ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

IMPACT OF CREDIT RISK MANAGEMENT ON PROFITABLITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

By: NEGA ANDEGZER BETURA

JUNE, 2015

ADDIS ABABA, ETHIOPIA

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA-Analysis of Variance

AIB S.C- Awash International Bank Share Company

BOA S.C- Bank of Abysinia Share Company

CAR-Capital Adequacy Ratio

DAR-Deposit to Asset Ratio

DAB S.C- Dashen Bank Share Company

DWS- Durbin Watson Statistics

EM-Equity Multiplier

G.C-Gregorian Calendar

GDP- Gross Domestic Product

LAR-Loan to Asset Ratio

LLPR-Loan Loss Provision Ratio

LOGD-Natural Logarithm of deposit (Size of Deposit)

NBE-National Bank of Ethiopia

NIB S.C-NIB International bank Share Company

NPL- Non-Performing Loans

OLS- Ordinary Least Square

ROA-Return on Asset

ROE-Return on Equity

SPSS- Statistical Package for Social Science

UB S.C- United Bank Share Company

U.S-United States

WB S.C- Wegagen Bank Share Company

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Abstract

The importance of strong credit risk management for building quality loan portfolio is of Paramount importance to robust performance of commercial banks as well as overall economy. Since a large chunk of banks revenue accrues from loans from which interest is derived, managing credit risk plays important role for their profitability. As a result, the author is motivated to do research entitled with "Impact of Credit Risk Management on Profitability of Private Commercial Banks in Ethiopia" basing that there is a gap while previous research papers were done on the topic in terms of variables assumed as well as a new directives were issued by National Bank of Ethiopia (the Central Bank in Ethiopia) after the research papers. Accordingly, the objective of the paper was to examine the impact of credit risk management on profitability of private commercial banks in Ethiopia. Multiple regression model was used in order to identify relationship between independent variables (Loan Loss Provision to Total Loan, Loan to Total Asset, Total Deposit to Asset, Size of Deposit, Capital Adequacy Ratio, Liquid Asset to Total Asset) and dependent variable (Return on Asset).Ten consecutive years audited financial statement were used as a secondary data covering 2005-2014 G.C (Gregorian calendar) from each of the six selected privates commercial banks (Awash International Bank Share Company, Abyssinia Bank Share Company, Dashen Bank Share Company, Nib International Bank Share Company, United Bank Share Company and Wegagen Bank Share Company) using purposive sampling techniques. The finding revealed that credit risk management has a significant impact on the profitability of private commercial banks in Ethiopia; particularly the LLPR,CAR & LATAR were statistically significant impact on ROA showing that reducing the value of LLPR and increasing CAR & LATAR are crucial for generating profit for the banks. Therefore, management need to be cautious while setting up a credit policy including prudent lending through proper analysis together with regular monitoring that might not negatively affects profitability, and NBE has also be conscious while issuing directives related to credit in such a way that the directives should not affect their profitability.

 *Key words: **Credit Risk Management, Private Commercial Banks, Profitability, CAR, LLPR, LATAR, LAR, DAR, LOGD & ROA.***

CHAPTER ONE: Introduction

The introductory part of the study focuses on the whole picture of the research paper which mainly includes background of the study, objectives as well as statements of the problem.

1.1 Background of the study

Commercial banks had and still have an important role in the economy. Their central role is to make the community's surplus of deposits and investments useful by lending it to people for various investment purposes: company growth, education & houses. They are firms that efficiently provide a wide range of financial services for profit. Among the different functions, lending function is the core product line of commercial banks which contributes the major share of revenue to their profitability. But their functionality is not without risk. Currently, the main income of the banking system comes from the credit facility availed to customers and hence exposes them to high credit risk which intern lead them to loss.

As a result, the need to employ a sound credit risk management system is crucial in order to achieve their objective. According to Ghosh & Islam (2014), Credit Risk Management holds a positive relationship with credit monitoring, reliability and assurance factors. All these factors play vital role in the mitigation process of credit risks. Credit Risk Management can be treated as the heart of any Commercial Bank because it plays the vital role in the performance of a financial institution by analyzing credit worthability of borrowers. Poor Credit Risk Management is the main consideration in case of Banks' unsatisfactory performance and often the reason of bankruptcy. Among the variables that affect their performance negatively, impact of non-performing loans and loan loss provisioning are the major ones while having adequate amount of capital, having sufficient deposit & liquid asset as well as amount of loans and advances are the ones that affect their performances positively where the study tries to focus on with the exception of the non-performing loans. In the problematic areas of the current topic, a number of researchers were done but only limited of them are in Ethiopia as is described below:

Tefera (2011) revealed that credit risk management has significant impact on profitability of banks in Ethiopia. In order to come up with this empirical result, the researcher has used 10 year audited financial statements of 5 private banks and 1 state bank in Ethiopia together with distributing questionnaire to risk management position personnel's of each sampled banks. Multiple regression analysis model was used selecting CAR & NPL as independent variable

while ROE as dependent variable and hence come up with a conclusion that both CAR & NPL has significant impact on profits of the banks.

Mekasha(2011), who made thesis paper on the impact of credit risk management on performances of six private commercial banks in Ethiopia, showed that banks with good credit risk management policies have lower default rate and relatively higher return on asset. A panel data of 10 year audited financial statements were used as a secondary data together with primary data collected from questionnaire. In order to arrives at the conclusion, he has used ROA as performance indicator while LLPR, LP/TA, NPL/TL & LP/NPL as credit risk variables.

Kaaya & Pastory (2013) have made research entitled with credit risk and commercial banks performance in Tanzania. The researchers had used regression model fixing credit risk indicators; Loan loss to gross loan, non performing loan, loan loss to net loan and impaired loan to gross loan as independent variable while profit indicator; ROA as a dependent variable. Their empirical result showed that the credit risk variables were negatively correlated with the performance indicators showing that the credit risk variables has reduced the performances of the performances of commercial banks during the study period.

The major objective of the research was to analyze impact of credit risk management on the profitability of private commercial banks in Ethiopia considering that there was gap while the previous researches were done in Ethiopia in selecting the variables that would affect profitability as well as new directive No.MFA/NBE Bills/001/2011 has been issued by National Bank of Ethiopia requiring private banks to purchase NBE bills equivalent to 27 percent of any new loans disbursement at lower interest rate of 3 percent having a maturity period of five years which appears to have a sizable negative impact on private banks' intermediation activities.
Accordingly, the study was started by reviewing related literatures where theoretical review and empirical reviews were the two major parts which was helpful for clarifying the variables that would affect the profitability of the selected banks collecting a ten year audited financial statements from each of the selected banks ranging from 2005 to 2014 Gregorian Calendar. A panel data regression analysis was run selecting six independent variables and one dependent

variable showing that a credit risk management has a major impact on the profitability of commercial banks.

1.2 Statement of the Problem

One of the major roles of banks is to offer loans to borrowers and loans serve as one of the ultimate source of earnings for commercial banks. In other words, loans represent one of the highest yielding assets on banks' balances sheet (Bentum, 2012). The development and establishment of a system for credit risk management is extremely important from the view point of ensuring the soundness and appropriateness of a financial institution's business. Failure to establish a sound credit risk management results in reduction on their performance as well as bankruptcy of financial institutions. Performances of commercial banks can be reflected on profitability where it is an important factor for the smooth running of any business in today's competitive setting and it has a significant impact on the performance of the institutions, as the financial proficiency of banks can also influence the economic development (Tariq, 2014).

The main aim of every banking institution is to operate profitably in order to maintain its stability and improve in growth and expansion (Aduda & Gitonga, 2011). The topic of the research is impact of credit risk management on profitability of private commercial banks in Ethiopia. It was selected because the author considered that there is a gap while the previous researches were done as well new regulations has been issued by the NBE after the studies were made, which directly impact on the performances of commercial banks.

As far as the author's knowledge is concerned, two studies by Tefera(2011) & Mekasha(2011) were conducted so far on similar topic where their summary of the research is described below:

Tefera (2011) evaluated the impact of credit risk on the profitability of six private banks and one state bank, Commercial Bank of Ethiopian, taking Return on Equity as measures of bank performance and non-performing loan ratio and capital adequacy ratio as a measure of credit risk collecting data from their annual reports and analyzed using descriptive, correlation and regression techniques. The findings revealed that credit risk management has a significant impact on the profitability of the commercial banks. Together with the NPL & CAR which were used as

a credit risk variables, the current study has used liquidity ratio, size of deposit and deposit to asset ratio which has an impact on profitability of the commercial banks. Moreover, there are many writers who argue on return on asset is better in order to measure profitability of commercial banks as it is a useful devise for comparing profitability of commercial banks in the same industry.

Mekasha (2011) examined credit risk management and its impact on performances of Private Commercial Banks in Ethiopia considering return on asset as performance measurement and four independent variables(non-performing loans, loan loss provision ratios, Loan Provision to total asset, non-performing loan to total loan & loan provision to non-performing loan) as credit risk measurement. The capital adequacy and liquidity ratios having significant impact on profitability of the commercial banks were also included in the current study.

Together with the above factors, NBE has issued Directive No.MFA/NBE Bills/001/2011 urging all private commercial banks to purchase bill up to 27% of a new loan disbursed having a maturity period of five (5) years with three percent (3%) interest rate per annum while the deposit rate is around 5% creating maturity mismatch which will limit their lending capacity and hence impacts on less profitability.

1.3 Guiding Research Questions:

- To what extent does loan loss provision affect banks profitability?
- What effect do loans and advances have on banks profitability?
- How does the amount of capital affect banks profitability?
- What effect does deposit mobilization of commercial banks has on banks profitability?
- How do liquid assets of the selected commercial banks affect their profit?

1.4 Objectives of the Study

Basing the research problems and research questions, the research intends to achieve the following objectives:

1.4.1 General Objective

To analyze the impact of credit risk management on the profitability of private commercial banks in Ethiopia.

1.4.2 Specific Objectives

This study assumes the following specific objectives:

- To determine the impact of loan loss provisioning affect banks profitability in Ethiopia
- To investigate the impact of loans and advances on banks profitability
- To examine the effect of deposit on banks profitability
- To determine whether banks capital contributes to their profitability.
- To determine to what extent banks liquidity affect profitability

1.5 Significance of the Study

- The study is useful as a base or reference in order to make further research on the topic
- The research is helpful for bank employees especially managers in enabling them on which variables to focus to improve the profitability of their bank.
- Depending up on the research results, a new regulation may be established by the regulatory body and the bank managers may revise the credit policy and procedures of their bank

1.6 Scope of the Study

The current research focuses only the impact of credit risk management on the profitability of selected private commercial banks (Awash International bank Share Company, Bank of Abyssinia Share Company, Wegagen Bank Share Company, United Bank Share Company and NIB International Bank Share Company). The selection of the banks were based on the similarities of their establishment period (from 1994 to 1999 respectively) where all of them have registered more than a decade. The government banks were not included in the sample because: the new directive issued by NBE which require a private commercial bank to purchase Bill on the 27% of loan disbursement with a maturity period of five years do not consider Commercial Bank of Ethiopia which enables to grant loan facility without a limit and hence expected to have better performance. The other state bank is Development Bank of Ethiopia where the motive of the bank itself is different from other commercial banks as it focuses on granting loans related to project financing.

