

# DETERMINANTS OF FINANCIAL RISK OF COMMERCIAL BANKS IN KENYA

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**Abstract:** The key objective of the research was to investigate the determinants of financial risks of commercial banks in Kenya. Specific aims of the study were to determine the influence of interest rates, operational efficiency, exchange rate and bank size on financial risk of commercial banks in Kenya. The research adopted a descriptive research design that enabled researchers to establish the current status without manipulation. The target population for this study was 42 licensed commercial banks in Kenya, out of which all were included in the study. In this research, secondary data was used gathered from the annual financial reports of commercial banks. The data was collected on the determinants of financial risks of commercial banks, which include interest rates, operational efficiency, exchange rate, bank size and financial risk. The data was analysed using descriptive and inferential statistics. Statistical Package for Social Sciences (SPSS) was used to aid in data analysis. The inferential statistics conducted include multivariate regression analysis which was run at 5% significance level. The findings of the study were presented in tabular and graphical forms. Regression analysis results revealed that a 79.0% variation in the financial risks of commercial banks, was explained jointly by these determinants under study, that is (interest rates, operational efficiency, exchange rates and banks size) according to obtained coefficient of determination of 0.790. Interest rates, exchange rates and banks size had positive and significant relationships with financial risks as shown by beta coefficient of 0.052 (p-value = 0.032), 0.554 (p-value = 0.003) and 0.526 (p-value = 0.001) respectively, while operational efficiency reduced financial risks by 0.711 (p-value = 0.005). This study recommends to the policy makers and regulators to address the issue of continued increase in exchange rates. such move can reverse the trend and therefore lower the financial risks faced by commercial banks in Kenya. The research further recommends to the management of banks to put into place/review measures they have out in place to control this increase.

**Keywords:** interest rates, operational efficiency, exchange rate, bank size and financial risk.

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## 1. INTRODUCTION

### 1.1 Background of the Study

Financial institutions are valuable contributors towards development in any economy (Knight, Rose, Riesenberger, & Cavusgil, Rammal 2014). Financial institutions play a big role in economic growth through mobilizing savings of investments and obtaining savings from companies firms with excess and idle capital. Such funds are lend inform of loans to entrepreneurs who need capital to start or expand their businesses. Commercial banks further offer advices to borrowers on management. Loans are further extended to governments. Therefore, Financial institutions are play a role in providing fiscal services to public, business and governments and ensuring social and economic stability as well as sustainable growth of economies (Onsongo, Muathe & Mwangi, 2020). Therefore, economic progress of any nation ion is significantly indomitable by the quality with the states banking sector.

As commercial banks continue to offer the crucial services to economies, the operations of banks have become much more complicated due to advancements in technologies and adoption of various models of operations. Consequentially,

the risks involved have been increasing over years. In the global context, Shetty and Yadav (2019) point out that the Indian banking sector is vulnerable to various types of risks which arise from both the external and internal environments. Among the risks include financial risks. In African context, Tan, Frimpong and Ding (2019) point out that there has been a long run relationship between financial risks and banks performance in Ghana and that the indicators of financial risk strongly and actively stimulate and improve the financial performance of banks in Ghana. Ugah (2020) identified financial risk as a major challenge in the Nigerian banking system.

Regionally, PWC(2019) reports that lending rates in Uganda, Tanzania and Rwanda range between 18% to 21% and these risks enable the banks to price for underlying risks, but at the same time, this is coupled with inadequate risk assessments leading to increased exposure to non-performing loans. In the Kenyan context, Musyoka (2020) observes that In Kenyan commercial banks, inconsistencies in financial performance are frequently recorded, to a large extent this trend is usually influence by risks and level of preparedness. Musyoka (2020) further adds that Commercial banks' performance in Kenya has deteriorated due to financial risks. Same views are advanced by Juma (2018) who point out that bad debts and Nonperforming loans have increased dramatically in commercial banks. Bases on the background, there is evidence that financial risks are very evident in the banking sector. Investigating root causes of financial risks requires prioritization as this can help lower the magnitude of the risk. It's against this background that the current research pursued to establish the determinants of financial risks in commercial banks in Kenya.

### 1.1.1 Financial Risks

According to Juma (2018), financial risk involves financial loss to firms, and it's a risk that results due to volatility and losses in the money markets brought about by changes in interest rates, currencies, stock prices. Financial risk can further be viewed as the possibility of incurring monetary loss on a business venture or investment. Therefore, financial risk is a type of risk that increases businesses probability of losing capital to other parties. Financial risk is a collective term for a variety of different types of risk and uncertainties that are related to the use of financial services. Svetlova and Thielmann (2020) point out that financial risk is classified into some distinct categories including credit risk and liquidity risks.

Knowledge of the dangers brought about by financial risks is important as it allows affected parties to understand how to mitigate the harm of the risks (Svetlova & Thielmann, 2020). Failure to mitigate financial risk result into heavy losses and hence, there is need to have the financial risk rates at acceptable parameters. Wanjohi, Wanjohi and Ndambiri (2017) emphasizes that most of the Kenyan Commercial banks outline credit risk, liquidity risk, market risk, interest rate risk and foreign exchange risk as the most important types of financial risks they face

### 1.1.2 Determinants of Financial Risk

Tona (2017) point out that financial risks of private commercial banks in Ethiopia, are determined by capital adequacy, assets, management efficiency, liquidity Management and bank size. Antwi, Obiri, Obeng and Abugre (2020) add that financial risks facing commercial banks also originate from environmental sources. They established that commercial banks' lending was a major source of financial risk. Similarly, Mohammad, Asutay, Dixon and Platonovaa (2019) point out that banks are exposed to liquidity risks, and further identifies the determinants of liquidity risks as stringency of capital regulations, long-term debts, bank specifications and ownership related variables. The authors further highlighted governance, bank size, GDP and ownership concentration as control variables that reduce banks' exposure to liquidity risks.

The current study seeks to investigate determinants of financial risks of commercial banks in Kenya which include interest rates, operational inefficiency and exchange rate. Interest rates are defined as the proportion of a loan that is charged as interest to the borrower, typically expressed as an annual percentage of the loan outstanding (Okon, Umoh, Uyime & Efang, 2020). It is the amount a lender charges for the use of assets expressed as a percentage of the principal. Brei, Borio and Gambacorta (2020) point out that low-interest rates induce banks to shift their activities from interest-generating to fee-related and trading activities. This rebalancing is stronger for low capitalized banks. Banks also moderately adjust their funding structure, away from short-term market funding towards deposits. Juma (2018) observes that performance of financial institutions in Kenya is affected by interest rate and as a result, banks continue to lose money affecting the profitability of banks.

