key risk indicators in commercial banks in Kenya.

The analysis indicates an R value of 0.486. This is the multiple correlation value which indicates presence of correlation. The adjusted R square (R^2) is 0.236 meaning 23.6% of risk in banks is explained by independent variables investigated. This means that the independent variables of the study explain 76.4% of the variability in the dependent variable.

The ANOVA analysis, the model indicated that the independent variables significantly predict risk of commercial banks (dependent variable). This is indicated by $F(5, 199) = 10.227$, $p<0.05$. When all other factors are held to a constant, an increase in non-funded income by a single unit reduces risk by 2.893. A single unit rise on the levels of capital adequacy, efficiency and the size of the bank results in reduction of commercial bank risk by 0.588, 0.006 and 0.147 respectively.

5.3 Conclusions

Non-funded income positively influences the risk (profitability) of commercial banks in Kenya. The established causal effect of non-funded income on risk of commercial banks underscores the need by commercial banks to diversify their operations into other non-core business activities as a means of generating more revenue. Through this, commercial banks will be able to mitigate risk that often arises out of dynamic business environments. A strong correlation was established between ROA and capital adequacy. This underscored the important role of capital adequacy in mitigating risk in commercial banks. Commercial banks must always ensure that they have adequate capital ratios and reserves as a way of minimizing their risk. Level of efficiency was found not to have a correlation with risk of commercial banks. It is imperative to ensure high levels of efficiency in business operations of commercial banks as a way of minimizing their level of risk.

Non-funded income does contribute to generating the overall profitability of commercial banks due to the effect it has on increasing revenue streams for commercial bank operations. Most banks have sufficient resources derived from their operations and wide branch networks. This also allows them to diversify their operations into other income generating activities. The capital adequacy of commercial banks indicated that a majority of the commercial banks ensured their financial systems and efficiencies were stable and sound.

A strong correlation was established linking ROE and capital adequacy. This underscored the important role of capital adequacy in mitigating risk in commercial banks. Level of efficiency and bank size were found not to have a correlation with risk of commercial banks. This was indicated by *r* values from the correlation analysis. The results underscore the important role played by key risk indicators in Kenyan banks. This is the multiple correlation value which indicates presence of a causal effect. The adjusted R square meant risk was explained using independent variables. This meant that the independent variables of the study explained a majority of the variability in the dependent variable.

5.4 Recommendations

Non-funded income is important to risk in commercial banks. Banks need to diversify their operations to include non-core activities that contribute to minimizing their levels of risk. This will act as important risk mitigation strategies for commercial operators of banks.

The study recommends improving efficiency levels as a way of improving their profitability (risk reduction). Higher efficiencies have a correlation with reduced risk exposure and therefore ensure adequate efforts are put into controlling costs and operations will be a good measure to achieve this goal.

The study reiterated the important role played by capital adequacy in minimizing risk. As such, measures including government and regulatory frameworks by the Central Bank and other related institutions need to ensure that they encourage maintenance of sufficient capital ratios in commercial banks. This will serve to minimize their level of risk.

Through ensuring more non-funded income generation, commercial banks will mitigate their risk exposure. Non-funded income tend to have stable income generation amount when compared to

interest rates income that can be volatile based on market dynamics among other factors. Ensuring that commercial banks tap more into generating non-funded income will therefore contribute towards minimizing their risk exposures.

5.5 Limitations of the Study

The study covered specific years (2015-2019), and thus risk assessment was done for the data that covered this time period. The use of secondary data meant the study employed historical data. The problem with historical data is that is that it may fail to capture all the needs of a researcher hence leaving some gaps that the researcher would have desired to answer using primary data. Secondly, historical data has the problem of rigorous testing prior to analysis, which often complicates the way in which it is supposed to be analyzed, hence calling for careful and rigorous analysis.