1.7 Limitation of the Study

Among the credit risk indicator variables of commercial banks, non-performing loan is the major one. Accordingly, the author of the study has tried his maximum effort to include in the current model as one independent variable but none of the audited financial statements of the selected banks, except that of Awash International Bank Share Company, were disclosed and hence forced to use the loan loss provision ratios as a variable which are proxy to credit risk.

1.8 Organization of the Research Report

The thesis paper was divided into five major parts:

The first part (Chapter one) includes introduction, problem statement, guiding questions, objectives and limitations, Scope and significance of the study. The introduction part of the research presented the whole body of the research paper.

The second part (Chapter two) deals with the theoretical and empirical background of the study. The theoretical part was theories of credit risk management and profit obtained from different articles as well as books while the empirical part is the empirical results of researchers made on similar topic.

The third part (Chapter three) of the thesis focuses on the description of the methodology used in the research. This section presents the sources of data employed in the study, the chosen samples with regards to the six banks under study and the reason why they were chosen. It presents the empirical models adopted in the study in order to be able to analyze and discuss the solution to the research question and arrive at conclusions.

Forth part (chapter four) of the study was about result presentation and discussion part starting with diagnostic analysis where interpreting the obtained results were followed.

The final part of the thesis (chapter five) contains conclusion and recommendation where it ends up with conclusion of the research paper and forwarding suggestions for further research as well as for bank personnel's and policy issuers.

CHAPTER TWO: Review of Related Literature

In this section, theoretical as well as Empirical reviews were discussed. Under the theoretical review; theories of credit risk and its management techniques, the dependent and independent variables were discussed together with the credit risk management guideline obtained from NBE. In the Empirical review part, what results did researchers obtain on the impacts of credit risk management on profits of commercial banks? What methods as well as variables were utilized in order to arrive at their conclusion? has been discussed.

2.1 Theoretical Review

2.1.1 Introduction

Poudel (2012) revealed that the health of the financial system has important role in the country as its failure can disrupt economic development of the country. Financial performance is company's ability to generate new resources, from day-to-day operation over a given period of time and it is gauged by net income and cash from operation. Banks perform investment activities by granting loan to customers. This loan creation process operates smoothly when the loan granted is returned back to the lender. But there are cases where loans are not returned back on time and hence credit risk will arise-the biggest risk commercial banks face. It maximizes bank risk, adjusted risk rate of return by maintaining credit risk exposure with view to shielding the bank from the adverse effects of credit risk. Sound credit risk management involves prudently managing the risk/reward relationship and controlling and minimizing credit risks across a variety of dimensions (Bank of Jamaica, 1996). A credit facility is said to be performing if payment of both principal and interest are up to date in accordance with agreed repayment terms (Charles & Keneth, 2013). Failure to manage credit risk will create un stability and hence impacts negatively on the survival of banking institutions because a profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system (Almumani, 2013). Most researchers explored that, in analyzing the relationship between profitability of commercial banks and credit risk management; Return on asset and Return on Equity were used as a profitable variable while non-performing loan to total loan and advances, Loan loss provisioning to total loan, size of deposit, total loan and advances to total asset, Total loans & advances to total asset and capital to total asset were used as a measure of credit risk.

Experiences elsewhere in the world suggest that the key risk in a bank has been credit risk. Indeed, failure to collect loans granted to customers has been the major factor behind the collapse of many banks around the world. Banks need to manage credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Additionally, banks should be aware that credit risk does not exist in isolation from other risks, but is closely intertwined with those risks. Effective credit risk management is the process of managing an institution's activities which create credit risk exposures, in a manner that significantly reduces the likelihood that such activities will impact negatively on a bank's earnings and capital (NBE, 2010, P.1).*

2.1.2 Credit Risk Management Guideline

2.1.2.1 Introduction

NBE has revised the risk management frame work that was issued in 2003 in order to incorporate latest developments in the areas of Credit risk management, Liquidity risk management, Market risk management and Operational risk management expecting that it would provide minimum risk management standards for all banks operating in Ethiopia as well as assist risk based supervision contributing towards safety and soundness the banking system. Accordingly, as the guidelines are important as well as directly related to the research topic, the credit risk management part is presented in a summarized way. The guideline also in forces all banks operating in Ethiopia to establish credit risk management structure concentrating on risk management functions expecting them to report directly to the board/its risk management committee independently where the risk management program is acceptable to NBE.

The program should contain to the minimum of:

• Active board and senior management oversight;

• Adequate policies, procedures and limits;

• Adequate risk monitoring and management information system; and

• Adequate internal control.

2.1.2.2 Board and Senior Management Oversight

Board Responsibilities

The guideline indicates that the board of directors is responsible for reviewing and approving a bank's credit risk strategy and policies where each bank should develop a strategy that sets the objectives of its credit-granting activities and adopts the necessary policies and procedures for conducting such activities. The board of directors shall also be responsible for monitoring their fulfillment with the credit risk management strategy as well as NBE directives where it is usually accomplished through periodic reporting of management and internal auditors (NBE,2010).

Management Responsibilities

Senior management has the responsibility for implementing the credit risk strategy approved by the board of directors and for developing policies and procedures for identifying, measuring, monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities at both the individual credit and portfolio levels. They must also insure that there is a periodic independent internal or external assessment of the bank's credit management functions.

2.1.2.3 Policies, Procedures and Limits

The process of credit risk management is formalized in most organizations in a set of procedures generally called a credit policy manual. The foundation for effective credit risk management is the identification of existing and potential risks in the bank's credit products and credit activities. This creates the need for development and implementation of clearly defined policies, formally established in writing, which set out the credit risk philosophy of the bank and the parameters under which credit risk is to be controlled.

A cornerstone of safe and sound banking is the design and implementation of written policies and procedures related to identifying, measuring, monitoring and controlling credit risk. Credit policies establish the framework for lending and guide the credit-granting activities of the bank. The policies should be designed and implemented with consideration for internal and external factors such as the bank's market position, trade area, staff capabilities and technology; and should particularly establish targets for portfolio mix and exposure limits to single counterparties, groups of connected counterparties, industries or economic sectors, geographic regions and specific products. Effective policies and procedures enable a bank to: maintain sound

credit-granting standards; monitor and control credit risk; properly evaluate new business opportunities; and identify and administer problem credits.

The basis for an effective credit risk management process is the identification and analysis of existing and potential risks inherent in any product or activity. Consequently, it is important that banks identify the credit risk inherent in all the products they offer and the activities in which they engage. This is particularly true for those products and activities that are new to the bank where risk may be less obvious and which may require more analysis than traditional credit-granting activities. Although such activities may require tailored procedures and controls, the basic principles of credit risk management will still apply. All new products and activities should receive board approval before being offered by the bank (NBE,2010).

2.1.2.4 Credit Limits and Concentration

To ensure diversification, exposure limits are needed in all areas of the bank's activities that involve credit risk. Banks establish credit limits for individual counterparties and groups of connected counterparties that aggregate different types of on and off balance sheet exposures. Such limits are frequently based on internal risk ratings that allow higher exposure limits for counterparties with higher ratings. Under no circumstance can limits established by banks be higher than regulatory limits set by NBE.

Excessive concentration renders a bank vulnerable to adverse changes in the area in which the credit is concentrated and to violations of statutory and regulatory limits. Sound and prudent risk management involves the minimization of concentration risk by diversifying the credit portfolio.

2.1.2.5 Credit Risk Mitigation

NBE states that there are a number of risk management techniques among which Collateral and Guarantee are the most common ones. Notwithstanding the use of various mitigation techniques individual credits transactions should be entered into primarily on the strength of the borrower's repayment capacity. Banks should also be mindful that the value of collateral might well be impaired by the same factors that have led to the diminished recoverability of the credit.

2.1.2.6 Measurement, Monitoring and Control

Failure to establish adequate procedures to effectively monitor and control the credit function within established guidelines has resulted in credit problems for many banks around the world. Compromising credit policies and procedures has been another major cause of credit problems. Accordingly, each bank needs to develop and implement comprehensive procedures and information systems to effectively monitor and control the risks inherent in its credit portfolio. These procedures need to define prudent criteria for identifying and reporting potential problem accounts to ensure that such accounts are identified for more frequent review, followed up with appropriate corrective action, adversely classified where appropriate and that provisions are made where necessary. Categorization of the credit portfolio by credit characteristics, risk rating and regular review of individual and groups of credits within the portfolio and independent internal credit inspections or audits are integral elements of effective and prudent portfolio monitoring and control(NBE,2010).

2.1.2.7 Managing Problem Loans

Banks must have a system in place for early remedial action on deteriorating credits, managing problem credits and similar workout situations as one of the reasons for establishing a systematic credit review process is to identify weakened or problem credits. A reduction in credit quality should be recognized at an early stage when there may be more options available for improving the credit. Banks must have disciplined and vigorous remedial management process, triggered by specific events, that are administered through the credit administration and problem recognition systems.

2.1.2.8 Management Information System and Measuring Credit Risk

Banks should establish management information systems and analytical techniques that enable management to measure the credit risk inherent in all on- and off-balance sheet activities. The effectiveness of a bank's risk measurement process is highly dependent on the quality of its management information systems since this information is used by the board and management to fulfill their respective oversight roles. Therefore, the quality, detail and timeliness of information are critical. The information system should provide adequate information on the composition of the credit portfolio, including identification of any concentrations of risk.

2.1.2.9 Internal Controls

Banks must establish a system of independent, ongoing assessment of their credit risk management processes and the results of such reviews should be communicated directly to the board of directors and senior management.

The bank should have an efficient internal review and reporting system as an effective oversight mechanism in respect of its credit function. This system should provide the board of directors and senior management with sufficient information to evaluate the performance of account or relationship officers and the condition of the credit portfolio.

2.1.3 Credit Risk

Credit risk is by far the most significant risk faced by banks and the success of their business depends on accurate measurement and efficient management of this risk to a greater extent than any other risks (Funso et al.,2012). Credit risk, or the risk that money owed is not repaid, has been prevalent in banking history as it is a principal and perhaps the most important risk type that has been present in finance, commerce and trade transactions from ancient cultures till today (Gestel & Baesens, 2009). It is the risk of loss of principal or loss of a financial reward arising from a borrower's failure to repay a loan or otherwise meet a contractual obligation.

Credit risk arises whenever a borrower is expecting to use future cash flows to pay a current debt. Investors are compensated for assuming credit risk by way of interest payments from the borrower or issuer of a debt obligation. It may also arise from either an inability or unwillingness to perform in the pre-committed contracted manner.

As per Van Gestel and Baesens (2009) states, there can be many reasons for a default:

- In most cases, the obligor(s) is in a financially stressed situation and may be facing a bankruptcy procedure.
- The borrower can also refuse to comply with its debt service obligation.
- Technical defaults result from a misunderstanding because of the flow in the information system or technology.
- A credit loss also occurs when the bank invests in debt of a high-quality borrower of which the risk profile has deteriorated. In the case of liquidation, the price at which the

debt is sold on the market is lower than the price at which the debt was bought by the bank, which makes a net loss.

Characteristics of Credit Risk

According to Brown & Mole (2012), there are three characteristics that define credit risk:

- **Exposure** -to a party that may possibly default or suffer an adverse change in its ability to perform
- **The likelihood that this party will defaul**t or the default probability on its obligations
- **The recovery rate**. That is, how much can be retrieved if a default takes place.