Operational efficiency is a measure of how much costs are incurred during a given economic or financial activity, where lower costs equals greater efficiency (Miencha & Selvam, 2013). For investors and traders, markets exhibit operational efficiency when transaction costs are low. Exchange rate is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in relation to another currency. Wanjohi, Wanjohi and Ndambiri (2017) points out that Financial risk may be caused by variation in interest rates, currency exchange rates, variation in market prices, default risk and liquidity gap that affect the cash flows, and any risk taken by commercial banks has impact of overall profitability of the commercial banks.

## 1.2 Statement of the Problem

According to the report by the Financial Sector Regulators (2019) on stability of Kenya Financial Sector, credit risk has increased as reflected by increase in gross Non Performing Loans (NPLs). This increase was by 19.69 percent to Ksh.316.7 billion in December 2018 from KSh. 264.6 billion in 2017. Similarly, the gross NPLs to gross loans ratio increased to 12.7% by end of 2018 from 12.3% in 2017. Due to adoption of technologies and automation of operations, operational risks as well increased according to the report. Cytonn (2020) report that in the first quarter of the year 2020, the gross NPL ratio in the banking sector increased by 0.9%. This increase was from 10.4% in first quarter of 2019 to 11.3% in first quarter of 2020. Cytonn (2020) acknowledges that this increase was higher comparing with an average of 8.5% achieved in the previous five years. These results imply that the rate at which non-performing loans and bad debts are rising is of concern. Central Bank of Kenya (2019), too, reports that during the quarter ended December 2019, liquidity of the banking industry fairly remained stable. In Kenya, interest rates volatility and foreign exchange rates fluctuation remain high.

Past studies have specifically investigated the effect of financial risks on performance of financial institutions. Among them include include; Ongore and Gemechu (2013) who investigated determinants of financial performance among the banking institutions in Kenya. The determinants investigated included quality, Management efficiency, Asset Liquidity Management, Capital adequacy, GDP and Inflation rate. Few studies have researched on determinants of financial risks in the banking sector among them Tona (2017) investigated on aspects linked with financial risks of private commercial banks in Ethiopia. The covariates in the research were management efficiency, management on liquidity, capital adequacy, asset and bank size. The study did not investigate the effect of interest rate volatility, operational efficiency and foreign exchange rates (FER). The current study sought to determine the effect of these particular determinants on financial risks of private banks in the Kenyan context.

## 1.3 Objectives of the Study

### 1.3.1 General Objective

The research sought to investigate the determinants of financial risks of commercial banks in Kenya

### 1.3.2 Specific Objective

1. To establish the influence of interest rates on financial risk of commercial banks in Kenya
2. To establish the effect of operational efficiency on financial risk of commercial banks in Kenya
3. To find out the influence of exchange rate on financial risk of commercial banks in Kenya
4. To establish the influence of bank size on financial risk of commercial banks in Kenya

## 1.4 Research Questions

1. What is the influence of interest rates on financial risk of commercial banks in Kenya?
2. How does operational efficiency affect financial risk of commercial banks in Kenya?
3. Does exchange rate influence financial risk of commercial banks in Kenya?
4. What is the influence of bank size on financial risk of commercial banks in Kenya?

### 1.5 Significance of the Study

This study is beneficial to the banks' strategic management as the study informs the team on determinants of financial risks in commercial banks and the magnitude of such determinants. The study findings would therefore guide the banks administrators in formulating and implementing measures that contribute towards mitigating the financial risks faced, by addressing the root causes.

To policy makers, and regulators including Central Bank of Kenya and other regulatory bodies, this study informs them on the determinants of financial risks in the banking industry. With such understanding, they would be in position to formulate policies, review existing ones, and advice the banking industry on best practices in mitigating determinants of financial risks.

The study is valuable to the researchers, academicians, scholars and other parties whose interests lies in the area of financial risks, as the study contributes to the existing scholarly work and act as point of reference to future researches.

### 1.6 Study Scope

The research investigated the determinants of financial risks in financial institutions (banks) in Kenya. The determinants under investigation were limited to interest rates, operational efficiency, bank size and exchange rates. The time scope of this study was from 2012 to 2019. The research covered a period of 8 years (i.e., from 2012 to 2019). Although the concept of financial risk was significant to private and public banks, this research only focused on commercial banks in Kenya. They might partake bearing on the result. It is also desirable to work on a similar sample to guarantee robust econometric estimations.

## 2. LITERATURE REVIEW

### 2.1 Theoretical Review

Several theories were employed in the study, including but not limited to Modern Portfolio Theory (MPT), and Purchasing Power Parity (PPP).

#### 2.1.1 Modern Portfolio Theory

The study will be anchored on the Modern Portfolio Theory was developed by Harry Markowitz back in 1952. The theory MPT breaks down risk into two key parts: one, the<sup>1</sup> systematic risk and second, the unsystematic<sup>1</sup> risk. Systematic risk can be explained as that kind of that impacts the entire market and is inherent. Conversely Unsystematic risk considered as idiosyncratic risk that occurs concurrently with the investment of a specific security. According to Modern Portfolio Theory, regardless of whether credit risk can be diversified or not, that purely depends on its factors. This suggests that determinants of financial risks are key in determining if a risk is diversifiable. The theory also emphasizes the need for understanding financial risk (Diamond & Rajan, 2001).

#### 2.1.2 Purchasing Power Parity (PPP)

The relationship between a country's FX rate and the level of its national price level relative to that of a foreign country is known as purchasing power parity. In Purchasing Power Parity(PPP), a rise in the price level of a country will cause depreciation of its exchange rate relative to other countries. According to Conard (2021), most institutions, based on the uncertainty of events, would prefer borrowing money to meet current needs and wants instead of waiting for a future date and paying the price of a similar amount should they spend it on a future date. The cost of acquiring the funds, therefore, forms the interest paid on the money borrowed. The paid interest is highly influenced by the purchasing power parity. The purchasing power parity states that there exists a link between the prices and exchange rates in two various countries. This theory is pertinent to this research because it explains the value of one currency in terms of the basket of products and services it can purchase using demand and supply.

