AN EMPIRICAL ANALYSIS OF FACTORS AFFECTING NON-PERFORMING LOANS IN COMMERCIAL BANKS IN TANZANIA

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA) DEPARTMENT OF ACCOUNTING AND FINANCE OF THE OPEN UNIVERSITY OF TANZANIA 2022

CERTIFICATION

The undersigned certifies that he has read and hereby recommends, for acceptance by the Open University of Tanzania, the dissertation titled: *An empirical analysis of factors affecting non-performing loans in commercial banks in Tanzania*, in partial fulfillment of the requirements for the successful completion and award of Master of Business Administration, Department of Accounting & Finance of The Open University of Tanzania.

Signature …………………………………………

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DECLARATION

I, **Mshana, Lina Joseph**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature**……………………………………**

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Date ……………………………..

ACKNOWLEDGEMENTS

DEDICATION

To my parents Mr. Joseph S Mshana and Mrs. Lilian K. Mshana

And

To my late grandparents Anjelita Ramadhan and, Odilina Kinenekejo

And

To my dear husband, Hillary Godson and my precious daughter Hope Hillary

Whose love, custody, counsel and charity configured and profiled my life and to

Whom I am always very grateful and thankful

ABSTRACT

This study analyzes the factors affecting non-performing loans in commercial banks in Tanzania. The experience of Tanzania shows gross non-performing loans have increased from 5.12 percent in 2013 to 9.8 percent in 2019. This indicates a huge risk in the financial sector and the national economy at large, such that solvency and liquidity of the banks affect negatively the liquidity position of the financial sector. This steers a need to explore the possible determinants of non-performing loans. This study used a quantitative approach and the quantitative analysis was done through multiple regression to examine the internal and external bank factors affecting nonperforming loans in commercial banks in Tanzania, whereas the sample comprised of ten commercial banks due to their seniority and satisfactory experience in lending activities. The findings show that log of tax paid has statistically positive significant effect on non-performing loans whereas log of total assets and number of employees have statistically negative significant impact on non-performing loans. Loan to deposit ratio and interest rate were found to have negative impact on non-performing loans but their effect is not statistically significant. The study suggests that the government through fiscal policy need to smooth taxes to ensure reliable income for clients to make payment of their debts whereas the banks need to strengthen their supervision and management practices by establishing adequate collaterals and procedures in solving unclear loans. Furthermore, the banks should be strategic in providing collateral obligations such that they are at low risk of the company's loss.

Keywords: *Non-performing loans and commercial banks*

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LIST OF ABBREVIATIONS

ACB   Azania Commercial Bank

BOT   Bank of Tanzania

CRDB   Corporate Rural Development Bank

DCB   Dar es Salaam Commercial Bank

GDP   Gross Domestic Product

GMM   Generalized Method of Moments

KCB   Kenya Commercial Bank

LTD   Loan to Deposit

NBC   National Bank of Commerce

NMB   National Microfinance Bank

NPL   Non- Performing Loan

SME's   Small-Medium Enterprises

TPB   Tanzania Postal Bank

CHAPTER ONE

INTRODUCTION

1.0 Chapter Overview

This chapter is dived into eight sections. Section 1.1 explains the background of the study, section 1.2 describes the statement of the problem, section 1.3 identifies the research objectives under study, section 1.4 presents the research questions to be explored, section 1.5 outweighs the significance of the study, section 1.6 defines the scope of the study, section 1.7 shows the limitations of the study, and finally section 1.8 elaborates the organization of the study.

1.1 Background of the study

Recently, most banks are cautious towards extending loans due to increase in non-performing assets (Tiwari& Sontakke, 2013). Traditionally, the key role of banks is lending. In Tanzania loans comprise 80 percent of total assets of commercial banks (BOT, 2012). Furthermore, these assets yield huge interest which ultimately determines the banks financial performance. Nevertheless, once a portion of these loans become non-performing as lending is not an easy task, they adversely impact their performance. Banks play key roles in the economic development as such the commercial banks are indignant source of funding to most business activities in the country.

Globally, commercial banks are the center of financial institutions in most economies (Richard, 2010). However, well-functioning of commercial banks significantly attributes huge part towards emerging economies where many borrowers have limited access to capital markets (Van Greuning and Bratanovic, 2003). Therefore,

they act as intermediary between the borrowers and depositors (Allen& Gale, 2004). Whereas poor performance of commercial banks is a handicap to economic advancement and amplify poverty (Barth *et al.,* 2001).

A loan is considered as non-performing loan when the borrower passes ninety days or more without paying the agreed or accruing interest (Klein, 2013). Therefore, the banks are forced to put aside more capital, under assumption that the loan will not be repaid back as a result the bank's capacity to give new loans is reduced. Furthermore, Messai and Jouini (2013) described non-performing as loans which relatively do not generate income for a long period of time, meaning the principal or/and interest of these loans is unpaid for at least ninety days.

Many studies postulate a crisis in the banking sector for both developed and developing economies. In presence of capital inadequacy, poor management and low-quality assets the banking industry cannot perform well. According to Waweru and Kalani (2008) there is a close association between non-performing loans and banking crises. The magnitude of non-performing loans is used as a key determinant of initial stage of financial and banking crises. Guy (2011) argues that asset quality measurement relies on non-performing loans level among lending institutions and are often associated with financial crises in both developing and developed countries. A decline in asset quality is a much more significant issue to the bank unless the other method applied to confirm the timely recognition of the matter, it's a typical reason for downfall. Non-performing loans remain major concern for both local and international regulators even though efforts of controlling the lending activities have been administered (Boudriga *et al.,* 2009).

In June 1999, the banking sector of Tanzania was liberalized, local state-owned banks are privatized, though the government maintains minority shares in National Bank of Commerce (NBC), Cooperative Rural Development (CRDB) Bank and National Microfinance Bank (NMB), among others. The banking sector in Tanzania has been growing competitively, till now there are 41 foreign and local private commercial banks are operating registered by central bank of Tanzania. Also, international banks include Standard Chartered Bank, Absa Bank, Stanbic Bank and Citibank. The presence of these foreign banks has enabled to facilitate the supply of monetary services and improvement in quality and pricing of the services provided. This is either through a direct channel whereas they are also the providers of the services or indirectly through induced competitive pressure on local banks.