5.6 Suggestions for Further Research

The study can be replicated using primary data given that the current study was done using secondary data. The study can be done in related institutions to assess the effect of non-funded income on their risk. Incorporating other macro-economic variables such as regulatory changes, GDP and changing interest rates would also be a good area for future researchers.

Studies can focus on the effect of non-funded income on other performance indicators in commercial banks. This can includes examining how non-funded income influences other banking ratios and their ability to meet both regulatory and market requirements. Due to the effect of non-funded income on ratios, such as capital adequacy, its effect on capital reserves is also a good area where further research can be done.

The study was done in Kenya, and looked at listed commercial banks. Conducting similar studies in different markets will test the results and ascertain whether they are applicable only to the Kenyan market of elsewhere as well. Considering different regulations and market dynamics, comparison of findings from a study done in a different market will be worthwhile.

REFERENCES

Amanwillkwaa, A., Anku-Tsede, O. &Senyo, B. (2014). Analysis of Non-Interest Income of Commercial Banks in Ghana. *International Journal of Academic Research in Accounting,*

Finance and Management Sciences, 4(4), 263-271. DOI: 10.6007/IJARAFMS/v4-i4/1343

Barry W. (2012). The Impact of Non-Interest Income on Bank Risk in Australia. *Elsevier*, 73, 16-37. DOI: 10.1016/j.jbankfin.2016.07.019Bodla, B. S., &Verma, R. (2007). Determinants of profitability of banks in India: A multivariate analysis. *Journal of Services Research, 6*(2), 75–89.

Bogalle, W. Y. (2019). Factors affecting profitability of banks: Empirical evidence from Ethiopian Private Commercial Banks. *Journal of Investment and Management, 8*(1), 8-15. doi: 10.11648/j.jim.20190801.12Busch, R. & Kick, T.. (2009). *Income Diversification in the German Banking Industry,* Deutsche BundesbankEurosystem. Discussion Paper. Series 2: Banking and Financial Studies. No: 09/2009.

Brunnermeier, M. K, Dong, G. &Palia, D., (2015). *Banks' Non-Interest Income and Systemic Risk.* Princeton Publication.

Butterworths, B. (1990). Managing Financial Risk into the 21st Century. *CMA-The Management Accounting Magazine.*

Central Bank Kenya. (2018). The Impact of Interest Rate Capping on the Kenyan Economy. *Draft for Comments*

Demirgiic-Kunt, A., & Huizinga, H. (1999). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence, *World Bank Economic Review, 13*(2), 379-408.

Elton, E. & Gruber, M. (1997). Money Banking and the Economy. *Journal of Banking & Finance, 20*(8), 1440-1441.

Feldman R. J. & Schmidt J. (1999), Noninterest income: *A potential for profits, risk reduction and some exaggerated claims.* Article on Federal Reserve Bank of Minneapolis

Gathaiya, R. N. (2017) Analysis of Issues Affecting Collapsed Banks in Kenya. *Journal of Jomo Kenyatta University of Agriculture and Technology, 7*(3), 9-15. Retrieved from http://www.ijmbs.com/Vol7/73/1-robert-n-gathaiya.pdf

Goddard, J., Molyneux, P., & Wilson, J. O. (2004). The Profitability of European Banks: A Cross-sectional and Dynamic Panel Analysis, *The Manchester School 72*(3), 363-381.

Guy, K. (2011), Non-performing Loans. *The Central Bank of Barbados Economic Review*, *37*(1).

Hou, Y. (2007) The Non-performing Loans: Some Bank-level Experiences. *4th AFE- QASS Conference*, INEAG, Samos

Jensen, M. C., &Meckling, W. H. (1976). Theory of the firms: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*, 881-880.

Jimenez, G., &Surina, J. (2005). *Credit Circle, Credit Risk and Prudential Regulations. Vol 2 paper No.2*

Jin, G., Kim, Y., & Jae, K. (2009). Non-Interest Income and financial performance at South Korea, *The Journal of Finance*, *39*(3), 881-892.