## 2.2 Conceptual Framework

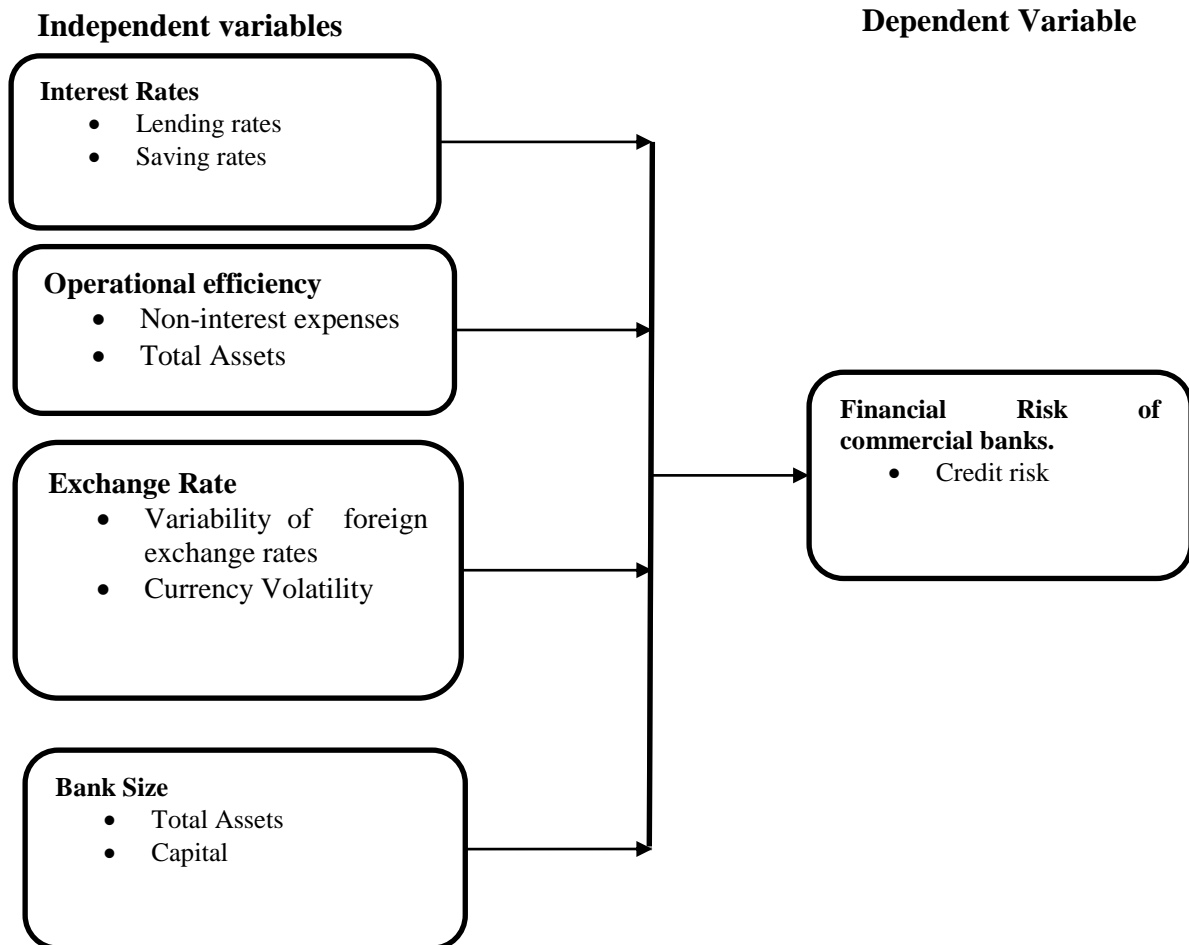


Figure 2.1: Conceptual Framework

## 2.3 Review of Variables

### 2.3.1 Interest Rates

Interest rate, according to Mweresa (2019), is the amount which is charged to a borrower by lender for use of an asset, and is expressed as a percentage of the principal. Interest rates in the context of commercial banks is the charges that bank changes to their clients. Ukundu (2017) acknowledges that for any financial institution, the selling point is interest rate, adding that the interest rates set influences customers decision to purchase products and services from them. Profitability of commercial banks increase as the interest rates rises. Ukundu (2017) adds that commercial banks can earn optimal interest income and adhere to recommended non-performing loans ratios through accurately evaluating loan applicants as a way of eliminating bad debts. This seems to suggest that interest rates can have a potential of influencing financial risks of commercial banks.

Ochanda (2018) argues that interest rates caps affect performance of commercial banks in Kenya through reducing commercial banks income, gross loans and interest rate margins. Samad (2004) adds that caps on interest rates increases liquidity in commercial banks. Ristolainen (2016) acknowledges that commercial banks obtain their income through short term deposits and lending to borrowers whereby the difference of the two rates, referred to as interest rates spread is the income. Ristolainen (2016) associates higher interest rate spreads with lower financial risks of banks. On the other hand, lower interest rate spread increases the financial risks of commercial banks. Failure by interest rates caps to provide sufficient cover for interest rates spread increases financial risks in commercial banks. Interest rates are according to Gila-Gourgoura and Nikolaidou (2017), is critical determinant of non-performing loans within the banking sector in Spain.

### 2.3.2 Operational efficiency

Lyambiko (2015) defines operational efficiency as a measure of the costs incurred in undertaking an economic activity. Lower costs implies higher efficiency and vice versa. Olalere, Temitope and Oluwatobi (2015) defines operational efficiency as capability by a firm to deliver its products and services to customers in a manner that is effective in cost and while ensuring high quality of the services and products. In the context of commercial banks, operational efficiency is a measure used to assess the efficiency of management. Kerongo and Mwaura (2016) points out that operational efficiency has a positive impact on the financial performance of financial institution.

Odhiambo (2019) points out that the efficiency of commercial banks is high considering the technologies currently adopted by the banks to facilitate service delivery, adding that commercial banks prefer lending to entities with fewer risks. Ukundu (2017) argues that efficiency by the management ensures that operational expenses of commercial banks are minimized and as a result promoting the banks financial performances. The author adds that if management efficiency is not heightened, high interest incomes that is earned from loans can be wiped out by high operating costs. Operation efficiency will entail ensuring that lending rates are properly evaluated to ensure that banks have adequate loan disbursement and at the same time high returns.

Garr (2013) acknowledges that existing literature identifies determinants of credit risk as but not limited to ownership structure of the bank, management efficiency, operating expenses, deposit quality and composition, capital and size, quality of assets and bank reserves requirements. The current study considers exchange rates, interest rates and operational efficiency among the determinants.

### 2.3.3 Exchange rate

According to Reid and Joshua (2004) defines exchange rate (EX) as the value of the one unit of foreign currency in relation to the local currency. Among the determinants of exchange rates include external debts whereby external debts has a positive influence on exchange rates. Volatile exchange rates reduces cash flows and as a result reducing the income of any firm. Therefore changes in exchange rates results to an impact in firms' profitability. Manyok (2016) measures fluctuations in exchange rates as a standard deviation of changes against the USD.

Manyok (2016) points out that one source of risks in any organization is the fluctuations in exchange rate, adding that exchange rate fluctuations have a positive influence on lenders ability to manage loans. Same sentiments are raised by Watkins (2014) who point out that fluctuation in exchange rates result to significant gains or losses. With huge losses in the foreign exchange, organizations have high probability of failure as well as falling into financial burdens. Gatobu (2013) adds that the net income of multinational companies' can be affected greatly by losses or gains in foreign exchange. Manyok (2016) adds that fluctuations in foreign exchange has potential of influencing the commercial banks' level of profitability.