Figure 1.1. Non-performing loans as percent of all bank loans in Tanzania
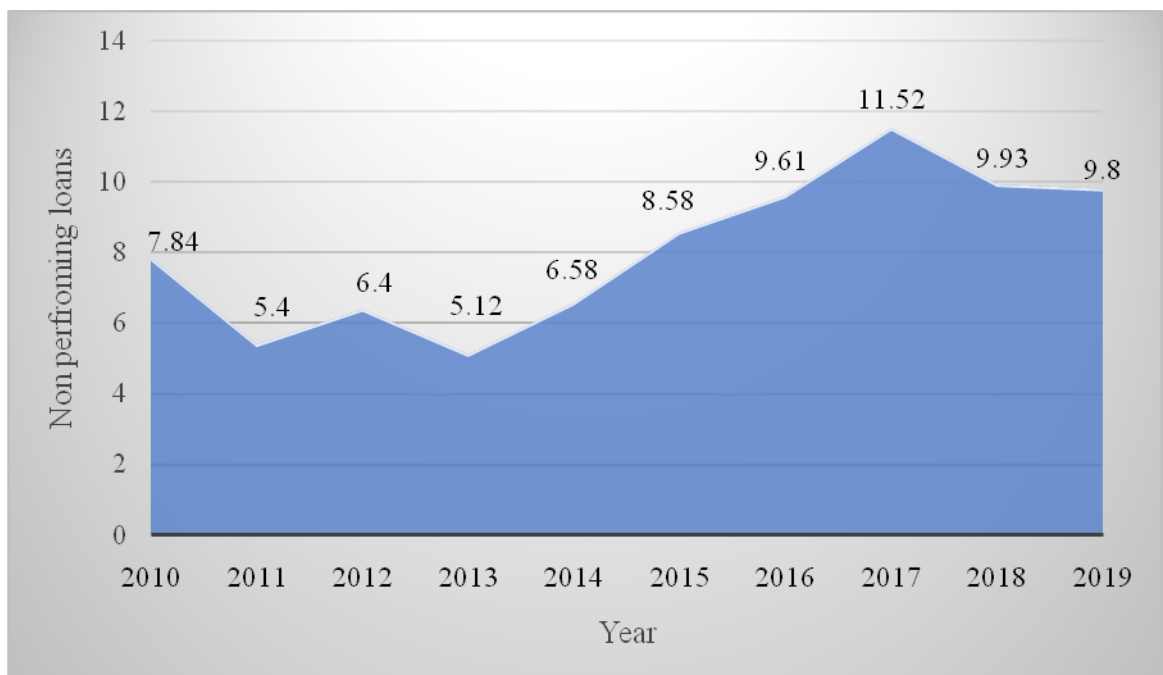
 Source: International Monetary Fund.

Figure 1.1 above shows the non-performing loans as percent of all bank loans in Tanzania. For over the period of ten years, the average value of non-performing

loans for Tanzania is 7.89 percent. In 2013, a minimum value was recorded which 5.12 percent while in 2017 the maximum value was recorded hitting 11.52 percent. This trend implies that commercial banks suffer financial losses as a result of non-performing loans which have risen steadily over the recent years. Exploring the determinants of non-performing loans is an issue of great importance for macroeconomic and financial system stability (Waweru *et al.,* 2008). In 2019 non-performing loans to gross loans declined to the enforcement of risk based prudential requirements and improvement in credit underwriting standards by using credit information reports from Credit Reference Bureaus in loan application assessment and granting process.

1.2 Statement of the problem

After world financial crisis of 2008, various measures were taken to address the challenges caused in the banking sector, however the prolonging of non-performing loans remains in debate. The upward trends of non-performing loans and the recent bank failures are constantly questionable. Bank of Tanzania enacted various regulations in response to maintenance of good quality assets by the commercial banks in line with their adherence to prudential requirements following their operations. One among these regulations includes management of risk assets regulations of 2014. However, regardless of these efforts by the central bank of Tanzania, asset quality in terms of non-performing loans has been worsening consequently over the years. Gross non-performing loans have increased from 5.12 percent in 2013 to 9.8 percent in 2019. The growth of non-performing loans indicates a huge risk in the financial sector and the national economy at large, such that solvency and liquidity of the banks affect negatively the liquidity position of the

financial sector. If loans are well managed the bank's profitability and sustainability will rise in future (Kithinji, 2010). Imperatively, not much is known to be the causes of non-performing loans to increase in Tanzania. Various studies have been conducted to identify and analyze the determinants of non-performing loans but obtained mixed results. For instance, Kingu *et al.,* (2018) found that higher capital ratio, asset growth and loan to asset ratio have negative relationship with non-performing loans in commercial banks in Tanzania, while cost inefficiency is positively related. Warue (2013) argued that increase in size of non-performing loans is related to bank specific factors such as weak operating and organizational structure and poor credit risk management. Mchopa (2013) found non-performing loans causes related to customer operations are moral hazards, management and entrepreneurship skills, multiple loans and fund diversion, while related to banking operations were corruption among bank officers, weak loan policy, poor loan monitoring and customer services. Therefore, the experiences of commercial banks in Tanzania raises concern to keep on identifying and reexamining the possible determinants of non-performing loans as the size keeps on increasing day after day. In a nutshell this is what the study seeks to investigate by considering the internal and external bank related factors that affect non-performing loans.

1.3 Research objectives

1.3.1 General objective

The main objective of this study is to examine the internal and external bank factors affecting nonperforming loans in commercial banks in Tanzania. Whereas the internal bank factors include loan to deposit ratio and interest rate while external bank factors include inflation rate and effective tax rate

1.3.2 Specific objectives

The following are specific objectives of the study.

  i.   To examine the impact of loan to deposit ratio of nonperforming loans of commercial banks in Tanzania.

  ii.   To examine the impact of interest rate on nonperforming loans of commercial banks in Tanzania.

  iii.   To examine the impact of tax paid amount on nonperforming loans of commercial banks in Tanzania.

  iv.   To examine the impact of inflation rate on nonperforming loans of commercial banks in Tanzania.

  v.   To examine the impact of other control variables such as gross domestic product, real effective exchange rate, total assets and number of employees on nonperforming loans of commercial banks in Tanzania.

1.4 Research questions

  i.   What is the impact of loan to deposit ratio on nonperforming loans of commercial banks in Tanzania?

  ii.   What is the impact of interest rate on nonperforming loans of commercial banks in Tanzania?

  iii.   What is the impact of tax paid amount on nonperforming loans of commercial banks in Tanzania?

  iv.   What is the impact of inflation rate on nonperforming loans of commercial banks in Tanzania?

v. What is the impact of gross domestic product, real effective exchange rate, total assets and number of employees on nonperforming loans of commercial banks in Tanzania?

1.5   Significance of the study

This study examined the factors that affect non-performing loans in commercial banks in Tanzania and alert all stakeholders, policy makers and other academicians to take urgent steps to solve the related problem under study. This study creates awareness regarding the factors that affect non-performing loans in banking industry and identify further gaps in the area in order to curb the challenges associated with them. In case any loopholes in lending and credit policies, the study poses insightful recommendations towards financial sector management to accommodate the causes of nonperforming loans related to both internal and external factors.