Among the three characteristics, the larger the exposure and probability default will result in the larger the credit risk but the larger in the recovery rate means the lower will be the risk. Given the above, credit risk management is the process of controlling the potential consequences of credit risk. As a result, credit risk can be expressed formally as:

Credit Risk = Exposure * Probability of default * (1 less recovery rate). This show that how much controlling of credit risk is very important.

2.1.4 Factors of Credit Risk

Gestel & Baesens, (2009) has classified factors of credit risk in to three: Default risk, Loss risk and Exposure risk with the following description:

Default risk

The default risk is the probability that a default event occurs. This probability is called the probability of default (PD). The probability has values between 0 and 1. There are many definitions of a default event. The most common definition of a default event is a payment delay of at least 3 months.

Loss risk (LGD)

The amount of the loss if there is a default, expressed as the percentage of EAD(the exposure at the time of default). The loss risk determines the loss as a fraction of the exposure in the case of default. In the case of no loss, the LGD is equal to zero. When one loses the full exposure amount, the LGD is equal to 100%.

Exposure risk

The expected value of the loan at the time of default. The exposure at the time of default (EAD) may not be known beforehand. For some products like a bond or a straight loan, the amount is a fixed amount. The uncertainty on the exact amount at risk at the very moment of a future default is exposure risk (Gestel & Baesens,2009).

2.1.5 **Credit Risk Management:**

Banking operations are exposed to some inherent risks including borrower's outright default and unwillingness or inability to meet credit commitment. This will lead to the formation of bad loans where they are mainly the causes of bank failure. As Njankie (2009) stated, bad loans results from mismanagement because of bad lending decisions made with wrong appraisals of credit status or the repayment of non-performing loans and excessive focus on giving loans to certain customers. This will reduce their competitiveness as profitability is shrinked due to the availability of bad loans. Thus effective credit risk management is very important to the survival of commercial banks as it reduces the risk of customer default and it adds the competitive advantages of the banks by enabling to depend on their capability to handle credit valuably. It also maximizes the wealth of share holders and insures the safety of depositors fund as commercial banks act as delegated monitors on behalf of depositors to enforce credit contracts using various technologies, procedures, and innovations. According to A.R (2012), Credit management frameworks are therefore becomes imperative tools in decision-making that relates credit risk on bank portfolio.

According to Gestel & Baesens (2009), credit risk management is a process that involves the identification of potential risks, the measurement of these risks, the appropriate treatment, and the actual implementation of risk models. It holds a positive relationship with credit monitoring, reliability and assurance factors (Ghosh et al., 2014). All these factors play vital role in the mitigation process of credit risks where the mitigation process starts from sourcing loan applications and the loan application goes through several screening process where reliability and assurance factors are very much important with knowledge of practical world and product program to identify risks associated with loan proposals.

One of the mechanisms in which credit risk management is implemented is by establishing good credit risk management policies. Credit Risk Management policies of a commercial bank comprise those decision-making structures associated with the reduction of exposures to credit asset classification and loan loss provisioning. Management of bank risk relates to the minimization of the potential that a bank borrower or counter-party will fail to meet its obligations in accordance with agreed terms**.**

Credit risk management policies are designed and applied both internally as an operational tool by bank management and externally by bank regulatory authorities to manage the financial health of the banking sector. In our country, the regulatory authority is NBE where directives related to financial institutions are issued as well as regulated for their implementation. Accordingly, the risk management guidelines issued before ten years were revised on 2010 in order to incorporate latest developments enforcing all banks to implement. The focuses of such policies are the needs for asset diversification, maintenance of balance between returns and risk, bank asset quality and ensuring safety of depositor's fund.

Sound credit management is a prerequisite for a financial institution's stability and continuing profitability, while deteriorating credit quality is the most frequent cause of poor financial performance and condition. The prudent management of credit risk can minimize operational risk while securing reasonable returns (Spring, 2005). Credit risk management comes to maximize a bank's risk adjusted rate of return by maintaining credit risk exposure within acceptable limit in order to provide a framework of the understanding the impact of credit risk management on banks profitability (Nawaz et al.,2012).

2.1.6 **Credit Risk Management Techniques**

Gestel & Baesens (2009) as well as Browns & Moles (2012) has identified different types of controlling techniques of credit risk before as well as after granting the loan. Gestel & Baesens (2009) has classified them in to four (selection, Limitation, Diversification & Credit enhancement) while Browns & Moles (2012) has classified credit risk controlling in to five (managing the loss given default, Diversification, Covenants & monitoring, Risk pricing and

finally as loan loss provisioning). The author has summarized in to six taking their benefit in to consideration.

1) Selection:

A good credit risk management starts with a good selection of the counterparts and products. For the selection strategy to be effective, the models that are used for assessment has to be good together with availing qualified risk officers. In order to reduce the recovery risk, more collateral will be requested for those counterparty with high default risk.

2) Managing the Loss given Default

Managing the credit risk means managing the amount of loss if a default should take place known as loss given default. Banks have different ways in order to manage defaults. One of the methods is having enough collateral where the lender has a claim over the security offered by the borrower which benefit them in sparing the expense of the default process provided that the offered collateral sufficiently cover the loan amount. Together with the collateral, the bank is also interested in having a total level of a borrower's capital because adequate supply of capital provides as a cushion against bankruptcy or insolvency.

3) Diversification:

This type of management technique allows granting different types of products to different industry sector, International as well as geography. Diversification techniques will spread the risk over the larger products rather than concentrating in a single product type as risk diversification is a concept of modern banking. The outcome of a single loan is default or no-default, possibly a high loss. So the probability to have a high loss in a diversified loan product is very much lower as compared with a single loan because the probability of defaulting all loans together is much higher than defaulting a single loan. Accordingly, the risk of high losses is reduced by diversifying the investment over many uncorrelated obligors.

4) Covenants and Monitoring

A covenant is a restriction or requirement imposed on the borrower to the terms of contract. These conditions include to have a minimum level of liquid asset(working capital) and to maintain the quality of assets pledged as collateral in the facility. This will enable the financial institution to take action and trigger the appropriate recovery processes at the same time it enables them to accelerate repayment in case of breaching the conditions.

Controlling credit risk requires to actively monitor the financial condition of counterparties and prepared to act, if conditions deteriorate. If a credit does get into difficulties (known as financial distress), then such problem accounts can be managed to maximize the amount that can be recovered. By properly monitoring exposures, problems can be detected at an earlier, less critical stage, when there are still options open to solve the problem without incurring substantial losses. Good credit control uses a range of signals to try to identify such credits prior to the critical stage.

5) Risk Pricing

Correctly pricing the credit risk to take into account expected losses is important. Banks must ensure that the loan rate (also known as the price of the loan) exceeds a risk-adjusted rate to compensate for expected losses and is inclusive of administration fees, establishment costs, the bank's desired profit and other costs of being in business. Therefore under this model the loan rate would comprise the market rate of interest for the currency being borrowed, administrative costs, plus a risk premium to compensate for expected default. The less credit worthy a potential borrower is considered to be, the higher the risk premium.

6) Loan Loss Provisioning

A common practice among financial institutions engaged in lending is to provision against expected losses. The provision of loan losses reserves is a mechanism used by such lenders to recognize in a timely fashion impending losses on troubled loans. The fact that a certain proportion of credits will default is acknowledged and accepted by financial institutions, commercial corporation would have a reserve for expected bad debts. Further, on occasions

where changes in the business cycle or local factors have an adverse effect on the loan or default experience, such reserves or provisions can be used to mitigate the consequences on the lender.

2.1.7 Relationship between Credit Risk & Banks Performances

Banks are relevant to economic development through the financial services they provide. Their intermediation role can be said to be a catalyst for economic growth. The credit function of banks enhances the ability of investors to exploit desired profitable ventures. Credit creation is the main income generating activity of banks; activities like trading, investment and banking, however, it exposes them to credit risk. Credit risk plays an important role on banks' profitability since a large chunk of banks' revenue accrues from loans from which interest is derived (Funso et al., 2012). This implies that there is a significant relationship between bank performance (in terms of return on asset) and credit risk management (in terms of loan performance). Better credit risk management results in better bank performance. Thus, it is of crucial importance that banks practice prudent credit risk management and safeguarding the assets of the banks and protect the investors' interests. Banking institutions are some of the predominant financial institutions whose changes in performance and structure have far reaching implications on the whole economy (Wangi, 2012). Therefore the instability in financial performance especially in banking industry emanates from the poor credit risk management. With this notion, credit risk and profitability of commercial banks are highly interrelated and controlling the exposure of credit risk to a maximum extent increases the performances of the banks having a better profit.

2.1.8 Profitability of Commercial Banks

As the topic of the research itself is impact of credit risk management on profitability of commercial banks, clear explanation for the need of profitability is important in order to understand the relationship between credit risk and profitability.

Financial sector plays a pivotal role in bringing sustainable economic growth & development (Javaid, 2011). In order to do so, banking system must be profitable as it is the most significant and consistent indicator for the smooth running of any business in today's competitive setting and has a significance impact on performance positively (Tariq, 2014). Profitability in commercial banks is determined by the ability of the banks to retain capital, absorb loan losses,

support future growth of assets and provide return to investors (Bank of Tanzenia, 2007). It is also an indicator of banks' capacity to carry risk and/or increase their capital (Li & Zou, 2014). The competitiveness as well as measurement of management's quality can also be indicated through the profitability of commercial banks and hence profitability is a pro-foundation for product innovation, diversification and efficiency of the commercial banks. The stability of commercial banks as whole in the economy depends on profitability level as it has tendency to absorb risks and shocks that commercial banks can face.

2.1.9 Determinants of Bank Profitability

In banking, the determinants of profitability are well observed and explored as it is increasingly important to strengthen the foundations of domestic financial system as a way to buildup flexibility for capital flow volatility. The determinants on commercial bank profitability have been studied by different authors where they classify them in two major factors:

  ➢ **Internal Factors**: Those factors are internal to the firm where they are related to managerial decisions and policy objectives to be achieved by the management. Internal factors are also called Micro or bank specific determinants. They are under the control of the management and hence called managerial factors. Among the internal factors Capital Adequacy Ratio, Credit risk, Productivity growth & bank Performance are the main ones (Almumani, 2013) & (Frederic, 2014). Lartey et al.(2013) has also classified the internal determinants of profitability in two main classes: **financial statement variables** like expense management, loan composition & bank credit, composition of bank deposits, bank earning and operational efficiency, changes in capital and liquidity management and **non financial statement variables** like number of bank branches, bank size and location.

  ➢ **External Factors**: are those factors that are out of the control of the management and hence environmental. They are affected by industry related macroeconomic variables like GDP, financial market structure, trade interdependence, Economic growth, inflation and market interest rate and ownership structure (Li & Zou,2014), (Almumani,2013), (Frederic,2014), (Ani et al., 2012) & (Lartey et al.,2013).

Together with the above authors, Belete (2013) while he was examining the asset liability management and commercial banks profitability in Ethiopia, he states that the internal factors encompasses asset liability management culture of the bank and external determinants reflect the

economic and legal environment that affect the operation and performances of the bank. With this he stated that asset liability management plays a dynamic role with regard to microeconomic determinants of commercial banks profitability.