### 2.3.4 Bank Size

Bank size is the capital of commercial banks, normally presented in the annual financial statement. Bank size is measured by core capital (Musyoka, 2018) and banks total assets (Shen et al., 2009). Size of commercial bank determines its influence in the industry as Large commercial banks can take advantage of scope and economies of scale, making them more efficient than small banks. Kiyota (2009) argues that smaller banks tend to have higher profit efficiency while larger banks tend are more cost efficient. Barrell, Davis, Fic and Karim (2011) argue that a relationship exists between size of commercial banks and risk-taking, adding that as size of commercial banks continue to increase, so does the risk taking. Such undertaking exposes bank to risk taking and risks as well.

Alam and Al-Karim (2013) point out that size of commercial banks as well as operational efficiency impacts significantly on the financial performance of commercial banks. However, they have not linked the relationship between bank size and operational efficiency to financial risks which is the focus of this study. Konya, Jagongo and Kosimbei (2020) argue that size of commercial banks and exposure to financial risks influences performance of commercial banks in Kenya, acknowledging that there is a huge disparity in the size of commercial banks in Kenya. Adusei and Elliott (2015), too, acknowledges that increasing the size of rural banks leads to increased stability and further, bank stability is positively influenced by funding risks.

Salas and Saurina (2003) argue that greater market power has correlation with higher banks solvency powers and lower credit risks. Terraza (2015) too acknowledges that liquidity risk in a commercial bank are highly dependent on the size of the bank. Shen, Chen, Kao and Yeh (2009) considers size of bank as a key element of liquidity risk in financial institutions and suggest measuring bank size as banks total assets. They argue that as bank grow in size, its ability to mobilize deposits increases with less difficulty and at the same time, increased capability to grand more loans. Huge financial commitments and expansion too increase the vulnerability of commercial banks to liquidity risk. The current study measures financial risks in terms of credit risk and therefore this study will help determine influence of bank size as a determinant of credit risk.

## 2.4 Empirical Review

Konya, Jagongo and Kosimbei (2020) carried out a study on size of commercial banks in Kenya, their exposure to risks and effect on financial performance. The study concluded that banks growth in size enabled them to enjoy economies of scale. The study acknowledged existing disparity in market power due to varying sizes of banks. The recommendation of the study was to investigate other variables besides bank size and financial risk exposure in establishing the financial performance of banking institutions. The current study not only investigates other variables but also examines the influence of the variables on financial risks of commercial banks.

Omondi (2019) investigated financial risks and resulting financial performance of banking institutions in Kenya. The results established that the banking industry was highly vulnerable to risks. The study conclude that interest rates have a positive significant effect on banks financial performance. However, a foreign exchange and credit risk affects financial performance of banking institutions negatively and significantly. The study however did not discussion the determinants of financial risks but rather confirmed the presence of financial risks in the banking industry in Kenya, which the current study sought to find out.

Ochanda (2018) sought to establish how interest rates caps affected performance of commercial banks in Kenya. The results revealed that commercial banks recorded reduced income, gross loans and interest rate margins due to interest cap by central bank of Kenya. This study only related the interest rates caps to performance of banking institutions and financial risks. The current study investigated the influence of interest rates on financial risks.

A study by Ukundu (2017) analyzed how lending interest rates affected financial performance of financial institutions in Kenya. The results of this study established that lending rate volatility influence financial performance of financial institutions positively since it was commercial banks main source of income. The study however did not show the link between interest rate volatility and financial with the banking sector which the current research aimed to investigate.

Mwangi (2017) carried out an assessment on how interest rates affect financial performance of banking institutions in Kenya. The study results showed that lending rates ratio positively influences performance of commercial banks but deposits interest ratio has a negative impact. The current study sought to find out how interest rates influence financial risks of commercial banks.

Tona (2017) wanted to establish the determinants of financial risks in private banking institutions operating in Ethiopia. The dependent variables were assets, management efficiency, liquidity management capital adequacy, and bank size while dependent variables were Return on Assets (ROA) and Return on Equity (ROE). Given the context of study is Ethiopia, such study cannot be generalized to the Kenyan context and different variables are considered which include interest rates, exchange rates, operational efficiency and bank sizes.

Manyoki (2016) examined the effect of fluctuating exchange rate (ER) on fiscal performance of Commercial Banks operating in South Sudan. The findings of this study revealed that that fluctuations of exchange rate have weak negative association with financial performance. The study also established that in South Sudan, interest rates had increased overtime while deposit rates had decreased overtime.

Maigua and Mouni (2016) sought to establish how interest rates determinants influences performance of banking institutions in Kenya. The study motivation was that interest rates affects economic growth of any economy. The interest rate determinants investigated included exchange rates, discount rates, reserve requirement ratio and inflation rates. The study found out that exchange rates, discount rates and inflation rates had a positive effect on the performance of banking institutions in Kenya whereas reserve requirement ratio negatively influenced the performance of banking institutions.

Mugenyah (2015) assesses the determinants of liquidity risk among commercial banks in Kenya for the period 2010 to 2014. The determinants in the study included liquid assets ratio, capital adequacy ratio, ownership type, leverage and size. The study concluded that these determinants were significant in influencing risk. The current study explored determinants which were not explored in this study

Owoeye and Ogunmakin (2013) carried out a study on how volatility of exchange rates affected performance of commercial banks within Nigeria. The study outcome of the research demonstrated that exchange rates fluctuations had a positive influence on lenders ability to manage loans. The study revealed that exchange rate and cash deposit ratio was insignificantly related.

Wong and Leung (2008) investigated how Chinese banks had been exposed to foreign exchange and revealed that there was a strong positive correlation between size of bank and exposure to foreign exchange. The study revealed that foreign exchange, when they appreciate minimize equity values and therefore hampering performance of the banks. The study did not investigate how foreign exchange rates influence financial risks which the current study sought to investigate.

## 2.5 Critique of the Existing Literature

Most of the existing literature presents detailed arguments on effects of financial risks on performance of commercial banks. The literature presents the relationships between financial risks performance of commercial banks. Examples include studies by Omondi (2019) on financial risks<sup>1</sup> and resulting financial performance of commercial Banks in Kenya; Jagongo and Kosimbei (2020) study on how exposure to risks affects performance of commercial banks. The study have discussed the determinants of financial risks but rather confirmed the presence of financial risks in the banking industry in Kenya, which the current study seeks to find out.

Further, the studies and literature on the variables under investigation in this study, only show the relationships between the variables, that is, bank size, interest rates, exchange rates and operational efficiency on profitability and performance of commercial banks other than on financial risks. The study confirms that interests rates, specifically interest rates caps affect performance of commercial banks (Ochanda, 2018; Mwangi, 2017; Ukundu, 2017; Maigua & Mouni, 2016). However, a clear link between interest rates (IR) and financial risks of banking institutions remains unknown.