1.6   Scope of the study

This study comprised of ten commercial banks in Tanzania named Cooperative and Rural Development Bank (CRDB), National Bank of Commerce (NBC), National Microfinance Bank (NMB), Tanzania Postal Bank (TPB), ACCESS Bank, EQUITY Bank, Kenya Commercial Bank (KCB), Dar es Salaam Community Bank (DCB), Azania Bank and Akiba Commercial Bank (ACB). The selection of these banks is due to their seniority and satisfactory experience in lending activities.

1.7   Limitations of the study

The objective of the study is to examine the internal and external bank factors affecting nonperforming loans in commercial banks in Tanzania. Panel data spanning from 2009 to 2018 were used for analysis, the choice of the period is based on the

data availability of the ten selected commercial banks whereas these banks were selected due to their seniority and satisfactory experience in lending activities.

1.8 Organization of the study

The study consists of five chapters. The first chapter is Introduction and Background. The second chapter presents the Literature Review, the third chapter discusses the Research Methodology, the fourth chapter deals with Presentation and Discussion of Research findings and the fifth chapter presents the Summary, Conclusion and Recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Chapter Overview

This chapter reviews various literatures related to the topic under study. It is divided into four sections. The first section presents theoretical review, and then followed by the second section which explores various empirical reviews. The third section summarizes the literature reviewed and identifies the research gap, and lastly the fourth section presents the conceptual framework to be used under study.

2.1 Theoretical review

2.1.1 Financial intermediation theory

Financial intermediation refers to the process whereby the deposited funds from the surplus units are lent to the deficit units through financial institutions. According to Matthew and Thompson (2008) four categories can be used to distinguish financial intermediaries, first their major category of deposits are in fixed terms and are not related to portfolio status. Second, the deposits relatively bear a short term compared to their assets. Third, high proportion of financial institutions liabilities is demanded. And lastly, their assets and liabilities are not transferrable. Financial intermediaries through a steady flow play a crucial role in channeling funds from surplus to deficit units.

2.1.2 Information asymmetry theory

The theory of information asymmetry relies on the assumption that the borrower may be more informed than the lender about the risks associated with the project which receives funds. This theory asserts more on the failure of distinguishing good and

bad borrowers leading to the problems of moral hazard and adverse selection (Richard, 2011). The two problems tend to reduce effectiveness and efficiency when transferring funds to deficit units from surplus units. One of the ways to curb these problems is to be committed to long term customer relationships and then share information and lastly through monitoring the borrowers. Furthermore, these two problems contribute much into bank the accumulation of nonperforming loans (Bofondi & Gobbi, 2003).

2.1.3 Delegated monitoring of borrowers' theory

This theory insists when monitoring a borrower, it is crucial to collect information before and after the loan is provided. This further includes assessment of loan applications, investigation of borrower's creditworthiness, and lastly adherence to contract terms by the borrower. However, banks do have an advantage as they process customer's information already retrieved from their accounts, thus can observe the income and expenditures flows. It further stresses that finance engagement initially begins with recruitment and selection of the customers. Knowing your customer is essential before going into details. Banks use different sources of information to be aware of their customers before granting the credits.

2.2 Empirical review

There is still a huge debate on the factors affecting nonperforming loans; various studies in different settings have been conducted and distinct conclusions have been reached. However, most of them came up with the same factors which tend to explain nonperforming loans. This part reviews various empirics on the topic as follows.

Ikram *et al.,* (2016) investigates bank specific macroeconomic determinants of nonperforming loans of small and medium enterprises sector owned by the commercial banks in Pakistan. The study used stratified random sampling for data collection using questionnaires whereas credit analysts of 42 branches of commercial bank were surveyed for 2014 to 2015. Furthermore, descriptive analysis and Pearson chi-square were used as estimation techniques and they found that loan duration, branch age and credit policy had significant impact on nonperforming loans. The study suggests that SME specific macroeconomic and bank specific factors have a direct influence on nonperforming loans while macroeconomic factors have indirect effect. Also, it recommends outlining risk management practices to mitigate risks associated with loan defaults and further provides policy measures for credit analysts and businessmen.

Ogbebor and Ighodaro (2017) examine the determinants of nonperforming loans in eight African countries. Using dynamic panel approach for the period 2000 to 2016, all variables were found stationary at order one and, they had a long run relationship among them. The tests used were panel unit root test and Kao and Pedroni Co-integration tests. With the use of three models' random effects model, fixed effects model and GMM model the study found that financial deepening ratio has positive significant effect on nonperforming loans while inflation and GDP growth rate have a negative significant effect on nonperforming loans. The study summarizes by advising the African Banks to manage their loan portfolio especially during liberalization of the banking sector, to concur the credit flows to productive units and avoid failures which may tend to appear in the bank.

Gezu (2014) examines the bank specific and macroeconomic determinants of nonperforming loans in commercial banks in Ethiopia. The study used panel data from 2002 to 2013 and deployed fixed effects model and results were as follows, loan to deposit ratio has positive impact on nonperforming loans while inflation rate has negative but insignificant impact on nonperforming loans in commercial banks in Ethiopia. Furthermore, return on equity, banks capital adequacy ratio and lending rate had negative statistically effect whereas return on asset, effective tax rate had positive significant effect on nonperforming loans in commercial bank in Ethiopia. The study recommends that bank managers should oversee management of the current assets and loans than fixed assets to reduce the amount of nonperforming loans. Furthermore, loan officers should play advisory role to the borrowers regarding their loan use.

By setting two distinct groups of 35 government shareholding and 20 non-government shareholding banks, Mucheke (2001) assesses the determinants of nonperforming loans in commercial banks in Nairobi Kenya. With the use of questionnaire, the study aimed to examine the following variables, government influence, economic growth, business management, exchange rate fluctuations, credit reference bureau, culture, time for loan approval, projects funding and lending security. The study found that economic growth significantly affects nonperforming loans in Kenya, furthermore government has significant influence across government shareholding banks contrary to those of non-government shareholding banks.

Using time series data from 1998 to 2015, Wairimu and Gitundu (2017) examine microeconomic determinants of non-performing loans in Kenya. The study deployed a linear regression model and results showed GDP growth rate, inflation rate,

exchange rate, interest rate and public debt are not statistically significant at 0.05 confidence level whereas remittances and unemployment rate are very important. Furthermore, the study suggests assessing more variables such as management, loan asset ratio, return on equity, capital adequacy ratio to understand the determinants of non-performing loans

Atem (2017) analyzed the factors affecting nonperforming loans in KCB Bank in Kenya. Using multiple regression approach the study found that interest rate has significant effect on nonperforming loans while bank size, credit size, age and gender had no significant effect in KCB Bank. He finalized by suggesting the banks to control their interest rate so long as its increase tend to stimulate increase in nonperforming loans, also there is a need for sound policies in order to manage the amount of loans in the Bank.