2.1.10 Indicators of Profitability of Commercial Banks

As an indicator of commercial banks profitability measurement, many writers focus on ROA & ROE as major indicators of profitability of commercial banks and hence they are described below:

Return on Equity (ROE)

The ROE is an important indicator of how efficiently bank capital is used. Its level is a subject of interest of shareholders, since it expresses the rate of return on the capital invested by them. Return on equity directly reflects corporate competitiveness strength and sustainable growth. It is an important indicator in the attractiveness of the equity in the eyes of investors. It's a basic test of how effectively a company's management uses investors' money. It also shows whether management is growing the company's value at an acceptable rate. ROE measures the amount of net income after taxes earned for each dollar of equity capital contributed by the bank's shareholders. As per Gestel & Baesens (2008), ROE can be calculated by:

ROE = profit after tax / own capital

In order to identify the problem, it can be decomposed into the following parts:

ROE= Net income/total asset * Total asset/Total equity capital

= ROA* EM, where EM is equity multiplier (measure of leverage)....(Li & Zou,2014)

EM measures the dollar value of assets funded with each dollar of equity capital. The higher EM ratio indicates the more leverage (or debt) that is used by banks to fund its assets. High EM ratio and ROA ratio have positive influence on ROE ratios. However, the source of high ROE needs to be concerned by the bank's manager. For example, increasing EM generates increasing ROE ratio while the leverage of bank has also enhanced, which causes solvency risk. But as measure of financial performance, ROE is prone to three problems: a timing problem, a risk problem, and a value problem. These problems mean that ROE is seldom an unambiguous measure of performance. ROE remains a useful and important indicator, but it must be interpreted in light of its limitations and no analyst should mechanistically infer that a higher ROE is always better than a lower one (Lesakova, 2007).

Return on asset (ROA):

As per Charles & Kenneth (2013) states that ROA is one of the measures of financial performances of commercial banks. Return on Asset effectively reflects corporate profitability which can be used to evaluate the performance of management in the utilization of the assets. This intend to measure bank efficiency using its asset. It measures how efficiently management is using its total assets (as reported on the balance sheet) to generate profits (as measured by net income on the income statement). It helps investors measure how management is using its assets or resources to generate more income. It is calculated by dividing Net profit to total assets (Kabajeh, 2012)**,** (Mustafa et al.,2012)**.** When the ratio is higher, it is showing that the management is efficiently utilizing assets indicating how many dollars of earnings the bank derive from each dollar of assets they control.

ROA is useful device for comparing the organizations with in the same industry. The higher ratio indicates the institution is performing well. It is a useful tool for comparing profitability of one bank with other or the whole commercial banking system (Bentum, 2012). It also is used to *assesses how efficiently a bank is managing its revenues and expenses, and also reflects the ability of the management of the bank to generate profits by using the available financial and real assets (Obamuyi, 2013).*

2.1.11 Credit Risk Management Indicators:

Based on frequency of references in various researchers as well as their properties, the following variables were discussed as a measure of credit risk management variables:

None Performing Loans (NPL)

Loans form a greater portion of the total assets in banks. These assets generate huge interest income for banks which to a large extent determines the financial performance of banks. However, some of these loans usually fall into non-performing status and adversely affect the performance of banks. NBE directive number SBB/43/2008 defines none performing loan as " *a loan whose credit quality has deteriorated and the full collection of principal and/or interest as per the contractual repayment terms of the loan and advances are in question"*. Muritala &

Taiwo,(2013) suggests that the rising of non-performing credit portfolios have significantly contributed to financial distress in the banking sector as banks collect deposits and lends to customers but when customers fail to meet their obligations problems such as non-performing loans arise (Nawaz et al. 2012).

As the fact that NPLs are steadily causing lesser profitability of banking sector, the spread of banks is shrinking due to the lower recovery of loans and decreasing yield on lending. Non-performing loans have been a hindrance to economic stability and growth of economies (Abd karim et al., 2010). Basing the above facts, a number of researchers like Tefera (2011), Mekasha (2011), Poudel (2012), Murital & Taiwo (2013) and Joseph et al., (2012) have confirmed that NPLs have affected the performances of commercial banks negatively while they were performing their research on relationship between credit risk management and profitability of commercial banks. In view of the critical role banks play in an economy, it is essential to identify problems that affect the performance of these institutions. As a result, managing the impact of NPL on bank performance is a matter of survival. But the author of this research paper has considered Loan loss provision as a proxy of NPL as the latter is confidential from the NBE as well as banks point of view.

Loans and Advances:

One of the major roles of banks is to offer loans to borrowers and loans serve as one of the ultimate source of earnings for commercial banks. In other words loans represent one of the highest yielding assets on banks' balances sheet. It is prudent for commercial banks to offer more loans but effective measures have to be put in place to ensure loan quality in order to avoid large number of defaults and ensure consistency in profitability. Loans and advances are taken as one of credit risk indicator because bank loans are relatively illiquid (Nawaz et al., 2012) and subject to higher default risk than other bank asset, implying a positive relationship between loans and advances and the risk measures (Abiola & Olausi, 2014). In contrast, relative improvements in credit risk management strategies might suggest that loans and advances are negatively related to bank risk measures and hence the effect of credit risk on profitability appears clearly negative.

As per Gul (2011) confirmed Keeping other things constant; the more deposits are transformed into loans, the higher the interest margin and profits. However, the profit of the bank may decrease up on increasing risk in order to have higher loan to asset ratio. In addition, as bank

loans are the principal source of income, we expect that noninterest bearing assets impact negatively on profits. We also expect that the higher equity-to asset ratio, the lower the need to external funding and therefore higher profitability (Gul, 2011). It is also a sign that well capitalized bank face lower costs of going bankrupt and then cost of funding is reduced.

Loan Loss Provisioning

Loan provisioning is the determination or estimation of the amount of non-performing loans which are likely to be uncollectible and providing for those on the basis of aging and risk class category of the loans concerned. A loan loss provision is the amount of expense that is reserved or set aside for defaulted loans or credit. Thus the status of every loan has to be regularly examined very carefully and the necessary corrective measures taken before a loan turns bad. If however, a loan remains delinquent in spite of continued efforts of follow-up, provision is to be held in order to hedge against probable losses. In any group of loans, banks expect there will some loans that do not perform as expected. These loans may be delinquent on their repayments or in default of the loan entirely, creating a loss for the bank on expected income. Therefore, banks set aside a portion of the expected loan repayments from all loans in its portfolio to cover all, or a portion, of the loss. In the event of a loss, instead of taking a loss in its cash flows, the bank can use the amount set aside to cover the loss. Since the bank does not expect all loans to be late, there is usually enough in the loan loss reserve to cover the full loss for any one or small number of loans when needed. An increase in loan loss provision is also considered to be a significant determinant of potential credit risk (Funso, 2012). In principle, loan loss provisions allow banks to recognize in their profit and loss statements the estimated loss from a particular loan portfolio/s, even before the actual loss can be determined with accuracy and certainty as events unfold and are actually written off. NBE directive no. SBB/43/2007 states that all banks should maintain Provisions for Loan Losses which shall be created by charges to provision expense in the income statement and shall be maintained at a level adequate to absorb potential losses in the loans or advances portfolio. It also states that banks should hold minimum provision percentages against the outstanding principal amount of each loan or advances. Accordingly, 1% & 3% of the outstanding loan and advances should be kept as a provision for loans and advances having 'pass' and 'special mention' status respectively while 20%,50% and 100% of the net

outstanding loan balances should be kept as a provision for loans and advances having 'sub standard', 'Doubtful' and 'loss' status respectively.

Ideally, the level of loan loss provisioning, should be able to reflect the beliefs of bank management on the quality of the loan portfolio that they have, indicating that provisions should be able to cover the whole spectrum of expected credit losses if they are to think of provisions as a measure of true credit risk (Dugan, 2009). Meanwhile, the loan-loss provisioning to cover the expected losses completes the picture of the economic structure of a bank's balance sheet.

Capital

As per NBE directive no. SBB/43/2007, "total capital" shall mean the paid up capital, legal reserve and any other unencumbered reserve acceptable to the National Bank of Ethiopia held by a bank. Commercial banks are legally required to maintain adequate capital funds as they function to provide resources to absorb possible future losses on asset. A strong bank has a strong capital buffer to absorb unexpected losses (Brown & Moles, 2012).

According to Büyükşalvarcl and Abdioğlu (2011), the requirement of capital from the bank point of view and regulatory body is for different purpose:

- Regulators require commercial banks to have more capital in order to protect the interests of depositors and protect banks failure. They monitor the capital positions of banks quite closely because banks by their nature are highly leveraged institutions, a decrease in the ratio of equity capital to total assets would also reduce the cushion that banks have to absorb credit or market related losses. When the capital ratio declines, the risk that the deposit insurance fund might be required to pay insured depositors rises. This creates a built-in tension between the desire of shareholders to use leverage to magnify returns on equity vs. the desire of regulators to insure the safety and soundness of the banking system (Hays et al.,2009).
- From Bank stockholders' viewpoint, the function of capital is to earn a satisfactory rate of return and hence is legally required to maintain adequate capital funds.

Accordingly, a minimum amount of capital is set by Central banks to protect depositors and promote the stability and efficiency of the financial system. In the event of a winding-up, depositors' funds rank in priority before capital, so depositors would only lose money if the bank

makes a loss which exceeds the amount of capital it has. In this regard, NBE has set minimum capital adequacy of 8% of the total risk weighted assets and a minimum of birr 500,000 initial capital is expected for any new licensing bank to be established in Ethiopia.

Reserve Bank of New Zealand (2007) summarizes the purpose of having minimum capital adequacy ratios saying that: applying minimum capital adequacy ratios serves to promote the stability and efficiency of the financial system by reducing the likelihood of banks becoming insolvent. When a bank becomes insolvent this may lead to a loss of confidence in the financial system, causing financial problems for other banks and perhaps threatening the smooth functioning of financial markets. The higher the capital adequacy ratio, the higher the level of protection available to depositors.

The adequacy of capital stated by Büyükşalvarcl and Abdioğlu (2011) and (Hays et al., 2009) is also repeated by Gestel & Baesens(2009) stating that capital can be used as cushion serving to absorb losses and to protect the depositors' funds. The functions of capital are also stated differently by different scholars. According to Floro (2010), bank capital serves two main functions by representing the shareholder value of equity and the value of the buffer stock available to absorb unexpected losses arising from extreme events.

But Ayayadin & Karakaya (2014) classified the functions of capital in banking industry into four:

> *It is a buffer that absorb losses*
> *Increase the confidence of depositors*
> *It shows the fact that how much risk the bank owners get into*
> *It shows the fact that how much the lowest cost financing method has been used.*

Capital is taken as the ratio of equity capital to total assets. It's interesting to note that higher the capital level breeds higher profitability level since by having more capital, a bank can easily adhere to regulatory capital standards so that excess capital can be provided as loans (Gul, 2011) & (Ponce,2013).

Deposits

Banks are said to be heavily dependent on the funds mainly provided by the public as deposits to finance the loans being offered to the customers. There is a general notion that deposits are the cheapest sources of funds for banks and so to this extent deposits have positive impact on banks profitability if the demand for bank loans is very high. That is, the more deposits commercial bank is able accumulate, the greater is its capacity to offer more loans and make profits (Devinaga & Rasiah, 2010). However, one should be aware that if banks loans are not high in demand, having more deposits could decrease earnings and may result in low profit for the banks. This is because deposits like Fixed, Time or Term deposits attract high interest from the banks to the depositors (Bentum, 2012). It is also the main source of banking funds and hence an impact on performances of commercial banks. Hence the competition for deposits is really a competition for profits. The impact of deposit can be measured in terms of dividing deposit to total asset (Gul, 2011) which is an indicator of liquidity but it is considered as a liability. When commercial banks are less liquid, less deposit to asset ratio, their lending capability will be limited which intern affect their profitability negatively. The more deposits are used to finance the loan, the higher will be the profits and interest margins, which together with the banks also make a positive impact on profitability (Erina & Lace, 2013). To summaries; deposits are important as it is cheaper to attract it than raising equity, as a source of fund for loan, in order to make profit & as source of fund investment or investment project (Elias, 2012).