Kamau, P. N. (2013). *The effect of cashless transactions and financial trading income on non-funded income in commercial banks in Kenya.* (Unpublished MBA Thesis) University of Nairobi.

Kiweu, M. J. (2012). Income diversification in the banking sector and earnings volatility: evidence from Kenyan commercial banks. *Working paper series 2,* Kenya Bankers Association.

Kohler, M., Düllmann, K., Herrmann, H. &Memmel, C. (2013). *Does non-interest income make banks more risky*?

Lehman, B., & Modest, D. (1988). The empirical foundations of the arbitrage pricing theory. *Journal of Financial Economics, 21*, 213–254

Lepetit, L., Nys, E., Rous, P. &Tarazi, A. (2008). The Expansion of Services in European Banking: Implications for Loan Pricing and Interest Margins, *Journal of Banking and Finance*, *32*, 2325-2335.

Li, S. (2003). *Future Trends and Challenge of Financial Risk Management.* Australia Queens Land.

Markowitz, H. M. (1959). Portfolio Selection: *Efficient Diversification of Investment.* John Wiley & Sons: NY, New York.

Mishkin, F. S. (2007). *The Economics of Money, Banking and Financial Markets, 8th ed.*. Pearson Canada Inc.: Toronto, Ontario. USA.

Mndeme, R. K. (2015). Impact of Non-Interest Income on Banking Performance In Tanzania. *International Journal of Economics, Commerce and Management*, *3*(5),

Moldoveanu, M., & Martin, R. (2001). Agency theory and design of efficient governance mechanisms. *Working Paper*. Rotman School of business.

Mugenda, O. M. & Mugenda, A. G. (2009). *Research Methods, Quantitative & Qualitative Approaches*. Acts Press: Nairobi, Kenya.

Mujuka, A. D. (2018). Factors affecting financial performance of commercial banks in Kenya. *International Journal of Academics and Research, 1*(1), 20-37.

Nachane, D. M., & Ghosh, S., (2007). An Empirical Analysis of the Off-Balance Sheet Activities of Indian Banks *Journal of Emerging Market Finance, 16*, 39-59.

Nguyen, T. C., Vo, D., & Nguyen, V. C. (2015). Risk and Income Diversification in the Vietnamese Banking System. *Journal of Applied Finance & Banking*, *5*(1), 93–109.

Njenga, E. (2014). *Determinants of non-interest income in Kenya's commercial banks.* Unpublished MBA project, Kenyatta University

Olweny, T., &Shipho, T. M. (2011). Effects of banking sectorial factors on the profitability of commercial banks in Kenya. *Economics and Finance Review, 1*(5), 1-30.

O'Neill, W. (2000). *Fundamentals of the Stock Market*. McGraw-Hill Professional Book Group: Black click, OH.

Onuonga, S. M. (2014). The Analysis of Profitability of Kenya's Top Six Commercial Banks: Internal Factor Analysis. *American International Journal of Social Science, 3*(5).

Rogers, K., &Sinkey Jr. F.J. (1999). An Analysis of Nontraditional Activities at US Commercial Banks. *Review of Financial Economics, 8*, 25-29.

Rogers, K. E. (1998). Nontraditional activities and the efficiency of US commercial banks. *Journal of Banking & Finance, 22*, 467-482.

Ross, S. A., (1976). The Arbitrage Theory of Capital Asset Pricing, *Journal of Economic Theory, 13*, 341-360

Ross, S. A. (1977). The determination of financial structure: the incentive signaling approach. *Bell Journal of Economics and Management Science*, *8*, 23-40.