Nathan *et al.,* (2020) examines the determinants of nonperforming loans in commercial banking sector in Uganda. The study used ARDL bounds test and deployed quarterly data from 2002 to 2017 while controlling for macroeconomic and bank specific factors. The findings showed that there is a positive relationship between nonperforming loans and lending rate, unemployment rate and real effective exchange rate while there is a negative relationship between nonperforming loans and return on assets and GDP growth rate. The study poses suggestions that commercial banks should diversify their asset portfolio through retaining income earning assets for instance equity, government bonds to reduce exposure to credit risk. Furthermore, in order to reduce nonperforming loans these banks need to focus on measures which reduce lending rate, unemployment and promote GDP growth.

Mchopa (2013) assesses the causes of nonperforming loans in commercial banks in Tanzania for the case of NMB bank. The causes were assessed in line with customers and bank operations. The study comprised a simple random sample of 50 respondents consisting of 40 bank customers and 10 bank officials and the data were collected through questionnaire and interview guide. The study found that in line with customers operations the causes of nonperforming loans are inadequate business, marketing, moral hazard, financial, management and entrepreneurial skills, multiple loans and fund diversion. Whereas, related to bank operations the causes are weak loan policy, adverse selection problem, loan monitoring inadequacy, poor customer services and corruption by bank officials. The study recommends that financial institutions should strive to promote trainings which will boost customers entrepreneurship and financial management skills. Also, financial institutions are required to design loan policies which reduce credit risk and foster monitoring of loan.

King *et al.,* (2017) analyzes bank specific determinants of nonperforming loans in commercial banks in Tanzania. The study used moral hazard, asymmetry and business cycle theories to explain the relationship between nonperforming loans and its causes. The study used panel data of sixteen commercial banks from 2007 to 2015. The study deployed various estimation methods such as Ordinary Least Square regression techniques, while Fixed Effects and Random Effects assumptions were held. The study found the following results, higher capital ratio, asset growth and loan to asset ratio affect negatively the nonperforming loans while cost efficiency affects positively the nonperforming loans in Tanzania. The findings of the study

further had both managerial and theoretical implications for policy makers and practitioners.

Nadham& Nahid (2015) ascertained the determinants of nonperforming loans in National Bank of Commerce. The study comprised 152 respondents and data were collected through questionnaire, interview and documentary evidence. The study found that GDP, interest rate, economic condition and bank's loan supervision capacity influence the level of nonperforming loans. However, the study did not suggest increase in nonperforming loans is caused by concentration in lending activities. The study suggests that there is a need for banks to place sound credit protocols that consider good customer selection and risk identification, adequate monitoring, appropriate recovery strategies for dead loans and lastly formulate prudent policies for managing loans.

Msigwa (2013) analyzes the factors affecting nonperforming loans in banking industry for the case of KCB Bank in Morogoro and Msimbazi branches in Tanzania. The study used cross-sectional research design and deployed a sample of 46 customers whereas data was collected and analyzed through SPSS software. The study found that diversion of funds for unnecessary business expansion influences nonperforming loans, however there were some attempts to eliminate nonperforming loans through implementation of aggressive debt collection policy. Also, the study recalls for the banks to improve reserves of capital so as to combat the associated risks, furthermore a need for conducting trainings for individuals to avoid any sort of failures resulting to nonperforming loans.

A study by Maro (2011) analyzes the contributory factors causing nonperforming loans in commercial banks for the case of Bank of Africa in Tanzania. The study

involved both qualitative and quantitative analysis whereas one hundred respondents were involved. The study findings showed that the bank's lending policies are effective, moreover the internal capacity for loan administration has to be readdressed to comply with credit management. Furthermore, financial discipline and loan processing time were found to increase nonperforming loans. Lastly, the study recommends in order to reduce nonperforming loans there should be improvement on interest rate, loan monitoring, loan processing duration and borrower's financial discipline.

2.3 Summary of the literature and research gap

Among the challenges faced by most African entrepreneurs is lack of funds to invest in productive activities. Many entrepreneurs have limited access to capital markets whereas financial sectors play an intermediate role through the banking industry(Wandera& Husson, 2013).Banking industry is an engine for any market economy, furthermore developed financial markets accelerate payment services and hence mobilize deposits and funds for investment and productive activities (World Bank, 2014).Banks smoothen credit flows in the economy and consequently adds up to investment portfolio and stimulate productivity. However, the role of banks can be hindered by occurrences of nonperforming loans. In the banking industry, nonperforming loans refer to the loans from which the borrowers fail to repay the principal loan or interest based on the signed agreement of repayment schedule. One among the side effects of nonperforming loans it tends to erode the bank's profitability (Khemraj & Pasha, 2009). Various numerous studies have been conducted trying to identify and reexamine what could be the possible determinants of non-performing loans. The design and setting differ from bank specific factors,

macroeconomic factors, ranging from a single bank to multiple banks, however the findings tend to be mixed and inconsistent. Furthermore, distinct theories have been used to explain how various variables could explain nonperforming loans. Focusing in Tanzania, most studies use primary data for different specific banks, though they find significant results it is hard to generalize for other banks, due to differences of nature of the banks and setting or design of the study. This study fills the gap by using secondary data and builds a panel data of ten selected experienced banks in Tanzania. The study covers the most recent data by considering a cross sectional period of ten years from 2009 to 2018. Furthermore, the variables of interest were taken for all ten commercial banks for that specific period under study. Also, the study prompted other macroeconomic variables such as real effective exchange and real gross domestic product their effect on nonperforming loans. And lastly, the study applied advanced methods related to panel model for estimation purposes.

2.4 Conceptual framework

Conceptual framework gives a summary of the variables of interest understudy. It shows explicitly what independent variables are and identifies what is a dependent variable. This study main objective is to examine the factors causing nonperforming loans in commercial banks in Tanzania. Furthermore, specifically it examines internal and external banking factors that tend to cause nonperforming loans with extension of other control variables. For that case bank internal factors comprise of loan to deposit ratio and interest rate, external factors comprise of effective tax rate and inflation rate, and lastly control variables include banks total assets, banks total employees, real GDP and real effective exchange rate.