Liquidity

The liquidity of assets refers to the ease and certainty with which it can be turned into cash. A bank needs to hold liquid assets to meet the cash requirements of its customers. If the bank is unable to meet its customers' demands leaves itself exposed to a run and more importantly, a systemic lack of confidence in the banking system. In the case that borrowers have difficulty of repaying loans, anticipating an increase in defaults or non-performing loans, the bank will be in trouble therefore banks are caught between the illiquidity of their assets (loans) and the liquidity of their liabilities and may become insolvent (Fadare,2011). When firms have problems with liquidity they may defer their payments to creditors which is a harmful for companies and can result in several consequences such as worse credit terms in the future. Since liquid assets such

as cash and government securities generally have a relatively low return, holding them imposes an opportunity cost on a bank. In the absence of regulation, it is reasonable to expect banks will hold liquid assets to the extent they help to maximize the firm's profitability. Beyond this, policymakers have the option to require larger holdings of liquid assets, for instance, if it is seen as a benefit to the stability of the overall financial system (Bordeleau and Graham, 2010).

According to Ojong (2014), a bank must hold a sufficient large proportion of its assets in the form of cash and liquid assets for the purpose of profitability. If the bank keeps liquidity the uppermost, its profit will be low. In the other hand, if it ignores liquidity and aims at earning more, it will be disastrous for it. Thus a bank must strike a balance between the objectives of liquidity and profitability. This balance must be achieved with a relatively high degree of safety.

2.2 Empirical Review

Different researchers have made research on the relationship between credit risk management and profitability of commercial banks. Their empirical results, basing the variables similar with the current study, were reviewed as below:

2.2.1 Capital Adequacy Ratio and Profitability

Many of the researchers who made their research on credit risk management and profitability of commercial banks have used CAR as one credit risk variable indicator. Among them, Gizaw, (2015) in Ethiopia, Charless & Kennet,(2013) in Nigeria, Afriye & Akotey (2012) in Ghana, Adeusi (2013) in Nigeria, Abiola & Olausi (2014) in Nigeria, W.U et al.(2012), Ponce(2012), Neceur,(2003), Francis(2013), Zhang & Epperson(2014), Onuonga,(2014) in Kenya, Almazari (2014) in Saudi Arabia, Apler & Anbar(2011) in Turkey and Tabari et al.(2013) in Iran were some who found positive impact on the profitability of their commercial banks during the period where for some of them the impact was significant while insignificant for others. The researchers used regression analysis for their study and arrived at a conclusion that a well capitalized bank can result in a better profit and may send a good signal to the market regarding its performance. Moreover, according to Onuonga, (2014) banks with large capital were able to get more profit as compared with the lower ones due to the fact that well capitalized banks access funds cheaply and can invest in better quality assets and diversify their investment. But in contrary; Tefera(2011) in Ethiopia, Mwangi(2010) in Kenya, Paudel(2012) in Nepal, Li & Zou(2014) in

Europe, Almumani, (2013) in Jordan and Frederick,(2014) in Uganda found inverse relationship of capital adequacy with profitability during the study period. Their justification for inverse relationship of capital adequacy to profits, mainly the study made from Uganda, were that the commercial banks were operated over-cautiously to avoid eating into regulatory capital, thus ignoring potential profitable opportunities over the period.

2.2.2 Loan Loss Provision Ratio and Profitability

As the author of this research paper did, many researchers have selected it as credit risk management variable which impacts on profitability of commercial banks either positively or negatively. Among the researchers who have obtained a negative and significant impact of loan loss provision on profitability: Mekasha,(2011) in Ethiopia, Funso et al.(2012) in Nigeria, Mustafa et al.(2012) in Pakistan, Frederick(2014) in Uganda, Ponce(2013) in Spain, Karim & Alam (2013) were some. Most of their justification for their findings was logical considering that doubtful customers usually cannot keep paying their debt and that loan loss provisions account for a significant part of profits and hence the poor quality of loans led to increased loan loss provisions, thus reducing bank profits. Accordingly, they concluded that bank management should allocate more fund to it and hence recommended establishing strategies that enhance profitability's of commercial banks rather than focusing only on minimizing credit risk exposures. Ayaydin & Karakaya(2014), explored that a bank making a high risk loan will allocate more funds to loan loss reserve compared to a bank taking lower risk. Thus depositors require higher rate for depositing in a riskier bank and hence resulted in reduction of profit. But in contrary; Charless & Kennet(2013), Gizaw(2015), Afriye & Akotey(2012) and Kaaya & Pastory,(2013) in Tanzania were the other researchers who found a positive impact on profitability of commercial banks. Their justification was that loan loss provision is a provision held in order to offset the loan loss that can be resulted in failure of customer's repayment. So rather than taking the bank's capital during the occurrences of loss, the bank will take the provision held which was held for that particular purpose.

2.2.3 Size of Deposit (LOGD) and Profitability

The size of deposit (Log of deposit) was one of the major variables, researchers considered, in the determination of credit risk management and profitability. Tariq, et al., (2014) used log of

deposit to measure the size of bank where he revealed that the size of deposit was highly significant and positive at all levels showing large banks are performing well as compared to small banks as they have more resources to invest and fiancé short term and long term operations of the economy to enhance the pace of development which also increase the earning of the banks that leads to increase profitability. The researcher has used panel regression techniques to analyze internal as well as external factors using secondary data from 2004 to 2010 of 17 Pakistan commercial banks. It indicates market is less competitive and banks which are more efficient taking the advantage of the cost effectiveness indicates efficiency that has a positive on profitability. But Erna & Lace, (2013) have made research having an objective of determining the impact of internal and external factors of bank performance on the profitability indicators of the Latvians. The researchers came up with positive and significant influence of deposits of the bank on profitability using multiple regression analysis technique and interpreting with SPSS soft ware. They showed a negative and significant influence of deposit on return on assets of the banks. In consistent with the researchers above; Francis, (2013) while he was investigating some of the determinants of commercial banks profitability in Sub Saharan Africa, he came up with positive and significant impact on size of deposit (measured as logarithm of total deposit) with return on asset justifying that as more deposits are transformed into loans for earning interest income, the profitability will be higher.

2.2.4 Liquid Asset Ratio and Profitability

Almazari(2014) investigating a comparative study on the impact of internal factors on profitability in Saudi Arabia and Jordan banks found that the liquid asset to asset ratio was positively related to profit on Saudi banks while negatively related to profit on Jordan banks but the positive and negative effect was insignificant. But Alper & Anbar, (2011) while they were examining banks specific and macro-economic determinants of bank profitability in Turkey found that liquid assets had negative but insignificant impact on the profits of the Turkey banks during the study period using return on asset as well as return on equity as profit indicator variable and hence concluded that the liquid asset ratio had no important influence on the profitability of the banks during the study period. The result of Alper & Anbar,(2011) was also repeated by Elsiefi,(2013) while researching to investigate on determinants of conventional and Islamic banking profitability in Qatar using return on asset as one dependent variable. His

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justification for the empirical result was that higher liquidity ratios, though it provides buffers for liquidity risk, it may also indicate ineffectiveness on the part of bank management to deploy resources into higher yield interest earning assets.

2.2.5 Loan to Asset Ratio and Profitability

Mustafa et al.,(2012), found that loan asset ratios of commercial banks have a positive and significant impact on profits of commercial banks in Pakistan during the period 2001 to 2009 years where the study was done using a panel data from balance sheet and income statements of 15 Pakistan commercial banks of which the data were analyzed using multiple regression methods. A positive impact of the ratio on profit were also evidenced by Ayaydin & Karakaya(2014), Gul, et al.(2011), Tariq et al.(2014), Almumani(2013), Ani, et al.(2012), Ponce(2013), Naceur (2003) and Onuonga (2014) evidencing that as banks were increasing the ratio of loan, a better return on asset will be realized because higher loan ratio is associated with higher interest margin. Among the researchers listed above, the result obtained by Almumani,(2013) who made the research having an objective of determining management controllable factors that determine profitability of Jordanian commercial banks showed insignificant impact of loan to asset ratio on profitability the banks. Most of their evidence for having a positive impact of loan to asset ratio on profitability of their sampled banks were similar in that loans are the main source of earning of the banks, which depicts that the higher the banks will lend higher will be the profitability as it earn large amount of interest from its short term and long term financing in different sectors of the economy. But Muritala & Taiwo(2013),Francis(2013), Zhang and Epperson(2014), Alper & Anbar(2011) and Almazari, (2014) in Saudi Arabia were among the researchers who found negative relationship of loan to asset ratio with profitability of commercial banks while they were studying their research on the impacts of credit risk management on profitability of commercial banks of Nigeria and determinants of commercial banks profitability in Sub Saharan Africa and banks specific and Macroeconomic determinants of commercial banks profitability respectively. The researchers have used multiple regression analysis and secondary data were collected to arrive at their empirical evidence. As loan ratios are increasing, large amount of the liquid assets are converted in to illiquidity and hence when the customer is not willing or unable to repay his/her/its obligation as per the contracts, the bank will be in danger implying reduction of profit. Excess

liquidity decreases bank profitability and low liquidity improves bank profitability. Moreover, Francis, (2013) has also added saying that the inverse relation of the variable with the profit variable is an indication of excess liquidity that bank lending is low and are holding more money than statutory required for precautionary purposes and hence it influenced banks profitability negatively. As per Zhang and Epperson, (2014); while he was justifying the inverse relationship of its empirical result, high loan to asset ratio results in relatively insolvency risk which confirms low liquidity level.

2.2.6 Deposit to Asset Ratio and Profitability:

Among the researchers who took deposit to asset ratio as one variable for measuring their impact on profitability and found negative impact on profitability were: Muritala & Taiwo (2013), Tariq et al.(2014), Zhang & Epperson(2004) and Alper & Anbar(2011). Muritala & Taiwo, (2013) evaluate the impact of credit risk management on banks profitability using deposit to asset ratio and Non-performing loans as credit risk indicators while return on asset as profit variable in Nigeria. Accordingly, their result reveled that both variables (Deposit to asset and NPL) had a significant and inverse relationship with the profitability of the sampled banks during the study period and hence forwarded their recommendation that while credit policy is established in Nigerian banks, a caution has to be taken in the way that might not affect profitability of the banks negatively. Tariq et al.(2014), has also agreed with Muritala & Taiwo(2013), while they were researching on the profitability of commercial banks evidencing that banks that depend on high deposits have less profit because they need to have high network of branches where their expenses increase and hence affected profit inversely. Zhang & Epperson(2004), who has made research on the profitability and risk of U.S Agricultural banks revealed that the inverse relationship of deposit to asset ratio on the profitability of the banks was due to high volatility of deposits and hence banks can suffer from this unstable sources of financing thus take high risk. But Gul, et al. (2011) have found a positive relationship of deposit to asset ratio with return on asset which is contrary to the four researchers mentioned above. While they were researching on factors affecting bank profitability in Pakistan considering deposit to asset ratio as one of the explanatory variables using multiple regression analysis, they revealed that deposit to asset ratio was positive and significant impact on return on asset and hence they were in a better position to conclude that banks depending on deposits for funds can achieve better return on asset.