Rowe, W. (1982). Two Criticisms of the Agency Theory. <i>Philosophical Studies: *An International Journal for Philosophy in the Analytic Tradition*, 363-378. Retrieved August 24, 2021, from http://www.jstor.org/stable/4319564

Santomero A. M. (1997). Commercial Banks Risk Management: An Analysis of the process, *The Wharton working paper 95-11-C*, University of Pennsylvania

Stiroh, K. J. (2006). A Portfolio View of Banking with Interest and on interest Activities, *Journal of Money, Credit and Banking*, *38*(5), 1351-1361

Smith, R., Staikouras, C., & Wood, G. (2003). *Non-interest income and total income stability*. Bank of England, Working Paper 198.

Saunders, A., Schmid, M. M. & Walter, I. (2014). Non-Interest Income and Bank Performance: Is Banks' Increased Reliance on Non-Interest Income Bad? *Social science research network.*

Tchouassi, G. (2012).Can Mobile Phones Really Work to extend Banking Services to the Unbanked? Empirical Lessons from selected Sub—Saharan Africa Countries. *International Journal of Development Societies, 1*, 70-81.

Teimet, R., Paul, O., & Shem, D. (2010). Income source diversification and financial performance of commercial banks in Kenya. *International Journal of Business and Public Management, 1*(1), 1-38.

Uzhegova, O. (2010). The relative importance of bank-specific factors for bank profitability in developing economies banks. *Journal of Economics and Business, 50*, 205-218.

APPENDIX I

LIST OF COMMERCIAL BANKS IN KENYA

1. Standard Chartered Kenya
2. Trans National Bank Kenya
3. United Bank for Africa
4. Victoria Commercial Bank
5. Jamii Bora Bank
6. Kenya Commercial Bank
7. K-Rep Bank
8. Middle East Bank Kenya
9. National Bank of Kenya
10. NIC Bank
11. Oriental Commercial Bank
12. Paramount Universal Bank
13. Prime Bank Kenya
14. I&M Bank
15. Giro Commercial Bank
16. Guaranty Trust Bank Kenya
17. Guardian Bank
18. Gulf African Bank
19. Habib Bank
20. Habib Bank AG Zurich
21. Housing Finance Company of Kenya
22. First Community Bank
23. Fidelity Commercial Bank Limited
24. Family Bank
25. Citibank
26. Commercial Bank of Africa
27. ABC Bank Kenya
28. Bank of Africa
29. Bank of Baroda
30. Bank of India
31. Barclays Bank Kenya
32. CFC Stanbic Holdings
33. Chase Bank Kenya
34. Consolidated Bank of Kenya
35. Cooperative Bank of Kenya
36. Credit Bank
37. Development Bank of Kenya
38. Diamond Trust Bank
39. Eco bank Kenya
40. Equatorial Commercial Bank
41. Equity Bank

APPENDIX II

DATA ANALYZED

Bank	Year	ROA	Bank size	Bank efficiency	Liquidity	Capital adequacy	Asset quality	Management efficiency
ABC Bank	2015	0.008	16.934	1.077	0.054	0.165	0.143	0.075
	2016	0.003	16.945	1.007	0.066	0.153	0.157	0.074
	2017	0.006	17.058	0.931	0.099	0.156	0.183	0.070
	2018	0.000	17.145	0.885	0.063	0.184	0.199	0.069
	2019	0.002	17.196	0.925	0.075	0.154	0.149	0.063
BOA	2015	(0.015)	18.054	0.860	0.086	0.164	0.232	0.052
	2016	0.000	17.841	1.014	0.114	0.162	0.261	0.096
	2017	0.001	17.808	0.963	0.095	0.158	0.282	0.063
	2018	0.004	17.709	0.801	0.202	0.160	0.338	0.059
	2019	(0.046)	17.600	0.525	0.210	0.108	0.414	0.054
Bank of Baroda	2015	0.030	18.038	0.666	0.047	1.962	0.075	0.059
	2016	0.036	18.233	0.711	0.049	0.305	0.085	0.051
	2017	0.041	18.381	0.724	0.045	0.323	0.059	0.061
	2018	0.032	18.628	0.518	0.052	0.347	0.088	0.056
	2019	0.029	18.781	0.517	0.055	0.327	0.083	0.054
Barclays Bank	2015	0.035	19.300	0.987	0.075	0.184	0.042	0.122
	2016	0.028	19.375	1.035	0.052	0.179	0.052	0.122
	2017	0.026	19.420	0.991	0.060	0.180	0.056	0.111
	2018	0.023	19.600	0.946	09.072	0.164	0.061	0.097