Figure 2.1: Conceptual Framework

Independent variables   **Dependent variable**
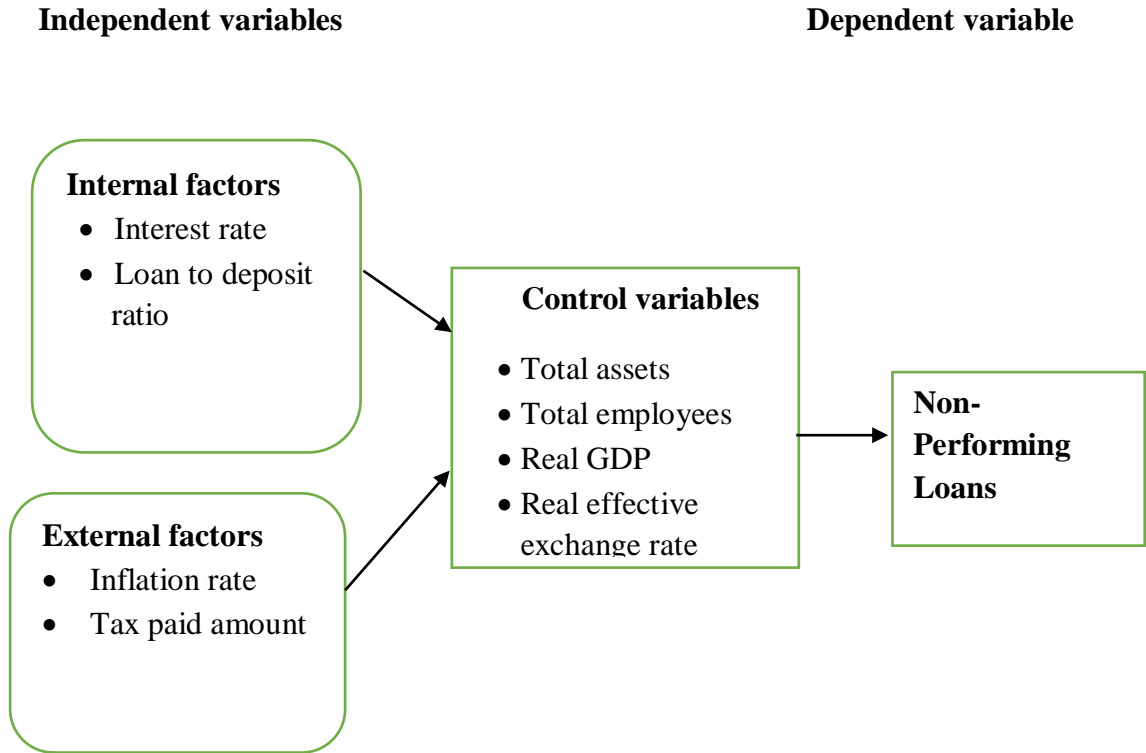
Source: Author, 2020.

CHAPTER THREE

METHODOLOGY

3.0 Chapter Overview

This chapter provides methodology to be used in the study. The first section explains about the research design, the second section provides variables description, the third section presents the model specification of the study, the fourth section give explanations about estimation technique and the last section presents data types and sources.

3.1 Research design

Research design is a comprehensive plan of action which identifies various methods and processes for gathering and examining the required data for the study variables. According to John (2007) the research design must be subjected to the goals the researcher wants to accomplish. This study, therefore, used quantitative approach to examine the factors of Nonperforming loans in the Banking Industry in Tanzania. Specifically, quantitative analysis was done through multiple regression analysis.

3.2 Variables definitions

Nonperforming loan are the loans which are outstanding both in its principal and interest for an extended period different to the agreed repayment schedule. According to the Tanzanian banking regulation, "Nonperforming loan and advances are a loan whose credit quality has deteriorated and the full collection of principals and/or interest as per the contractual repayment terms of the loan and advances are in question" (BOT, 2008). Nonperforming loan is a loan that delays for the payment of principal and interest for more than 90 days. Deterioration in asset quality is much

more serious problem of bank unless the mechanism exists to ensure the timely recognition of the problem. It is a common cause of bank failure.

NPL ratio= NPLs /Gross loan

Loan to deposit (LTD) ratio is the ratio that asses the liquidity of the bank by comparing the total amount borrowed by borrowers to total bank's deposits. The metric is presented in percentage. It shows the relationship between total loans to total deposits. However, it provides a measure of source of income and liquidity of the bank's asset tied to loan (Ayem & Wahyuni, 2017). Thus, it represents a bank's preference for credit.

LTD= Total loans /Total Deposit

Interest Rate of the bank is the amount charged by lenders from the principal amount borrowed and it is expressed in percentage. Normally it is calculated on annual basis. The asset borrowed can be cash, consumer good or large asset. Interest can be thought of as rent of money or an asset. Thus, interest rate is a rate of return usually remains under the monetary regulatory of central bank, Bank of Tanzania (BOT) regulates the lending rate for commercial banks.

Inflation Rate is a general increase in price level in the economy over a period of time. Inflation indicates the decrease of purchasing power of a nation's currency. This loss of purchasing power generates high cost of living which contributes to decelerate the economic growth, hence may have effect on nonperforming loans.

Tax paid amount is the compulsory contribution imposed by the government to accommodate the needs of the country for example infrastructure development,

social services provision at large. This is for the betterment of the nation, society and of living in it. Taxation in banking sectors affects the nonperforming loans as the higher tax rate impose the burden to borrowers in paying very high interest rate for the bank to cover their obligation to pay tax hence may lead to high nonperforming loan ratio.

Real gross domestic product is a macroeconomic measure of the value of output in an economy adjusted for price changes (Snowdon and Vane, 2005). The adjustments transform the nominal GDP into a real GDP, which offers a better perspective than nominal GDP when tracking economic output over time. When economic growth prospers the level of nonperforming loans tends to decline as the loans channeled towards the right productive sectors.

Real Exchange Rate refers to the purchasing power of national domestic currency relative to another country's currency. The real exchange rate is measured by domestic and world price indices and nominal exchange rate such that it is obtained by a product of nominal exchange rate and a wholesale foreign index divided by the domestic index (Athukorala & Rajapatirana, 2003). Exchange rate depreciations is said to increase nonperforming loans if the country has a high degree of lending in foreign currencies to unhedged borrowers.

3.3 Model specification

The study aims to examine the factors affecting nonperforming loans in commercial banks in Tanzania. This study adopted a multiple regression analysis whereas the model comprised various independent variables to explain the causes of nonperforming loans in commercial banks in Tanzania. Specifically, the study

adopted the model used by Fawad and Taqadus (2013). The model to be estimated is presented as follows.

$$nplratio_{it} = \beta_0 + \beta_1 ltd_{it} + \beta_2 ir_{it} + \beta_3 infr_{it} + \beta_4 tr_{it} + \beta_5 rgdp_{it} + \beta_6 ta_{it} + \beta_7 rer_{it} + \beta_7 te_{it} + \varepsilon_{it}$$

(1)

Whereas.

$nplratio$ stands for nonperforming ratio,

ltd stands for loan to deposit ratio,

ir stands for interest rate,

$infr$ stands for inflation rate,

tr stands for tax paid amount,

$rgdp$ stands for real gross domestic product,

rer stands for real exchange rate,

ta stands for total assets,

te stands for total employees.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \beta_7 \beta_8$ are coefficients of determinants for specific bank "i" at time "t",

ε is an error term capturing unobserved factors not included in the model.