Tona (2017) looks at determinants of financial risks in private commercial banks operating in Ethiopia focusing on the capital adequacy, assets, management efficiency, liquidity management and bank size while dependent variables were Return on Equity (ROE) and Return on Assets (ROA). The study is however not exhaustive as it focuses only on CAMEL. Hence, influence of interest rates, exchange rates, operational efficiency have not been presented with regard to how they determine financial risks.

Studies on exchange rates focus on how such rates affect performance of commercial banks. (Manyok, 2016). Given that exchange rates vary within countries and therefore generalization of the findings could result to bias. Studies acknowledge the exchange rates volatility (Owoeye & Ogunmakin, 2013). Other studies focus on determinants of liquidity risk limiting the scope on liquid assets ratio, capital adequacy ratio, ownership type, leverage and size (Mugenyah, 2015). Exchange rates, interest rates, operational efficiency and bank size have not been investigated as determinants of financial risks.

## 2.6 Summary of Reviewed Literature

Konya, Jagongo and Kosimbei (2020) found out that exposure to risks effect financial performance. Omondi (2019) established that interest rates have a positive significant effect on banks financial performance. Ochanda (2018) revealed that commercial banks recorded reduced income, gross loans and interest rate margins due to interest cap by central bank of Kenya. A study by Ukundu (2017) established that lending rates influenced monetary performance of banks positively since it was the institutions' main source of income.

Study by Mwangi (2017) found out that lending rates ratio positively influences performance of commercial banks but deposits interest ratio has a negative impact. Tona (2017) did an assessment on determinants of financial risks in private commercial banks operating in Ethiopia focusing on capital adequacy, assets, management efficiency, liquidity management and bank size as dependent variables and Return on Assets and Return on Equity as dependent variables.

Manyok (2016) revealed that fluctuations of exchange rate have weak negative association with financial performance. Maigua and Mouni (2016) sought to establish how interest rates elements influences performance of banks in Kenya,



determinants being exchange rates, reserve requirement ratio, discount rates and inflation rates. Exchange rates, inflation rates and discount rates had a positive impact on the performance of commercial banks. Mugenyah (2015) did an assessment on determinants of liquidity risk among commercial banks in Kenya for the period 2010 to 2014. The determinants in the study included liquid assets ratio, capital adequacy ratio, ownership type, leverage and size.

### 2.7 Research Gaps

Majority of existing literature relates financial risks and performance of commercial banks. The studies reveal the links between various factors and financial performance of banking institutions. However, the only research so far known to the researcher regarding determinants of financial risks was conducted in the Ethiopian context (Tona, 2017) focusing on CAMEL as determinants of financial risks. Exchange rates, operational efficiency, interest rates and bank size have not been investigated. The literature on determinants of financial risks remain scanty and inconclusive, a gap that this study sought to fulfill.

## 3. RESEARCH METHODOLOGY

### 3.1 Research design

Creswell and Creswell (2003) reiterates Calder, Phillips and Tybout (1981) that research design entails the framework of research techniques and methods employed for efficient data collection, presentation, measurement, and analysis. According to Kothari (2004), the research design is very vital as it facilitates ease of navigation through the whole research process and ensures validity and reliability of obtained findings and results. The study adopted a descriptive research design that enabled researcher to establish the current status without manipulation. The descriptive research design allowed the researcher to evaluate determinants of financial risks in financial institutions.

### 3.2 Target Population

The target population is the sum of the individuals or participants considered in the research upon which the sample is drawn (Banerjee & Chaudhury, 2010). The target population for this study were the registered commercial banks in Kenya. There are currently 42 licensed financial institutions in Kenya, out of which 39 commercial banks (financial institutions) are privately owned in the remaining three (3), the government of Kenya has controlling stakes (Appendix 1). Table 3.1 presents the target population.

**Table 3.1: Target Population**

	Total
Commercial Banks in Kenya	42

### 3.3 Sampling Framework

The sample is the part of the population considered for research. Since there are 42 commercial banks in Kenya, and all are required to by CBK to publish their financial reports, inclusion of all of them in the study was possible.

### 3.4 Procedures Used in Data Collection Process

Data collection involves gathering and measuring information related to the variables of interest within a well elaborate designed fashion enabling the researcher to obtain answers to the research questions and objectives, testing the hypotheses and evaluating the outcomes of the research (Ahmad & Seymour, 2008). In this research, secondary data was used gathered from the annual financial reports of commercial banks. Use of secondary data was justified by the fact that this research used longitudinal data other than cross-sectional data and therefore, use of primary data could have introduced bias in events were the records of the data being sought were not properly recorded. The data was collected on the determinants of financial risks of commercial banks, which include interest rates, operational efficiency, exchange rate, bank size and financial risk.

### 3.5 Data Analysis and Presentation

This section entails the systematic process and approaches applied to give meaning and logical sense to the data collected by condensing, recapping, and evaluation. Shamoo and Resnik (2003) defines data analysis as a process that enables the cleaning, transformation, and modeling of data for proper presentation and interpretation of the data to aid the decision-making process and drawing of conclusions.

This study was analyze quantitative data using descriptive and inferential statistics. Statistical Package for Social Sciences (SPSS) was used for data analysis. The study established determinants of financial risks of commercial banks in Kenya using the multivariate regression model run at 5% significance level. The model specifications was;

$$Y_1 = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

Where,

$Y_1$  = Financial risk measured by credit risk (Non-performing loan ratio)

$X_1$  = Interest rates measured by natural logarithms of interest rates

$X_2$  = operational efficiency measured by Total expenses (excluding interest payment expense)/Return on Assets

$X_3$  = Exchange rate measured by natural logarithms of exchange rates

$X_4$  = Bank size measured by natural logarithms of total assets

$B_0$  is the financial intercept and  $B_i$ ,  $i = 1, 2, 3$  are the coefficients of the independent variables

$e$  = error term

## 4. DATA ANALYSIS AND RESULTS

### 4.1 Introduction

This section presents the results of data analysis aimed at addressing the study objectives which were to examine the determinants of financial risks<sup>1</sup> of commercial banks<sup>1</sup> in Kenya. The specific objective was to determine the outcome of operational efficiency, interest rates, exchange rate and bank size on financial risk of commercial banks in Kenya.

### 4.2 Exploratory Data Analysis

This sub-section presents the trend of the variables under scrutiny following data exploration.

#### 4.2.1 Interest rates

The general trend of the interest rates declined from 18 as at the year 2012 to around 7 as at the year end of 2020. Specifically, interest rates where on a high of 18 in January and February 2012 before declining to a low of around 9 in the year 2014. However, there was a slight increase in interest rates during the second half of the year 2015 whereby the interest rates remained at 11 till March 2016. Afterwards, the interest rates declined to 10 over the year 2017 and further to 9 during the last quarter of the year 2019. Figure 4.1 presents the findings.