	2019	0.020	19.740	0.911	0.077	0.167	0.056	0.091
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
Bank of India	2015	0.026	17.557	0.867	0.036	0.423	0.020	0.048
	2016	0.034	17.683	0.877	0.034	0.457	0.014	0.058
	2017	0.037	17.852	0.819	0.039	0.540	0.021	0.059
	2018	0.031	17.954	0.588	0.034	0.439	0.071	0.054
	2019	0.037	17.951	0.403	0.043	0.484	0.094	0.056
Citibank	2015	0.039	18.295	0.566	0.111	0.283	0.058	0.099
	2016	0.033	18.453	0.574	0.067	0.264	0.019	0.087
	2017	0.040	18.403	0.707	0.084	0.256	0.037	0.097
	2018	0.037	18.266	0.629	0.086	0.276	0.016	0.107
	2019	0.030	18.386	0.549	0.122	0.272	0.026	0.097
Commercial Bank of Africa	2015	0.017	19.189	0.746	0.081	0.179	0.106	0.068
	2016	0.029	19.251	0.753	0.134	0.184	0.075	0.087
	2017	0.023	19.320	0.693	0.095	0.173	0.083	0.082
	2018	0.023	19.317	0.722	0.075	0.157	0.080	0.086
Consolidated bank	2015	0.003	16.464	1.018	0.054	0.094	0.055	0.143
	2016	(0.015)	16.449	1.034	0.047	0.079	0.118	0.103

	2017	(0.025)	16.415	1.018	0.064	0.051	0.153	0.095
	2018	(0.042)	16.372	1.024	0.071	0.028	0.153	0.109
	2019							
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
		(0.045)	16.289	0.882	0.076	0.135	0.257	0.104
Credit bank	2015	(0.006)	16.146	1.029	0.025	0.155	0.064	0.079
	2016	0.009	16.320	0.970	0.025	0.228	0.072	0.101
	2017	0.009	16.490	0.973	0.020	0.148	0.075	0.093
	2018	0.014	16.701	1.080	0.023	0.145	0.072	0.096
	2019	0.010	16.891	0.997	0.018	0.150	0.087	0.083
Co-operative bank of Kenya	2015	0.034	19.652	0.902	0.086	2.126	0.034	0.106
	2016	0.036	19.679	1.109	0.073	0.228	0.039	0.120
	2017	0.029	19.774	1.098	0.063	0.227	0.062	0.108
	2018	0.031	19.841	0.908	0.079	0.162	0.101	0.106
	2019	0.031	19.940	0.908	0.064	0.151	0.098	0.106
	2016	0.004	16.613	1.689	0.005	0.251	0.260	0.037
	2017	0.002	16.607	1.614	0.004	0.236	0.210	0.031
	2018	0.007	16.545	1.630	0.008	0.232	0.298	0.035
	2019	0.070	16.547	1.897	0.024	0.315	0.369	0.101