3.4 Estimation technique

First the study provided descriptive analysis to understand the nature of the data of all our variables of interest. Thereafter correlation analysis was conducted in order to check whether the problem of multicollinearity exists among the explanatory variables. In presence of multicollinearity problem, it is difficult to provide individual estimates of the effect of independent variable to the dependent variable, and so the test was performed for validation. Thereafter, Hausman specification test was performed to assess whether random effects or fixed effects model is appropriate for estimation. However, comparison was made to trace any statistical significance and differences. With fixed effects model the assumption is that time invariant characteristics of the individuals are perfectly collinear with the individual entity. It is designed to study the causes of changes within an entity; while with random effects model it assumes variation across entities is random and uncorrelated with the regressors. This means some differences across entities have some influence on dependent variable. It used both within and between information to produce estimates.

3.5 Data types and sources

This study relied on secondary sources. The data for specific identified bank variables were retrieved from the bank's specific websites while for variables such as real GDP, inflation rate and exchange rate were collected from BOT reports published on the Bank of Tanzania website, furthermore the data are presented on annual basis. This study used panel data built in ten banks named ACB, NMB, NBC, ACCES BANK, TPB, EQUITY BANK, KCB BANK, DCB, AZANIA BANK and

CRDB from their financial statements from 2009 to 2018 were used with a total of ten years.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Chapter Overview

The chapter presents study findings of the relationship between the determinants of non-performing loans in commercial banks in Tanzania. The analysis and results are based on the panel data coverage from 2009 to 2018. Data collected for the study were obtained from Bank of Tanzania, published financial statements from bank specific websites, National Bureau of Statistics and World Development Indicators. Through STATA package, summary tables were used, and analysis was done using descriptive statistics, correlation analysis, tests and multiple regression to answer the research questions and objectives.

4.2 Descriptive analysis

This sub section provides summary of the descriptive statistics of the data deployed for the study. Preliminarily, it is important to understand the properties of the variables. Descriptive statistics give basic features of the variables such minimum, maximum, mean and standard deviation getting to know the general picture of the data.

Table 4.1 Summary statistics of the variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
nplratio	100	9.6	5.427	1.2	25.78
loantodepositratio	100	71.013	14.638	14.12	117.05
interestrate	100	21.142	3.149	16	28.78
inflationrate	100	8.17	3.886	3.5	16.1
noofemployees	100	901.6	957.965	114	3450
realexchangerate	100	1376.037	96.584	1192.509	1477.873
logtaxpaid	100	12.243	1.961	7.941	15.694
logta	100	14.852	3.091	9.587	20.035
loggdp	100	24.407	.179	24.128	24.683

Source: Author (2021).

The findings in Table 4.1 show that our data contains 100 observations for each variable of interest. The collective average non-performing loans ratio for commercial banks is 9.6 while the average interest rate is 21.14. Also, average inflation rate is 8.17 while overall average loan to deposit ratio is 71.01. Furthermore, overall log of tax paid average is 12.243 with a minimum of 7.941 and a maximum of 15.694. The average real exchange rate is 1,376.04 TZS with a minimum of 1,192.51 and a maximum of 1477.87 TZS. Log of total assets over the period across the commercial banks on average is 14.85 with a minimum of 9.58 and a maximum of 20.04. Lastly, log of GDP has an average of 24.41 with a minimum of 24.13 and a maximum of 24.68.

4.3 Multicollinearity tests

4.3.1 Correlation analysis

Multicollinearity test aims to examine whether there is a correlation among independent variables. The presence of collinearity limits the ability to examine the

individual effects of independent variables to dependent variable. The decision criterion is that there exists multicollinearity problem when obtained coefficients are above the 0.8 (Dougherty, 2011).

Table 4.2 Correlation analysis results of the variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) loantodepositratio	1.000							
(2) interestrate	0.244	1.000						
(3) inflationrate	-0.378	-0.120	1.000					
(4) realexchangerate	0.011	0.016	-0.353	1.000				
(5) noofemployees	-0.148	-0.437	-0.118	0.042	1.000			
(6) logtaxpaid	0.334	0.470	-0.054	0.003	-0.500	1.000		
(7) logtotalassets	-0.086	-0.335	-0.077	0.012	0.004	-0.344	1.000	
(8) loggdp	0.434	0.183	-0.730	0.226	0.158	0.088	0.103	1.000

Source: Author (2021).

Table 4.2 depicts correlation matrix of the independent variables. The findings show that there is no multicollinearity problem since all the correlation coefficients are less than 0.8 thresholds. However, correlation coefficient between inflation rate and log of GDP is slight high and they are negatively correlated. Furthermore, loan to deposit ratio and log of real exchange rate, number of employees and log of total assets, and real exchange rate and log of tax paid ratio show to have a quite lowest correlation compared to other variables, and they are positively correlated.

4.3.2 VIF test

This study also adopted VIF test to check whether our regressors are linearly related. The VIF value greater than 5 implies potential high correlation between independent variables.

Table 4.3 Variance inflation factor test

	VIF	1/VIF
Loggdp	2.556	.391
Inflationrate	2.378	.421
noofemployees	1.802	.555
Logtaxpaid	1.795	.557
Interestrate	1.661	.602
loantodepositratio	1.441	.694
Logta	1.406	.711
realexchangerate	1.169	.855
Mean VIF	1.776	.

Source: Author (2021).

Table 4.3 above depicts the VIF test results. The VIF values of all explanatory variables are less than 5 indicating no correlation between the exogeneous variables in the model. Thus, model does not suffer from multicollinearity problem. These results conform to the correlation results form table 4.2 of no existence of multicollinearity problem.

4.4 Fixed effects regression results

Fixed effects model estimation results provide within information for individuals over a certain period. The main assumption for fixed effects to hold is individuals time invariant features are highly correlated with the individual entity, therefore it allows to trace causes or determinants of individual changes while the invariant time characteristics are unique and do not correlate with other individual entity characteristics. One of the drawbacks with fixed effects estimation is that it does not take into consideration the difference across units and also does not provide estimates of time invariant variables.

Table 4.4 Regression results of fixed effects

Nplratio	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Loantodepositratio	-.036	.033	-1.08	.284	-.102	.03	
Logtaxpaid	1.627	.551	2.95	.004	.531	2.723	***
Interestrate	-.216	.425	-0.51	.614	-1.062	.631	
Inflationrate	-.064	.14	-0.46	.648	-.343	.215	
Noofemployees	-.002	.002	-1.21	.231	-.006	.001	
Realexchangerate	.003	.004	0.85	.397	-.005	.011	
Loggdp	19.971	4.57	4.37	0	10.88	29.062	***
Logtotalassets	-3.215	1.859	-1.73	.087	-6.912	.483	*
Constant	-445.197	94.598	-4.71	0	-633.382	-257.011	***
Mean dependent var	9.600		SD dependent var	5.427			
R-squared	0.444		Number of obs	100.000			
F-test	8.177		Prob > F	0.000			
Akaike crit. (AIC)	531.075		Bayesian crit. (BIC)	554.521			
*** p<.01, ** p<.05, * p<.1							

Source: Author (2021).