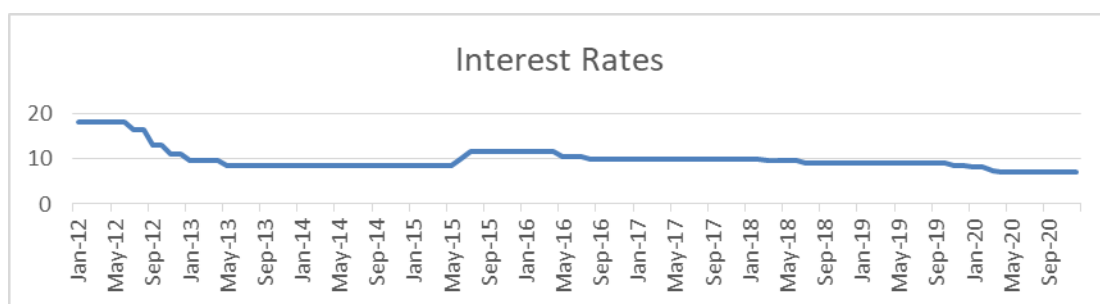
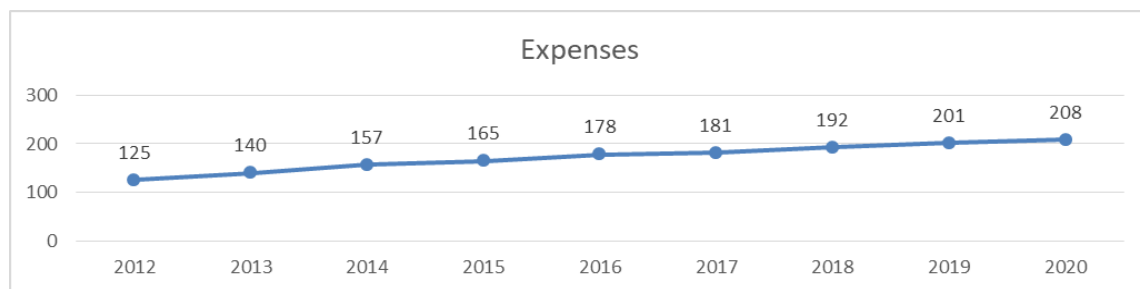


Figure 4.1: The trend in variation of interest rates over time

#### 4.2.2 Operational efficiency

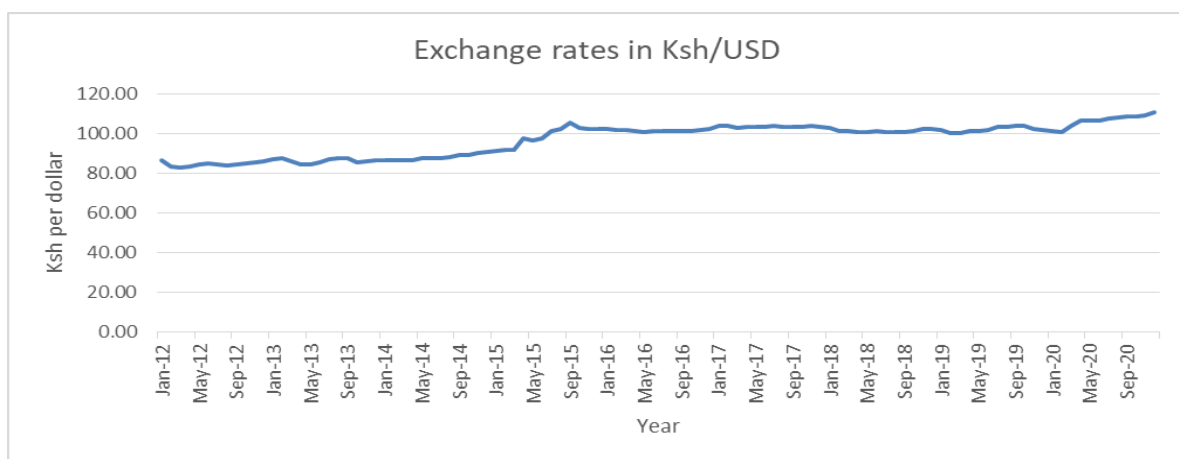
Operational efficiency in this study was measured by total expenses (excluding interest payment expense)/Return on Assets. In general, the expenses of commercial banks increased over the entire study period. As at the year 2012 the expenses of commercial banks where 125 billion. This cost increase to a high of 208 billion as at the year 2020. The results indicate increased expenses of commercial banks had been on increase over the study period. Figure 4.2 presents the results.



**Figure 4.2: The trend in variation of commercial banks expenses over time**

#### 4.2.3 Exchange rate

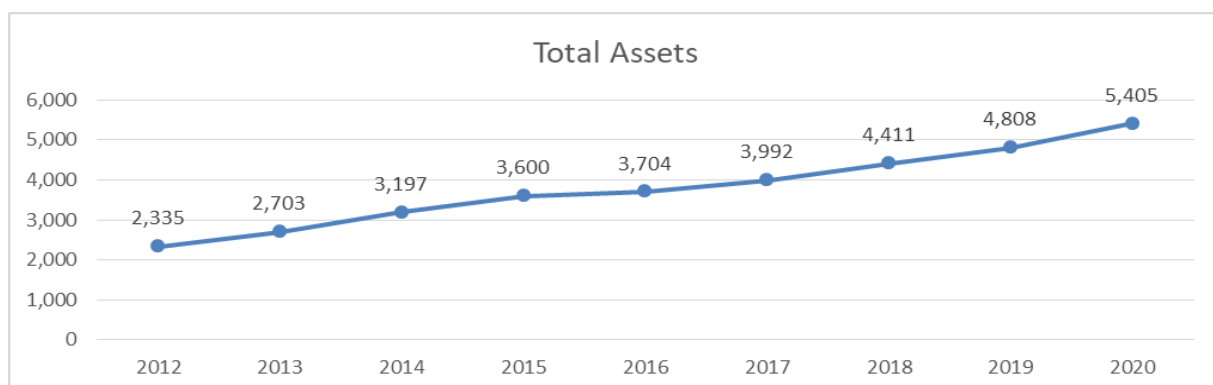
In this study, interest rates were explored for the period 2012 to 2020. The trends showed revealed that the average monthly exchange rates of Kenya shillings against the US dollar had been increasing over the study period. This is an indication of the weakening of the Kenyan shilling against the US dollar. The range of exchange rates over the study period was a low of KSh 83 and a high of Ksh 110.59 at the end of the year 2020.



**Figure 4.3: The trend in variation of exchange rates over time**

#### 4.2.4 Bank size measured by natural logarithms of total assets

The size of commercial banks was measured by the natural logarithms of total assets. Exploring the trends in total assets of banks, it emerged that such assets had been increasing during the entire study period. As at the year 2012, the total assets of commercial banks in Kenya were Ksh 2335 billion. The total assets increased steadily to Ksh 3600 billion as at the year 2015 following which the increase rate slowed down to Ksh 3704 billion as at the year 2016. Afterwards, the total assets increased steadily to Ksh 5405 as at the year 2020. These results imply continued increase in the total assets of commercial banks over time. Figure 4.4 presents the results.