Diamond Trust Bank	2015	0.024	19.420	1.018	0.016	0.146	0.024	0.068
	2016	0.024	19.609	0.893	0.018	0.185	0.032	0.065
	2017	0.019	19.711	0.837	0.021	0.190	0.067	0.059
	2018	0.019	19.750	0.784	0.021	0.211	0.063	0.062
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
		0.019	19.772	0.809	0.021	0.209	0.068	0.064
	2017	(0.230)	14.775	0.154	0.042	0.701	38.554	0.005
	2018	(0.119)	15.474	0.569	0.099	0.299	0.004	0.026
	2019	(0.064)	16.011	0.778	0.126	0.149	0.010	0.025
Ecobank	2015	0.002	17.775	0.939	0.068	0.250	0.062	0.058
	2016	(0.043)	17.668	0.770	0.048	0.194	0.163	0.027
	2017	(0.021)	17.794	0.432	0.085	0.160	0.377	0.055
	2018	0.004	17.813	0.354	0.074	0.166	0.174	0.051
	2019	0.002	18.138	0.417	0.030	0.162	0.145	0.040
Equity Bank	2015	0.040	19.875	0.985	0.081	0.202	0.027	0.111
	2016	0.035	19.976	0.889	0.049	0.197	0.063	0.106
	2017	0.036	20.078	0.843	0.051	0.204	0.055	0.091
	2018	0.035	20.167	0.794	0.042	0.159	0.071	0.086
	2019	0.036	20.328	0.845	0.071	0.198	0.087	0.082
Family bank	2015	0.024	18.213	0.735	0.076	0.144	0.037	0.113

	2016	0.005	18.057	1.272	0.079	0.208	0.120	0.129
	2017	(0.014)	18.052	0.953	0.082	0.199	0.192	0.094
	2018	0.004	18.020	0.970	0.094	0.195	0.162	0.101
	2019	0.012	18.183	0.935	0.088	0.187	0.141	0.097
First Community Bank	2015	(0.001)	16.494	0.907	0.168	0.115	0.235	0.092
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
	2016	(0.004)	16.521	0.908	0.149	0.140	0.320	0.086
	2017	0.009	16.670	0.703	0.134	0.153	0.408	0.084
	2018	(0.012)	16.699	0.652	0.127	0.091	0.488	0.066
	2019	0.010	16.747	0.662	0.168	0.081	0.415	0.064
Guaranty Trust Bank	2015	0.009	17.528	0.825	0.079	0.265	0.092	0.052
	2016	0.013	17.286	0.799	0.227	0.255	0.111	0.069
	2017	0.007	17.277	0.801	0.196	0.239	0.109	0.059
	2018	0.002	17.452	0.743	0.048	0.260	0.147	0.046
	2019	0.020	17.186	0.726	0.053	0.243	0.109	0.063
Guardian Bank	2015	0.016	16.497	0.860	0.090	0.176	0.030	0.081
	2016	0.016	16.504	0.847	0.104	0.190	0.017	0.084
	2017	0.010	16.576	0.821	0.078	0.202	0.045	0.046
	2018	0.014	16.600	0.799	0.086	0.227	0.076	0.031

	2019	0.011	16.612	0.810	0.096	0.222	0.069	0.025
Gulf African Bank	2015	0.029	17.023	0.901	0.089	0.158	0.084	0.115
	2016	0.018	17.117	0.815	0.128	0.187	0.092	0.090
	2017	0.005	17.260	0.793	0.109	0.162	0.093	0.084
	2018	0.004	17.322	0.893	0.087	0.187	0.106	0.089
	2019	0.005	17.374	0.841	0.064	0.171	0.153	0.077
Habib Bank	2015	0.029	16.141	0.710	0.053	0.321	0.079	0.081
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
Ltd								
	2016	0.024	16.342	0.598	0.067	0.391	0.187	0.067
	2018	0.011	16.885	0.832	0.032	0.246	0.074	0.050
	2019	0.010	17.027	0.857	0.030	0.273	0.092	0.048
Housing finance Company ltd	2015	0.017	18.087	1.397	0.000	0.181	0.044	0.061
	2016	0.013	18.091	1.527	0.070	0.177	0.069	0.056
	2017	0.002	18.028	1.432	0.060	0.170	0.108	0.055
	2018	(0.010)	17.919	1.315	0.046	0.153	0.249	0.045
	2019	(0.002)	17.849	1.097	0.050	0.146	0.236	0.049
I&M Bank	2015	0.037	19.072	1.094	0.052	0.202	0.025	0.075
	2016	0.037	19.165	1.033	0.053	0.182	0.029	0.077