Table 4.3 above shows the fixed effects regression results. The p-values for statistical significances are recorded in three levels:1%, 5% and 10%. The findings show that log of total assets, log of tax paid amount and log of GDP are statistically significant, however only log of total assets shows to have a negative impact on nonperforming loan ratio.

4.5 Random effects regression results

The assumption with Random effects is that variation across entities is uncorrelated with the independent variables. This implies the differences across entities have influence on endogenous variable. The random effects model provides both within and between information to produce estimates. Main drawback of random effects is that if no strong exogeneity exists, it cannot control for omitted variables bias.

Table 4.4   Regression results of random effects

Nplratio	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Loantodepositratio	-.044	.032	-1.36	.172	-.107	.019	
Logtaxpaid	.75	.411	1.82	.068	-.056	1.556	*
Interestrate	-.343	.289	-1.19	.236	-.911	.224	
Inflationrate	-.044	.141	-0.31	.757	-.319	.232	
Noofemployees	-.002	.001	-1.97	.049	-.004	0	**
Realexchangerate	.004	.004	1.00	.316	-.004	.012	
Log Gdp	17.23	3.633	4.74	0	10.11	24.35	***
Logta	-.737	.331	-2.22	.026	-1.386	-.088	**
Constant	-402.153	83.637	-4.81	0	-566.079	-238.227	***
Mean dependent var	9.600		SD dependent var			5.427	
Overall r-squared	0.446		Number of obs			100.000	
Chi-square	65.463		Prob > chi2			0.000	
R-squared within	0.414		R-squared between			0.524	
*** p<.01, ** p<.05, * p<.1							

Source: Author (2021).

Table 4.4 above shows the random effects regression results. The p-values for statistical significances are recorded in three levels:1%, 5% and 10%. The findings show that log of total assets, number of employees, log of tax paid amount and log of

GDP are statistically significant, however only log of total assets shows to have a negative impact on nonperforming loan ratio. The only difference with fixed effects results is that number of employees also has a significant and negative effect on non-performing loan ratio.

4.6 Hausman specification test

Hausman specification test is a test for model specification, and it helps to decide for either random effects model or fixed effects model. The null hypothesis is the preferred model is random effects meaning the correlation between the explanatory variables and fixed effects is zero. The null hypothesis is rejected when the p-value is less than 5% (0.05) significance level.

Table 4.5 Hausman test

	Coef.
Chi-square test value	7.525
P-value	.481

Source: Author (2021).

Table 4.5 displays results of the Hausman specification test. The p-value obtained is 0.481 is greater than 0.05 significance level. Based on the decision criteria we fail to reject the null hypothesis. Thus, the preferred model is random effects and therefore it will be used to produce regression estimates.

4.7 Random effects estimation results

Following the results of Hausman test, the preferred model is random effects as explained above. The advantage of using random effects model is that captures information of between and within estimators. Furthermore, it is more efficient than the fixed effects model because it estimates time invariant covariates.

Table 4.6 Regression analysis results

Nplratio	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
loantodepositratio	-.041	.033	-1.22	.221	-.106	.024	
Logtaxpaid	.675	.416	1.62	.104	-.142	1.491	*
Interestrate	-.245	.297	-0.83	.409	-.826	.336	
realexchangerate	.036	.081	0.45	.656	-.122	.194	
noofemployees	-.002	.001	-1.91	.056	-.004	0	*
inflationrate	1.402	1.736	0.81	.419	-2	4.805	
Logtotalassets	-.684	.331	-2.07	.039	-1.333	-.036	**
Loggdp	49.902	32.633	1.53	.126	-14.058	113.862	
y1	8.395	11.741	0.72	.475	-14.617	31.407	
y2	10.281	9.371	1.10	.273	-8.086	28.647	
y3	-1.024	6.206	-0.16	.869	-13.188	11.14	
y4	-.713	13.572	-0.05	.958	-27.313	25.887	
y5	11.001	23.396	0.47	.638	-34.855	56.858	
y6	8.812	18.937	0.47	.642	-28.304	45.928	
o.y7	0	.	.	.	.	.	
o.y8	0	.	.	.	.	.	
o.y9	0	.	.	.	.	.	
o.y10	0	.	.	.	.	.	
Constant	-1261.345	916.15	-1.38	.169	-3057.015	534.325	
Mean dependent var	9.600		SD dependent var	5.427			
Overall r-squared	0.478		Number of obs	100.000			
Chi-square	71.645		Prob > chi2	0.000			
R-squared within	0.454		R-squared between	0.536			
*** p<.01, ** p<.05, * p<.1							

Source: Author (2021).

Findings from the Table 4.6 above shows results of random effects regression. The Chi2-p values is less than 0.05 meaning the model is correctly specified.

Tax paid amount is positive and statistically significant related to non-performing loan ratio. This means a unit increase in tax paid amount causes non-performing loans to increase by 67 percent. This implies that increases in taxes for instance corporate tax causes non-performing loans to also increase due to various government policies whereas non-performing loans are transferred to social groups from the commercial banks such that the issue of controlling non-performing loans becomes difficult. Furthermore, government intervention through fiscal system can elevate state-owned enterprises to provoke further prospective problem loans. This finding is similar to the findings presented by Gezu (2014) such that emphasis was placed on the management body to assure appropriate lending policies to embark nonperforming loans.

Number of employees is found to be negatively related to non-performing loans ratio; however, the relationship is statistically significant. An increase of a single employee causes non-performing loans ratio to decrease. This can be linked with bank supervision capacity and management practices such that when bank officer increase with bad supervision capacity non-performing loans may tend to increase. This further translates to failure of bank employees to supervise the customers on loan utilization. While the study relies on number of employees, Mchopa (2013) found in relation to bank operations the causes of nonperforming loans are loan monitoring inadequacy, poor customer service and corruption by bank officials, thus suggesting financial institutions to promote trainings to boost bank official's entrepreneurship and management skills.

Lastly, commercial banks total assets have a negative and statistically significant effect on non-performing ratio. This indicates when commercial banks total assets increase it causes a decrease in non-performing ratio. This implies when commercial banks face massive increase of non-performing loans and fail to recover them, they repossess the assets which were pledged as collateral or sell them off to reclaim the amounts owed by the clients. By considering return on assets, Nathan et al., (2020) found have negative significant on nonperforming loans thus suggesting commercial banks to diversify their asset portfolio through retaining income earning assets for example government bonds to avoid credit risks. This is contrary to Gezu (2014) where he found return on assets have positive significant effect on nonperforming loans and recommends bank management to oversee the current assets and loans than fixed assets to reduce nonperforming loans.