2.3 Research Model (conceptual framework)

Theoretical framework is a logically structured representation of the concepts, variables and relationships involved in a scientific study with the purpose of clearly identifying what will be explored, examined, measured or described. Accordingly, the conceptual frame work of the author's research is explained by the following diagram:
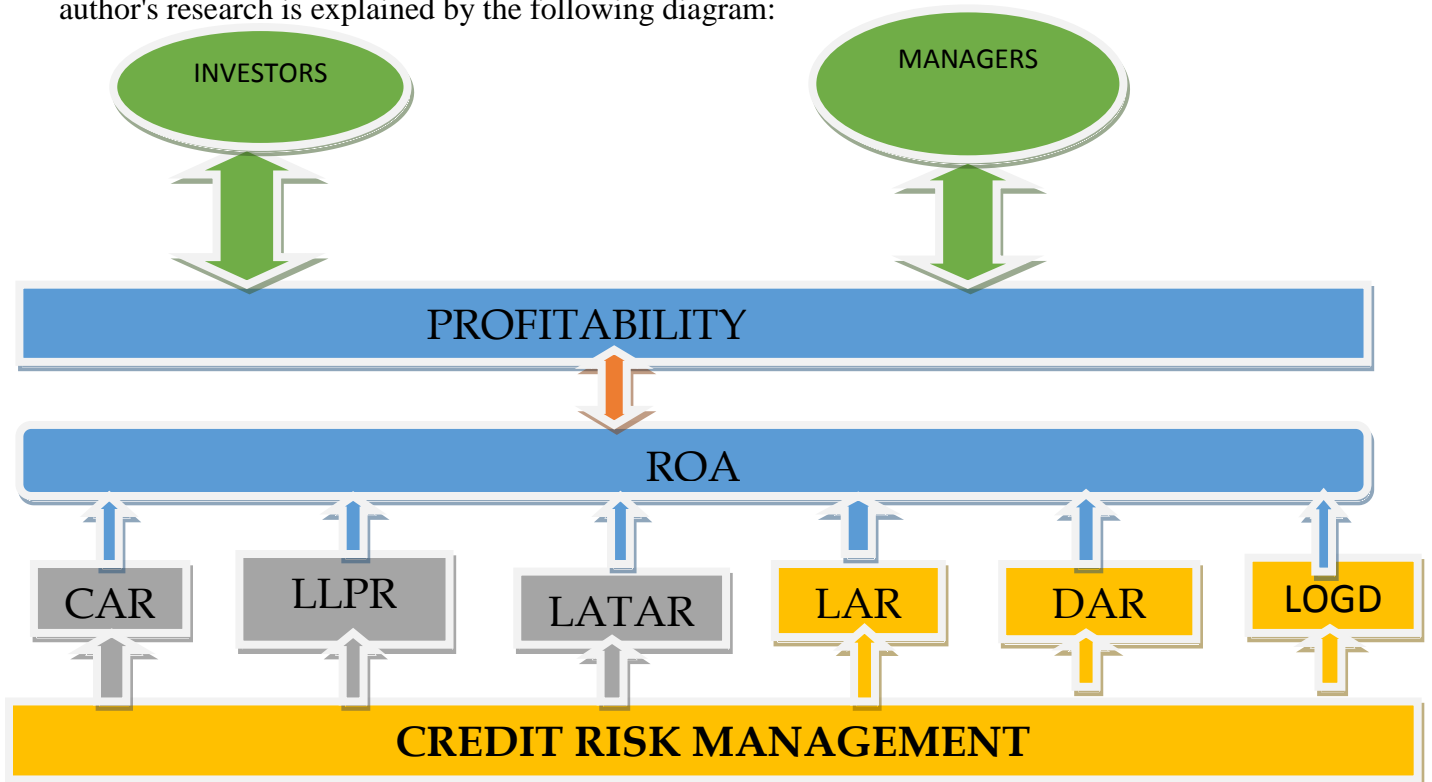
Source: Adapted from Li & Zou(2014)

Figure 1: Research Model

The foundation of the research is built on credit risk management of private commercial banks as the interest is to observe impact of credit risk managements on profitability. Accordingly, to satisfy the objective of the research, credit risk management which is the corner stone of the model can be disclosed by five variables: LAR, CAR, LLPR, DAR. LATAR & LOGD where as profitability ratio which lies up on the credit risk management ratio can be disclosed by one variable: ROA. The information obtained by the profitability of the commercial banks will be useful to managers of the bank as well as investors and hence they are the outsiders who are concerned with the profitability of the banks.

CHAPTER THREE: Research Design and Methodology

The methodology part of the research explains the design of the research, instruments to be utilized in order to answer the research questions, the sources of data (primary & secondary), sample specification and finally the model adopted explaining the dependent as well as independent variables.

3.1 Research Design

A research design is a master plan that specifies the methods and procedures for collecting and analyzing the needed information. It provides a framework or plan of action for the research (Zikmund, 1998). The design of the research was quantitative as the author focused on numeric data obtained from financial statements of the selected banks and then regression analysis was run. The purpose of the research paper was explanatory as the emphasis in explanatory research is on studying a situation or a problem in order to explain the relationships between variables. It also attempts to build and elaborate on theories and add to predictions and principles where possible. Accordingly, the cause and effect relationship between dependent (profitability) and Independent variables (Credit risk) were studied.

Panel data regression analysis was used to investigate the extent to which credit risk management affect profitability of private commercial banks in Ethiopia within the period 2005 to 2014. Panel data is a dataset in which the behavior of entities like states, companies, individuals and countries are observed across time. The estimation technique is adopted because it takes care of heterogeneity associated with individual banks by allowing for individual specific variables, it gives more informative data, more variability, less collinearity among variables, more degree of freedom and more efficiency (Charless & Kenneth, 2013). It also in reaches empirical analysis in such a way that may not be possible if either only time series data or cross sectional data is used. According to Samy(2003) cited by Abiola & Olausi(2014), Panel data analysis was normally involved two main models; Fixed effect and Random effect.

Fixed effect model was used when to control omitted variables that differ between cases but are constant over time. This model helps to track changes in the variables over time to estimate the effect of independent variables on dependents variables. The main technique used for analysis of

panel data is fixed effect. Statistically, fixed effect is always a reasonable thing to do with panel data because they give consistent result but may not be the most efficient model to run. The random effect is used where some omitted variables may be constant over time but vary between cases, others may be fixed between cases but vary over time (Abiola & Olausi,2014).

3.2 Sample and Sampling Techniques

Data for the study were collected from six private commercial banks out of the available banks in Ethiopia. The names of the private commercial banks included in the sample were: AIB S.C (Awash International Bank share company), DAB S.C (Dashen Bank Share Company), BOA S.C (Abyssinia Bank share company), WB S.C (Wegagen Bank share company), UB S.C (United Bank share company), & NIB S.C (NIB International Bank share company). From the available commercial banks in Ethiopia, only six of them were selected based on their establishment period where all of them have registered more than a decade and hence the availability of required data was assured. Secondly, state owned banks were not selected due to market dominancy nature as well as purpose for their establishment. For example, commercial bank of Ethiopia is not purchasing Bill on the 27% of every loan disbursement as per NBE directive while private banks as a whole were implementing the directive enabling commercial bank of Ethiopia to grant a loan with a full capacity and hence its capital is far from other banks in Ethiopia and its profit too in addition to other factors for the growth of the capital and profit. DBE (Development Bank of Ethiopia) is also the other state owned specialized bank to finance medium and long-term investment projects that are in the government's priority sectors.

Ten year audited financial statement data ranging from 2005 to 2014 G.C (Gregorian calendar) were collected from each of the sampled banks as well as NBE where the data were used as independent variables as well as dependent variable in the regression model. Theoretically, the number of observations should be 20:1 (20 observations per one independent variable) in the regression analysis and as low as 5:1(Hosna et al., 2009). Accordingly, 60 observations per six (6) independent variables are between the maximum and minimum standards and hence satisfactory with respect to the cut of points. The selected sampling method is purposive because the samples included are based on the judgment of the author considering that the six private banks are the pioneers in private banks and conclusions made on those banks will fairly represent the other banks. The main goal of purposive sampling is to focus on particular characteristics of

a population that are of interest, which will best enable to answer research questions. Basing purposive sampling, 60 observations are selected taking 10 consecutive year data from each of the six banks. Together with the secondary data, credit risk managers of each bank were interviewed in order to confirm the results obtained from the secondary data by developing structured questionnaire.

3.3 Sources and Instruments of Data Collection

The study has been conducted based on data obtained from both secondary as well as primary. panel data regression analysis and interview questions were the instruments used for data collection.

3.3.1 Primary Source

Primary data are collected from credit risk managers of each selected banks preparing structured interview questionnaires in order to make the result more conclusive.

3.3.2 Secondary Source

The secondary data were ten year audited financial reports of the sampled banks ranging from 2005- 2014 G.C taking from National Banks of Ethiopia as well as from the respective banks. Together with the financial report; credit policy and procedure manuals, Brochures, National Bank of Ethiopia Directives as well as reference materials that are performed by prior researchers in the topic area were also used.

3.4 Data Analysis and Interpretation

Panel data regression and correlation analysis was run in order to analyze the relationship between dependent variable and independent variables and then the output obtained through SPSS software was interpreted as per the prior theoretical knowledge's obtained from earlier researchers. Ordinary Least Square (OLS) methods were used as a technique in order to test the parameters of the model assumptions. The OLS is a regression estimation technique that "The least squares regression line of y on x is the line that makes the sum of the squares of the vertical distances of the data points from the line as small as possible" (Moore et al., 2009, p.120) cited by (Li & Zou, 2014).

3.5 Model Specification

The author has borrowed Charles & Kenneth (2013) econometric model which were used as a model while they were researching 'impact of credit risk management and capital adequacy on the profitability of commercial banks in Nigeria' with little modification. As is specified under the limitation part of introductory section, NPL of the selected commercial banks, except that of AIB S.C, were confidential and hence they did not disclose in their annual financial reports so the non-performing loan to total loan ratio included by the authors' were replaced by loan to total asset which is a good credit risk indicator by showing the quality of loan.

The general equation of multivariate regression model is:

$$Y_i = \beta_o + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \cdots + \beta_k X_{ki} + \epsilon_i$$

Where:

 i goes from 1 to N, N is the number of observation

B_o is the intercept

B_1-B_k is the slope of the line

Xi- is the independent variables

Yi- is the dependent variable

Accordingly, the model adopted for the current study was specified as below:

$$ROA = B_o + B_1\ LLP/LA + B_2\ LQA/TA + B_3\ EQ/TA + B_4\ LA/TA + B_5\ TD/TA + B_6\ LOG\ D + \mu$$

Where:

ROA- Return on Asset (dependent variable)

LLP-Loan Loss Provision

LA- Loan & Advances

LQA-Liquid Asset

TD-Total Deposit

EQ-Share holders fund

TA-Total Assets

LOGD- the natural logarithm of deposit (size of deposit)

B_o- the constant term (intercept), B_1-B_6 is coefficient of independent variables &

μ -is the error term.