	2017	0.030	19.297	0.996	0.049	0.186	0.087	0.069
	2018	0.026	19.332	0.867	0.048	0.179	0.108	0.072
	2019	0.033	19.429	0.857	0.044	0.216	0.098	0.068
Jamii Bora Bank Ltd	2015	0.001	16.636	1.023	0.065	0.163	0.052	0.031
	2016	(0.011)	16.574	1.252	0.044	0.201	0.172	0.030
	2017	(0.037)	16.371	1.642	0.013	0.193	0.133	0.037
KCB Bank	2015	0.035	20.140	0.924	0.174	0.154	0.045	0.102
	2016	0.033	20.204	0.957	0.049	0.180	0.071	0.098
	2017							
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
		0.030	20.287	0.931	0.045	0.166	0.077	0.094
	2018	0.034	20.387	0.938	0.059	0.195	0.063	0.088
	2019	0.028	20.616	0.858	0.068	0.190	0.102	0.081
	2016	(0.013)	15.471	0.975	0.058	0.393	0.159	0.051
	2017	(0.005)	15.449	0.785	0.158	0.571	0.181	0.051
	2018	0.000	15.495	0.703	0.066	0.449	0.382	0.061
	2019	0.000	15.952	0.933	0.062	0.312	0.137	0.062
	2016	0.003	16.110	1.043	0.080	0.387	0.082	0.074
	2017	0.009	16.174	1.062	0.092	0.332	0.072	0.074
	2018	0.008	16.168	1.097	0.110	0.309	0.094	0.067
	2019	(0.002)	16.333	0.826	0.086	0.344	0.193	0.051

National Bank of Kenya	2015	(0.009)	18.647	0.710	0.131	0.140	0.112	0.102
	2016	0.001	18.535	0.670	0.076	0.071	0.175	0.094
	2017	0.007	18.515	0.630	0.068	0.054	0.300	0.083
	2018	(0.001)	18.559	0.553	0.053	0.037	0.391	0.071
	2019	(0.008)	18.534	0.610	0.113	0.115	0.356	0.089
NIC Plc bank	2015	0.027	18.926	1.135	0.054	0.206	0.091	0.073
	2016	0.026	18.948	1.133	0.043	0.230	0.113	0.073
	2017	0.020	19.144	0.959	0.046	0.223	0.109	0.058
	2018	0.020	19.155	0.913	0.057	0.187	0.122	0.061
Para	2015							
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
mount Bank Ltd		0.015	16.169	0.852	0.096	0.241	0.052	0.049
	2016	0.011	16.059	0.891	0.081	0.274	0.083	0.051
	2017	0.012	16.071	0.866	0.115	0.295	0.106	0.050
	2018	0.024	16.107	0.800	0.125	0.285	0.132	0.049
	2019	0.009	16.161	0.854	0.087	0.245	0.121	0.045
Prime Bank	2015	0.031	17.990	0.932	0.057	0.173	0.017	0.066
	2016	0.029	17.995	0.930	0.041	0.222	0.036	0.070
	2017	0.029	18.172	0.790	0.061	0.225	0.049	0.059