**Figure 4.4: The trend in variation of commercial banks total assets over time**

#### 4.2.5 Financial risk measured by credit risk (Non-performing loan ratio)

Financial risk was measured by credit risk determined by non-performing loans ratio within the banking industry in Kenya. Trends over time revealed that the net loans increased steadily over the study period. As at the year 2012, the net loans amounted to Ksh 1296 billion after which they increased to ksh 2180 billion as at the year 2015 before increasing at a lower rate to Ksh 2188 and 2257 billion as at the years 2016 and 2017 respectively. Afterwards, the net loans increased at a much higher rate to a high of 2659 as at the year 2020. On the other hand, the net non-performing loans continued to increase over the study period from a low of Ksh 20 billion as at the year 2012 to a high of ksh 166 billion as at the year 2020, implying continued increase in net non-performing loans. Figure 4.5 presents the results.

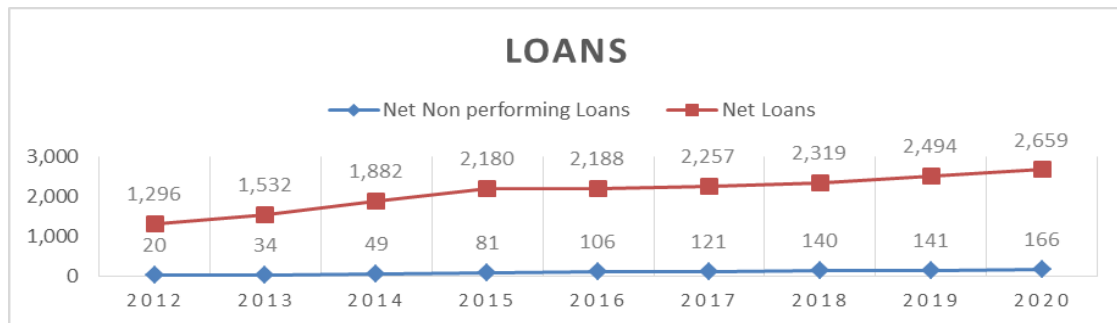


Figure 4.5: The trend in variation of Net loans and non-performing loans over time

Pertaining the net non-performing loans ratio, it emerged that such ratio had been on upsurge over the entire study duration. As at the year 2012, this ratio was 0.015 after which it increased to a high of 0.061 in the year 2018 before a slight decline to 0.057 as at the year 2019. In the year 2020, the ratio net non-performing loans ratio reached an all-time high of 0.063. The results are presented in figure 4.6.

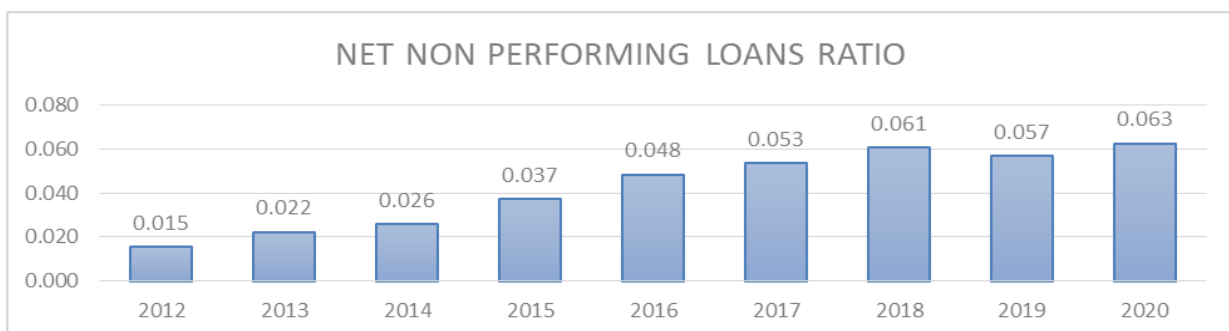


Figure 4.6: The trend in variation of net non-performing loans ratio over time

#### 4.3 Regression analysis

To establish how the determinants under study influenced financial risks of banks in Kenya, multivariate regression test was carried out at 0.05 significance level. Three tables were generated in the regressions analysis which contained model summary results, the Analysis of Variance, (ANOVA) results and the measurements of the model<sup>1</sup> respectively. From the model summary table, coefficient of determination ( $R^2$ ) which is the variation in the dependent variable explained by the predictor variable, was used to explain the variation in the financial risks of commercial banks, explained jointly by the determinants considered (interest rates, operational efficiency, exchange rates and banks size. According to the results obtained, the 79.0% variation in the financial risks of commercial banks, was explained jointly by these determinants. The findings are presented in table 4.1.

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.889	.790	0.746	.32561

Source: Research data, 2021

Further ANOVA was used to test the significance of the multivariate regression model fitted on the data. The results are as show in table 4.2.

**Table 4.2: Summary of One-Way ANOVA results**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.422	4	.106	73.021	.003 <sup>b</sup>
Residual	.004	3	.001		
Total	.427	7			

Source: Research data, (2021)

According to the results, the p-value obtained was below 0.05, the significance level of the study. This implied that the model fitted was ideal for deducing conclusions and the model fit was good. The results indicate that interest rates, operational efficiency, exchange rate and bank size all have significant impact on financial risk of commercial banks in Kenya. The significance value was less than 0.05 indicating that the model was significant.

Finally, the coefficient table results yielded the beta scores and the significance of each individual determinant in influencing the financial risks of commercial<sup>1</sup> banks in Kenya. The findings are presented in the table 4.3 .

**Table 4.3: Summary: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
(Constant)	-3.585	.523		-6.856	.006	
Interest Rates	X <sub>1</sub>	.052	.014	.240	3.800	.032
1 Operational Efficiency	X <sub>2</sub>	-.711	.095	-.498	-7.455	.005
Exchange Rate	X <sub>3</sub>	.554	.065	.662	8.494	.003
Bank_Size	X <sub>4</sub>	.526	.045	.847	11.730	.001

Source: Research data, (2021)

According to the results obtained, the multivariate regression equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ ) with the estimated beta parameters corresponding to each determinant is becomes:

$$Y = -3.585 + 0.052X_1 - 0.711X_2 + 0.554X_3 + 0.526X_4$$

From the obtained model, a unite increase in interest rates, holding other determinants constant would result in an increase in financial risk of commercial banks in Kenya by 0.052 units; further, a unit change in operational efficiency of commercial banks, holding other determinants constant, reduced the financial risks of commercial banks by 0.711 units. Similarly, a unit change in prevailing exchange rates holding other factors constant, changed the financial risks of commercial banks by 0.554 units. Finally, a unit increase in size of commercial<sup>1</sup> banks, while holding other factors constant increased the financial risks of commercial banks in Kenya by 0.526 units.