The model in the above equation can be rewritten as:

ROA= B_0 + B_1LLPR + B_2LATAR + B_3CAR + B_4LAR + B_5 DAR + B6 LOG D + μ

Where: LLPR= LLP/LA, LATAR= LQA/TA, CAR= EQ/TA, LAR= LA/TA, DAR= TD/TA and LOG D = the natural logarithm of total deposit.

3.6 Definition of Dependent and Independent Variables

3.6.1 Introduction

Profitability ratios are an indicator for the firm's overall efficiency, growth, success & control and hence usually used as a measure for earning capacity of company based on its level of sales, assets, capital employed, net worth and earnings per share (Kebajeh, 2012). Accordingly, Creditors and Share holders are interested in profitability ratios since they indicate the company's capability to meet interest obligations & the progress and the rate of return on their investments respectively. Researchers have agreed on ratios as the appropriate way to measure profitability and hence banks are reporting in their annual reports in the form of ratios because the use of profitability ratios are not influenced by changes in price levels as one make use of time series analysis and at the same time. So it was for such a reason that the author was used ratio for the dependable variable as well as independent variables to be described below.

3.6.2 Dependent Variable

ROA: Measure of Profitability of the Commercial Banks.

Return on asset (ROA) is used as a major metric for measuring profitability while the endogenous drivers of bank profitability were used as the independent variables (Ani et al.,2012). Almumani (2013) revealed that a profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system and hence financial institutions must watch carefully the determinants of profitability as they are increasingly important in order to strengthen the foundations of domestic financial system as a way to build

flexibility for cash flow volatility. Profitability in commercial banks is determined by the ability of the banks to retain capital, absorb loan losses, support future growth of assets and provide return to investors (Quin & Pastory, 2012).

The author of this study has chosen ROA as a measure of profitability for commercial banks as larger body of empirical literatures are proposing the determinants of bank profitability. This is has been revealed by a number of researchers while they were performing their research; (Almumani, 2013), (Funso, 2014), (Kekash, 2011), (Gizaw, 2015), (Bentum, 2012),(Zribl & Boujelbene,2011), (Ani et al.,2012), (Obamuyi,2013), (Gul,2011). ROA signifies how effective and efficient the management of banks has been as they seek to transform assets into earnings and the higher ratio indicates the higher performance of the banks. It is a useful tool for comparing profitability of one bank with other or the whole commercial banking system (Bentum, 2012). It is a ratio calculated by dividing net income by total assets. ROA shows the profit earned per dollar of assets which reflects bank's management ability to utilize the bank's financial and real investment resources to generate profits (Ani et al.,2012). This ratio measure for the operating efficiency for the company based on the firm's generated profits from its total assets (Kabajeh et al.,2012).

Quin & Pastory, (2012) studied on commercial banks profitability and proposed that return on asset effectively reflects corporate profitability which can be used to evaluate the performance of management in the utilization of the assets. Basing on the argument made by Almumani (2013), that bank profitability is best measured by ROA because ROA cannot be distorted by high equity multiplier. The ratio is considered as an indicator of how efficient a company is using its assets to generate before contractual obligation must be paid. It also shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments.

3.6.3 Independent Variables

Total Loans / Total Asset (LAR)

Asset composition of loans and advances, which are explained by total loans to total asset, are the main source of income and measure the liquidity of bank assets tied up with loan. Other variables constant, the more deposits are transformed into loans, the higher the interest margin

and profits. Loans are the most important indicators of banks performance in the bank financial statements because they reflect the bank's primary activity (Ani et al., 2012).

On the other hand, if increasing loans leads to higher funding requirements, a negative impact of the loan ratio on the banks profitability may accrue (Tesfaye, 2012). Loans provide major means of earnings for commercial banks and it is often believed that the more banks offer loans the more it does generate revenue and more profit. These loans are expected to have a positive relationship with bank performance. But empirical evidence on the relationship between loans and profitability is mixed up. Researchers use loans and advance to total asset ratio in order to assess bank activity on bank risk because bank loans are relatively illiquid and subject to default risk showing a positive relationship between total loan and the risk measures. In contrast, relative improvements in credit risk management strategies might suggest that the ratio is negatively related to bank risk measures. It is a variable measuring what percent of total assets is comprised by loans and it gauges the percentage of total assets the bank has invested in loans (or financings). The author expects a positive relation between loans and advances and profitability, as more loans would generate interest income for the bank (Ponce, 2013; Tesfaye, 2012).

The ratio is also an indicator of liquidity risk which is measured by bank net loans to total assets or a percentage of assets that comprise the loan portfolio. High ratios may be an indicative of better bank performance because of possible increases in interest income. However, very high ratios could also reduce liquidity and increase the number of marginal borrowers that default (Francis, 2013). Poor asset quality is perceived to cause capital erosion and increase credit and capital risks. It is included in the study of the subject matter as an independent variable to determine the impact of loans on banks profitability.

Liquid Assets to Total Assets (LATAR):

Liquidity ratio is defined as the extent to which the banks fund are available to meet the withdrawal demand of depositors. Banks need amounts of liquidity depending on their growth rate, variability in financing, deposit activities and the regulations of the Central Bank (Muda et al., 2013). Failing to fulfill liquidity requirement results in liquidity risk described as the risk of funding which is related to un expected event (Santomero, 1997) as cited by Li & Zou(2014). As per Athanasoglou(2006), Liquidity risk will arise from the possible inability of a bank to

accommodate decreases in liabilities or to fund increases on the assets' side of the balance sheet and is considered as an important determinant of bank profitability.   If the commercial banks are not liquid enough, they will not respond the demands of credit from customers. Liquidity risk reduces the ability of the bank to meet its financial obligations as they fall due (Ojong, 2014). This makes to reduce banks operation and then profit of the bank.

Currently, the private commercial banks are not responding the demands of customers for credit on timely bases because of the credit cap set by NBE as well as Bill purchase for 27% of every disbursement of loan which impacts on their liquidity aspect negatively. This implies that Liquidity risk is a serious factor that has an impact on the profitability of commercial banks and hence became a base to consider it as one variable. As per NBE directive no. No. SBB/57/2014, any licensed commercial bank shall maintain liquid assets of not less than fifteen percent (15%) of its net current liabilities.

Loan Loss Provision to Total Loan (LLPR)

It is used as one component of credit risk because it is an indicator of asset quality in commercial banks indicating how much of the total portfolio has been provided for but not charged off (Frederick, 2014) & (Nawaz,2012). Indicator shows that the higher the ratio, the poorer the quality and therefore the higher the risk of the loan portfolio will be. The ratio of loan loss provisions to total loans shows the level of credit risk that the banks are exposing too. The relationship between loan loss provision and profitability is expected to be negative based on the concept that more bad loans reduce profitability. This is an amount of money that a bank set aside from its annual earnings as a precaution against possible loss of a non performing loan, or to off-set a lost credit facility. As indicated by Buyuksarvarcl & Adioglu, (2011)

Loan loss reserve is defined as a valuation reserve against a bank's total loans on the balance sheet, representing the amount thought to be adequate to cover estimated losses in the loan portfolio. We consider loan loss reserves to gross loans ratio as a proxy of bank risk as this ratio may indicate the banks' financial health. A negative impact of loan loss reserve in capital could mean that banks in financial distress have more difficulties in increasing their capital ratio. In

contrast, a positive effect could signal that banks voluntarily increase their capital to a greater extent in order to overcome their bad financial situation.

Although loan loss provisions and cumulative loss reserves provide early lines of defense against bad loans, in the severe case where a bank may face a serious asset quality problem and loan loss reserves becomes insufficient to allow all bad loans to be written off, the excess will have to be written off against shareholder's equity (Elsiefy,2013).

Size of Deposit (Log D)

Bank deposits represent the most significant components of the money supply used by the public, and changes in money growth are highly correlated with changes in the prices of goods and services in the economy. Banks as any other business organizations needs funds and this can be obtained by either debt or equity. But raising equity is more expensive or costly than attracting deposits. There is a general notion that deposits are the cheapest sources of funds for banks and have positive impact on banks profitability if the demand for bank loans is very high. That is, the more deposits commercial bank is able accumulate the greater is its capacity to offer more loans and make profits (Bentum, 2012). The notion of Bentum (2012) is also repeated by Alumia (2013) saying deposits and loans are the primary activity of a bank; the higher the rate of transforming deposit into loan, the higher will be the performance. Elias (2012) also say that deposits provide most of the raw materials for bank loan and hence the ultimate source of profit and growth is only viable when the deposits are transformed to loan at the required rate. But if the deposit collected is not converted to loan facility, performance will decline as the bank pay interest to the depositors.

Total Capital to Total Assets Ratio (CAR):

Commercial banks are legally required to maintain adequate capital funds as banks capital or net worth serves as a buffer against losses and failure (Noceur & Kandl, 2008). It is one of the main indicators for determination of the capital, which shows the bank's capacity to cover losses (Erina & Lace, 2013). The primary function of bank capital is to provide resources to absorb possible future losses and handle risk exposure of the share holders on assets. The capital ratio,

which is measured by total equity over total asset, reveals capital adequacy and should capture the general safety and soundness of the financial institution. In order to prevent bank failures and protect the interest of the depositors, it is necessary to require banks to maintain a significant level of capital adequacy (Buyuksarvarcl & Adioglu, 2011). Capital Adequacy Ratio (CAR) is a measure of the amount of bank's capital expressed as a percentage of its risk weighted credit exposure. It is taken as one independent variable as regulatory body considers as one core component of financial strength and hence other researchers has also used as one component in the evaluation of impact of credit risk management on profitability of commercial banks (Afriyie & Aketey, 2012). Bank with good Capital Adequacy Ratio have good profitability (Ponce, 2013). With good capital requirement, commercial banks are able to absorb loans that have gone bad. Banks are therefore required to have adequate capital, not only to remain solvent, but to avoid the failure of the financial system (Abiola & Olausi, 2014). The ratio is "cushion" for potential losses, which protect the bank's depositors or other lenders (Tefera, 2011). CAR is expected to have a positive relation with performance because well capitalized banks are less risky and more profitable (Ani et al., 2008). For the current study CAR are calculated by Total Capital/ Total Asset (Tesfaye, 2012),(Almumani, 2013), (Zrible & Boujelbene, 2011),(Ani et al.,2008), (Murital & Taiwo,2013), Afriyie & Akotey, 2012).

Total deposit to Total Asset (DAR):

This ratio is included as credit risk indicator to increase the exposure of explanatory variables. It is considered as an indicator of liquidity. The ratio indicates the proportion of total deposit from the available assets but is considered as a liability.

3.7 Expectations of the empirical result

The expectations of the author basing the theoretical frameworks of the variables were tabulated below:

NOTATIONS	EXPECTED SIGN	SIGNIFICANT/INSIGNIFICANT
CAR	POSITIVE	SIGNIFICANT
LLPR	NEGATIVE	SIGNIFICANT
LATAR	POSITIVE	SIGNIFICANT
LAR	POSITIVE	SIGNIFICANT
DAR	POSITIVE	SIGNIFICANT
LOGD	POSITIVE	SIGNIFICANT

CHAPTER FOUR: Data Presentation, Analysis & Discussion

Introduction

Multiple Regression analysis technique was used to analyze the relationship between Credit risk management and profitability of the commercial banks and the power of influencing each independent variable on ROA. Accordingly, before directly going to the analysis part, the following tests (basic assumptions of multiple regression analysis) were done:

- Whether there is a relationship between the dependent and independent variables. If there is a relationship between the variables, is it linear? How strong is it in predicting the dependable variables?
- Checking whether there is a multi-collinearity or not between the independent variables. If there is a multi-collinearity, how to correct the problem.
- Testing of Normality of the variables through distribution
- Test for homoscedasticity
- Testing for the Independence of the Residuals

4.1 Diagnostic Tests

The author has used SPSS software for the regression in analyzing the impact of credit risk management on profitability of private commercial banks. Accordingly, the following steps are followed in order to fulfill the objectives of the research.