	2018	0.023	18.422	0.620	0.088	0.373	0.061	0.046
	2019	0.024	18.505	0.563	0.053	0.414	0.102	0.050
SBM Bank	2015	(0.005)	18.798	9.090	0.080	0.151	0.102	0.060
	2016	(0.192)	16.087	0.925	0.031	(0.128)	0.883	0.071
	2017	(0.029)	16.261	0.735	0.088	0.164	0.729	0.032
	2018	0.019	18.073	0.337	0.111	0.243	1.253	0.068
	2019	0.012	18.099	0.454	0.059	0.231	0.852	0.087
Sidian Bank	2015	0.019	16.766	1.048	0.156	0.247	0.128	0.120
	2016	0.001	16.854	1.062	0.149	0.232	0.238	0.120
	2017	(0.022)	16.776	1.016	0.199	0.165	0.278	0.154
	2018	(0.015)	17.047	0.888	0.085	0.144	0.204	0.128
	2019	0.004	17.091	0.928	0.125	0.179	0.197	0.088
Stanbic	2015	0.024	19.155	1.069	0.054	0.187	0.041	0.074
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Managment efficiency**
Bank Kenya Ltd								
	2016	0.021	19.185	1.081	0.040	0.181	0.050	0.076
	2017	0.017	19.332	0.923	0.032	0.168	0.067	0.064
	2018	0.022	19.454	0.856	0.079	0.174	0.094	0.069
	2019	0.021	19.495	0.868	0.091	0.183	0.100	0.071

Standard Chartered Bank	2015	0.027	19.271	0.771	0.061	0.212	0.101	0.107
	2016	0.036	19.339	0.778	0.062	0.209	0.083	0.109
	2017	0.024	19.471	0.697	0.047	0.185	0.090	0.093
	2018	0.028	19.469	0.640	0.071	0.195	0.117	0.097
	2019	0.027	19.526	0.668	0.068	0.177	0.095	0.095
Spire Bank Ltd	2015	(0.034)	16.488	0.864	0.054	0.175	0.333	0.055
	2016	(0.054)	16.440	0.893	0.071	0.163	0.168	0.061
	2017	(0.101)	16.227	0.735	0.031	0.127	0.427	0.049
	2018	(0.244)	16.037	0.863	0.045	(0.220)	0.560	0.094
	2019	(0.069)	15.741	1.024	0.020	(0.206)	0.711	0.165
Transnational Bank	2015	0.016	16.162	0.988	0.097	0.216	0.110	0.097
	2016	0.011	16.155	0.898	0.124	0.223	0.116	0.105
	2017	0.004	16.142	0.909	0.139	0.291	0.242	0.095
	2018	(0.007)	16.141	0.883	0.129	0.211	0.221	0.081
Bank	**Year**	**ROA**	**Bank size**	**Bank efficiency**	**Liquidity**	**Capital adequacy**	**Asset quality**	**Management efficiency**
	2019	(0.009)	16.047	0.922	0.087	0.202	0.286	0.096
UBA Kenya Bank Ltd	2015	(0.034)	15.867	0.705	0.031	0.238	0.018	0.045

	2016	0.004	15.539	1.589	0.037	0.387	0.019	0.105
	2017	0.003	15.688	1.151	0.073	0.388	0.044	0.093
	2018	0.003	16.545	0.714	0.086	0.332	0.128	0.046
	2019	0.004	16.594	0.691	0.026	0.254	0.243	0.059
Victoria Commercial Bank	2015	0.036	16.812	1.016	0.066	0.193	0.033	0.061
	2016	0.026	16.925	1.104	0.060	0.255	0.025	0.063
	2017	0.024	17.073	1.119	0.067	0.227	0.001	0.062
	2018	0.014	17.292	1.068	0.082	0.211	0.031	0.042
	2019	0.015	17.401	1.004	0.078	0.202	0.051	0.044

Dr. Duncan Elly Ochieng 17.11.2021

The effect of Non-funded income on risk of commercial banks

ORIGINALITY REPORT

14%	13%	3%	8%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	erepository.uonbi.ac.ke Internet Source	4%
2	erepository.uonbi.ac.ke:8080 Internet Source	1%
3	pdfs.semanticscholar.org Internet Source	1%
4	Submitted to University of Nairobi Student Paper	1%
5	ir-library.ku.ac.ke Internet Source	1%
6	chss.uonbi.ac.ke Internet Source	1%
7	Submitted to Africa Nazarene University Student Paper	1%
8	Submitted to Kenyatta University Student Paper	1%
9	dokumen.pub Internet Source	<1%