Interms of statistical significance, all the beta coefficients had corresponding significant value was less than 0.05, the significance level of the study. This is an implication that the impact of each determinant on the financial risk of financial institutions in Kenya was statistically substantial.

#### 4.4 Discussion

Exchange rates according to the results have a strong positive association with financial risks of commercial banks. these results concur with Ristolainen (2016) wo argue that lower interest rates spread increases the financial risks of commercial banks. same results are supported by Ukundu (2017) who acknowledges that for any financial institution, the selling point is interest rates as the set rates influences customers decision to purchase products and services from them. The results suggest that failure by interest rates caps to provide sufficient cover for interest rates spread increases financial risks in commercial banks. Gila-Gourgoura and Nikolaidou (2017) acknowledge that interest rates are a critical determinant of (NLP) non-performing loans within the banking sector.

The study findings that operational efficiency has a negative effect on the financial risk performance of commercial banks are in line with Kerongo and Mwaura (2016) who point out that operational efficiency has a positive effect on the financial performance<sup>1</sup> of commercial banks, which is as a result of less financial risk. The positive relationship could further be supported in an argument by Lyambiko (2015) that lower costs implies higher efficiency and vice versa. Ukundu (2017) argues that if management efficiency is not heightened, high interest incomes that is earned from loans can be wiped out by high operating costs. Garr (2013) identifies determinants of credit risk as but not limited to management efficiency and operating expenses.

The study revealed that a unit change in exchange rate while holding the other factors constant would positively enhance the financial risk performance of commercial banks in Kenya. These findings agree with Manyok (2016) who established that fluctuations in exchange rate have a key influence on lenders ability to manage loans. The results are further in agreement with Watkins (2014) who point out that fluctuation in exchange rates result to significant gains or losses, adding that huge losses in the foreign exchange increase the probability of organizations failure as well as falling into financial burdens. Gatobu (2013) adds that the net income of multinational companies' can be affected greatly by losses or gains in foreign exchange.

Inferential statistics show that unit change in bank size while holding the other factors constant would positively enhance the financial risk performance of commercial banks. Adusei and Elliott (2015), too, acknowledges that increasing the size of rural banks leads to increased stability and further, bank stability is positively influenced by funding risks. The findings further with Barrell, Davis, Fic and Karim (2011) who argue that a relationship exists between size of commercial banks and risk-taking, adding that as size of commercial banks continue to increase, so does the risk taking. They conclude that such undertaking exposes bank to risk taking and risks as well. Shen, Chen, Kao and Yeh (2009) considers size of bank as a key determinant of risk in commercial banks, further arguing that as bank grow in size, its ability to mobilize deposits increases with less difficulty and at the same time, increased capability to grand more loans.

## 5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary of findings

Data exploration revealed a decline in the interest rates over the study period from a low of 18 as at the year 2012 to around 7 as at the year end of 2020. On the other hand, the total expenses (excluding interest payment expense) of commercial banks increased over the entire study period. As at the year 2012 the expenses of commercial banks were 125 billion. This cost increase to a high of 208 billion as at the year 2020. The trends on exchange rates revealed that the average monthly exchange rates of Kenya shillings against the US dollar had been increasing over the study period, from a low of KSh 83 and a high of KSh 110.59 at the end of the year 2020. The commercial banks' size and been growing over the entire study period as shown by the total assets whereby as at the year 2012, the total assets were Ksh 2335 billion, increasing to Ksh 5405 as at the year 2020. The study findings also revealed that the net loans increased steadily over the study period from Ksh 1296 billion in 2012 to 2659 as at the year 2020. The net non-performing loans continued to increase over the study period from a low of Ksh 20 billion as at the year 2012 to a high of ksh 166 billion as at the year 2020. The consequences were continued increase in net non-performing loans ratio from 0.015 in 2012 to 0.063 in the year 2020.

Regression analysis results revealed that a 79.0% variation in the financial risks of commercial banks, was explained jointly by these determinants understudy, that is (interest rates, operational efficiency, exchange rates and banks size) according to obtained coefficient of determination of 0.790. Interest rates, exchange rates and banks size had positive and significant relationships with financial risks as shown by beta coefficient of 0.052 (p-value = 0.032), 0.554 (p-value = 0.003) and 0.526 (p-value = 0.001) respectively while operational efficiency affected financial risk of commercial banks by - 0.711 (p-value = 0.005).

### 5.2 Conclusion

#### 5.2.1 Effect of interest rates on financial risk of commercial banks

Interest rates have been fluctuating overtime in Kenya. Increase in interest rates results to increase in financial risks of commercial banks. This could be associated with inability of borrowers to service their loans in advance. The non-performing loans ratio increases hence increased credit risk.

### 5.2.2 Effect of operational effectiveness on financial risk of commercial banks

Commercial banks in Kenya have been recording increased operational expenses over years. Increase in operational efficiency has a statistically significant negative effect on the financial risks of commercial banks. Operational inefficiencies increase financial risks and vice versa.

### 5.2.3 Effect of exchange rate on financial risk of commercial banks

Exchange rates has been on increase throughout the entire study period. The consequences are increase in financial risk of commercial banks in Kenya. This study concludes that increase in exchange rates has a positive and statistically significant relationship with financial risks of commercial banks in Kenya.

### 5.2.4 Influence of bank size on financial risk of commercial banks

Regarding influence of bank size on financial risk of commercial banks in Kenya, the research concludes that growth in the size of banks result to growth in the financial risks it faces. This influence is statistically significant. the study further concludes that there has been a continued increase in the size of commercial banks as shown by increase in the total assets of the banks.

## 5.3 Recommendations

The study established that increase in exchange rates increased the financial risks faced by commercial banks. based on these results and following continued increase in the exchange rates, this study recommends to the policy makers and regulators to address the issue of continued increase in exchange rates. The Government, who are part pf the policy makers should develop mechanisms to safeguard the value of Kenyan currency and maintain inflation at lower levels. Such move can reverse the trend and therefore lower the financial risks faced by commercial banks.

The study established that the non-performing loans ratio which measured financial risks was on increase over years. This implies increase in financial risks of commercial banks. This study recommends that the management of commercial banks to put into place/review measures they have out in place to control this increase. On the other hand, they should engage the stakeholders responsible for regulating the factors are beyond their control and which result to increase in financial risks. These stakeholders could include Central Bank of Kenya and other regulatory bodies.

The study had not exhausted the determinants of financial risks in commercial banks in Kenya. As a result, the study recommends for further studies into the determinants such as, Capital adequacy, GDP and Inflation rate as they were not explored by this study. Such findings would be valuable in enhancing the already existing knowledge on the financial risks in commercial banks in Kenya, thereby contributing to better mitigation strategies and undertakings. Further, the knowledge will be useful in guiding in formulation of strategies to mitigate financial risk increase within the banking sector

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