4.8 Comparison with other studies

The findings appear to be consistent and contrary to other empirical studies in various ways. Loan to deposit ratio is negatively related to non-performing loans ratio, however the relationship is not statistically significant. These results are similar to Gezu (2014) though the relationship was statistically significant. Furthermore, from the same study tax is shown to have positive and significant effect on non-performing loans. The study also finds a negative insignificant relationship between interest rate and non-performing loans. The finding is contrary to Nadham & Nahid (2015) and Atem (2017) who found significant influence of interest rate on non-performing loans. Nathan *et al.,* (2020) found real exchange rate has a positive relationship with non-performing loans while Mucheke (2001) found exchange fluctuations have no significant effect on non-performing loans. This study findings

comply with both findings of the latter two studies such that they suggest a need to

control for interest rate as it raises, it stimulates increase in non-performing loans.

CHAPTER FIVE

CONCLUSION, POLICY IMPLICATION AND RECOMMENDATIONS

5.0 Chapter Overview

The chapter gives the summary of the key findings and conclusion of the study and it is divided into four subsections. Section 5.1 provides the summary of the study while section 5.2 shows the study's conclusion. Section 5.3 narrates the implication of the study and section 5.4 prompts further study areas to be researched.

5.1 Summary of the study

The study aimed at analyzing the factors affecting non-performing loans in commercial banks in Tanzania from 2009 to 2018. The motive behind carrying out this study was due to the fact that the experiences of commercial banks in Tanzania raises concern to keep on identifying and re-examining the possible determinants of non-performing loans as the size keeps on increasing day after day. Gross non-performing loans have increased from 5.12 percent in 2013 to 9.8 percent in 2019. The growth of non-performing loans indicates a huge risk in the financial sector and the national economy at large, such that solvency and liquidity of the banks affect negatively the liquidity position of the financial sector. If loans are well managed the bank's profitability and sustainability will rise in future and imperatively not much is known to be the causes of non-performing loans to increase in Tanzania. The variables included in the study were categorized into two groups internal factors and external factors with an addition of other control variables to strengthen the relationship of the variables in the model. Internal factors were loan to deposit ratio and interest rate, external factors were inflation rate and log of tax paid amount, and lastly control variables were log of real GDP, log of total assets, real exchange rate

and total number of employees. The study sample comprised of ten commercial banks whereas the selection of these banks was due to their seniority and satisfactory experience in lending activities.

5.2 Conclusion of the study

Random effects model was used as an estimation technique to examine the internal and external bank factors affecting nonperforming loans in commercial banks in Tanzania. The internal bank factors include loan to deposit ratio and interest rate while external bank factors include inflation rate and effective tax rate. The control variables were log of real GDP, log of total assets, real exchange rate and total number of employees. The findings show that log of tax paid has statistically positive significant effect on non-performing loans whereas log of total assets and number of employees have statistically negative significant impact on non-performing loans. Loan to deposit ratio and interest rate were found to have negative impact on non-performing loans but their effect is not statistically significant. Furthermore, real exchange rate, inflation rate and log of GDP showed to have positive insignificant effect on non-performing loans. Theoretical and empirical literature review asserts the need to examine the causes of non- performing loans in commercial banks in Tanzania.

5.3 Implication of the study

This study is useful to policy makers particularly bank policy makers and government policy makers as they are interested to realize factors which have influenced non-performing loans levels for the past 10 years. Some of the key implications include.

i. The existing positive relationship between tax paid amount and non-performing loans implies that the government through fiscal policy should make sure that the taxes are efficient and non-distortive to enable clients to have reliable consumption income which will enable them to have confidence and ability to make payments of their debts.

ii. The negative relationship between number of employees and non-performing loans implies that commercial banks should increase concerns on supervision and management practices such as ensuring adequate collaterals and procedures in solving unclear loans. It is further recommended that when the commercial banks hire new officials, they should take note of their supervision capacity and quality of employees so as to support customers on loan utilization.

iii. The negative impact between total assets and non-performing loans implies that commercial banks embrace extra assets when customers fail to recover non-performing loans, such that they repossess the assets which were pledged as collateral or sell them off so as to reclaim the amounts owed by the clients. This call for bank authorities should be strategic when they provide loans to the clients by making sure their collateral obligations are at low risk of the company's loss.

5.4   Limitations of the study

Due to data availability the study period was selected for only ten years from 2009 to 2018, however due to constraints of data availability from the specific banks, the period may not be sufficient for concluding the long run relationship between non-performing loans and its determinants. There is a room for extracting monthly data or

having many more years for time series analysis which can provide a wide coverage of understanding the determinants of non-performing loans by examining the trends, patterns and behaviors and lastly comparison across the banks.

The commercial banks covered in the study were only 10 which are Cooperative and Rural Development Bank (CRDB), National Bank of Commerce (NBC), National Microfinance Bank (NMB), Tanzania Postal Bank (TPB), ACCESS Bank, EQUITY Bank, Kenya Commercial Bank (KCB), Dar es Salaam Community Bank (DCB), Azania Bank and Akiba Commercial Bank (ACB). The selection of these banks is due to their seniority and satisfactory experience in lending activities. The data used for analysis were drawn from specific commercial bank's annual reports and BOT. These raw data were used and analyzed as obtained by the researcher to meet the intended objectives of the study.

5.5 Areas for further research

The study analyzed the factors affecting non-performing loans in commercial banks in Tanzania. In order to have a general clear picture of causes of non-performing loans, other researchers can expand the scope of the study by considering also micro-finances which operate lending activities as financial sector is quite large and comprise other entities rather than banks. Since the study involved only 10 commercial banks, there is a room to consider all commercial banks in Tanzania. This will increase the sample size to capture variations across the banks, create chances of for having more precise, representative and conclusive results for specific sector area. Also, the time period of the study involved only 10 years, other researchers can include years beyond that in order to trace out long run relationship of the variables under study. The study categorized factors affecting non-performing

loans into internal and external bank factors and added other control variables which could be possible determinants. I call for other researchers to include other bank specific factors to examine the causes of non-performing loans such return on assets, return on equity and many others.

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APPENDIX

I Lina Joseph Mshana, a student at the Open University of Tanzania pursuing Master of Business Administration (MBA), as part of my academic curriculum I am conducting an Empirical analysis of Factors affecting non-performing loans in commercial banks in Tanzania using secondary data that was obtained from the official websites of several commercial banks and the Bank of Tanzania. Such data included audited financial statements and monetary reports issued by BOT from time to time.