Table 4.1: Variables Entered & Removed

Variables Entered/Removed[a]			
Model	Variables Entered	Variables Removed	Method
1	LOGD, CAR, LATAR, LLPR, DAR, LAR[b]	--	Enter
a. Dependent Variable: ROA			

Source: SPSS Regression output

The table above shows that the lists of independent variables entered and removed as well as how they were entered in to the analysis. Six of the independent variables were entered simultaneously so the method was "enter". The cell under the variables removed column shows blank indicating that there is no variable removed.

4.1.1Testing Existence of Relationship

In doing regression analysis, we determine whether or not there is a relationship between the dependent and independent variables by examining the significance of the regression line using Analysis of Variance (ANOVA). In ANOVA, we are trying to determine how much of the variance is accounted for by our manipulation of the independent variables (relative to the percentage of the variance we cannot account for). Accordingly, ANOVA table was prepared and summarized below:

Table 4.2: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.501	6	2.917	14.474	.000[b]
	Residual	10.681	53	.202		
	Total	28.181	59			
a. Dependent Variable: ROA						
b. Predictors: (Constant), LOGD, CAR, LATAR, LLPR, DAR, LAR						

Source: SPSS regression Output

As can be seen from the above table, the regression raw displays the variations accounted by the existence of the model while the residual raw shows variations that are not accounted by the model. The total raw shows the sum of regression and residual values. Mean square is sum of squares divided by degree of freedom and F value is the regression mean square divided by residual mean square. In order to observe the existence of relationship between variables, we see the intersection cell of regression raw and Sig. column which is 0.000.

Theoretically, the probability of F statistics is compared with the significance level and hence said to be significant or there is a true relationship between the variables if the F statistics of the regression analysis is less than the significance level. The tests of significance level was done at 95% confidence level showing that the F value should result in less than 5% to be significant. As per summary of research data presented under table 2 above, the F value is less than 0.001 which is less than the level of significance i.e 0.05 and hence the author concludes that there is a significance relationship between the dependent variable ROA and the independent variables CAR, LLPR, Size of Deposit, DAR and LAR.

4.1.2 Determining the strengths of Relationship:

In order to answer questions related to the strengths of relationship, the model summary table is presented and interpreted here below

Table 4.3: Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.788[a]	.621	.578	.4489107	1.623
a. Predictors: (Constant), LOGD, CAR, LATAR, LLPR, DAR, LAR					
b. Dependent Variable: ROA					

Source: SPSS regression output

The strength of the model is explained by the value of R, R^2 & adjusted-R^2. R is a measure of the correlation between the observed value and the predicted value of the criterion variable. The value of R tells us the strengths of relationship between the variables. The value of R^2 ranges from 0, which shows all of the independent variables are not capable of explaining the dependent

variables, to 1 showing the variations of dependent variables are fully explained by the independent variables. Accordingly, the value of R for the research data is 0.788 which is said to be strong relationship between the dependent and independent variables as per the rule of thumb suggested by MacEachron**.**

R Square (R^2) is the coefficient of determinant which is the measure of correlation and indicates the proportion of the variance in the criterion variable which is accounted for by the model. However, R square tends to somewhat over-estimate the success of the model when applied to the real world, so an Adjusted R Square value is calculated which takes into account the number of variables in the model and the number of observations the model is based on. This Adjusted R Square value gives useful measure of the success of the model. Thus research result of R^2 is 0.621 which means that 62.10% of the variations in the ROA is explained by the cumulative effect of LOGD, LATAR, CAR, LLPR, DAR & CAR while the rest (37.9%) of the variation in the ROA are other factors. As is explained above, the value of R Square is adjusted taking a number of factors and hence the adjusted R^2 of the research data became 57.8%.

4.1.3 Multicollinearity Test

Multicollinearity happens when one or more explanatory variables were highly linearly related to each other. Perfect multicollinearity means one independent variable is a perfect linear function of the any other independent variable. Imperfect multicollinearity is a linear fictional relationship between two or more independent variables that is so strong that it can significantly affect the estimation of the coefficients of the variables. Multicollinearity will cause the variances and standard errors of the estimates to increase and the t-scores to decrease. If the r is high in absolute value, then the variables are quite correlated and multicollinearity is a potential problem. Multicollinearity is all about the linear relationship among the independent variables. If the variables are linearly related, a unit change in one of the variable coincides with a unit change in the other variable and hence we cannot determine the separate effects of both variables on the dependent variable. That is, when variables are highly correlated in a multiple regression analysis, it is difficult to identify the unique contribution of each variable in predicting the dependent variable because the highly correlated variables are predicting the same variance in

the dependent variable. But if their relationship is non-linear, a unit change in one variable coincides with a variable number of changes in the other variable. As per (Studenmund, 2011) sited by (Li & Zou, 2013), an absolute value of 0.80 was taken as a benchmark for multicollinearity and hence when the value exceeded 0.8, a multicollinearity became a series issue.

How to Detect Multicollinearity:

In order to detect the multicollinearity of the independent variables, the author has used two methods:

- One way to detect multicollinearity is by examining Tolerance and the Variance Inflation Factor (VIF)-the two multicollinearity diagnostic factors that can help us to identify multicollinearity.

Tolerance Value (1-R$^{2)}$: is a measure of multicollinearity where the variables tolerance is given by 1-R^2. A small tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation. The cutoff point suggested by authors is 0.1 where any tolerance value less than the cutoff point should be investigated further. Accordingly, the tolerance value of independent variables indicated under table 4.4 is greater than 0.1 indicating that there is no multicollinearity.

The Variance Inflation Factor (VIF)

The Variance Inflation Factor (VIF), which is defined by $1/1$-R^2, measures the impact of multicollinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is the reciprocal of tolerance value (1/Tolerance). It shows us how much the variance of the coefficient estimate is being inflated by multicollinearity. It is always greater than or equal to 1. The cutoff point to detect the presence of multicollinearity differs for researchers to researchers. As per Marquardt, (1970) sited on (Chang kua, 2010), the model will be seriously affected by multicollinearity when values of VIF exceed 10. But in weaker models, values above 2.5 may be a cause for concern. According to Alkhatib (2012), multicollinearity does not exist between independent variables when VIF values are less than 5.

In many statistics programs, the results are shown both as an individual R^2 value (distinct from the overall R^2 of the model) and a Variance Inflation Factor (VIF). When those R^2 and VIF values are high for any of the variables in the model, multicollinearity is probably an issue. When VIF is high there is high multicollinearity and instability of the B and beta coefficients. The VIF shows how much the variance of the coefficient estimate is being inflated by multicollinearity. For example, if the VIF for a variable were 9, its standard error would be three times as large as it would be if its VIF was 1. In such a case, the coefficient would have to be 3 times as large to be statistically significant.

Accordingly, the table below is produced in order to check the multicollinearity of the independent variables as well as to check whether the tolerance value and VIF fall within the range.

Table 4.4: Regression Results

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2.602	4.510		-.577	.566		
	CAR	.077	.025	.346	3.035	.004	.549	1.822
	DAR	-.029	.016	-.208	-1.843	.071	.563	1.776
	LAR	.015	.013	.217	1.158	.252	.204	4.898
	LATAR	.033	.009	.486	3.569	.001	.387	2.587
	LLPR	-.187	.033	-.596	-5.734	.000	.663	1.509

LOGD	.561	.389	.248	1.441	.155	.242	4.140

a. Dependent Variable: ROA

Source: SPSS Regression Output

As is indicated in the above table; the VIF of LAR & LLPR are suspected for multicollinearity as their values are above 2.5   In order to check the multicollinearity effect of VIF values suspected for multicllinearity (LOGD & LAR), making further analysis became mandatory.

- the other way of detecting multicollinearity was assessing the correlation coefficients of each paired independent variables and comparing it with the acceptable range.

Table 4.5: Correlation Matrix

Correlations		CAR	DAR	LAR	LATAR	LLPR	LOGD	ROA
CAR	Pearson Correlation	1	-.612**	-.182	-.059	-.244	-.017	.546**
DAR	Pearson Correlation	-.612**	1	.150	.000	.034	.113	-.379**
LAR	Pearson Correlation	-.182	.150	1	-.402**	.104	-.689**	-.305*
LATAR	Pearson Correlation	-.059	.000	-.402**	1	.432**	-.141	.086
LLPR	Pearson Correlation	-.244	.034	.104	.432**	1	-.360**	-.544**
LOGD	Pearson Correlation	-.017	.113	-.689**	-.141	-.360**	1	.215
ROA	Pearson Correlation	.546**	-.379**	-.305*	.086	-.544**	.215	1

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

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

Source: SPSS output,2015

Accordingly, the highest correlation result obtained was between LLPR & LATAR having an output result of 0.432 showing that there is no multicollinearity as it was far below the cut of point, 0.8. Thus the degree of correlation between each pair of explanatory variable was very low as compared with the cut of point (0.8).With this result, the author has conclude there is no

multicollinearity between the independent variables that will distort the strengths of the model and hence the independent variables have a great predicting power.

4.1.4 Homoscedasticity & Linearity of variables

Linearity

A multiple linear regression line assumes that the relationship between dependent and independent variables should be linear. The assumption is usually evaluated by visual inspection of the scatter plot. Violation of the assumption may result in understatement of the strengths of relationships between the variables. In order to check linearity of the independent and dependent variables, all of the variables were entered to SPSS software and a visual inspection of the variables showed that, there was a linear relationship of CAR, DAR, LAR, LLPR & LOG D with ROA while LATAR difficult to judge even though it seems somehow linear.

Homoscedasticity:

It is similar with homogeneity of variance. Homoscedasticity means that the variance of dependent variable for each value of the independent variables is constant. Violation of homogeneity of the variance will reduce the strengths of relationship between the variables. As a result, the range of variance for the dependent variable was uniform for each independent variable and hence the author concludes that there was no hetroscedasticity of variables that can result in reducing the strengths of the relationship.

4.1.5 Normality of Distribution

As per Osborne & Waters(2002), multiple regression assumes that variables have normal distributions. Non-normally distributed variables (highly skewed or kurtotic variables, or variables with substantial outliers) can distort relationships and significance tests. There were

several pieces of information that are useful in testing normality assumption: visual inspection of data plots, skewness, kurtosis, and P-P plots are some of them in which the author has used to test the normality of the research data.

Skewness is statistics used to measure degree of symmetry in a distribution while Kurtosis measures the shape of the distribution i.e it tells us how scores are concentrated in the center of the distribution. Distributions that have the same shape on both sides of the center are called symmetric. A symmetric distribution with only one peak is referred to as a normal distribution. The range for skewness and kurtosis is from -1 to +1

Table 4.6: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CAR	60	7.10	19.22	12.49	3.12	.586	.309	-.706	.608
DAR	60	67.67	83.62	76.05	4.92	-.164	.309	-1.400	.608
LAR	60	33.22	73.06	49.49	9.77	.573	.309	-.710	.608
LATAR	60	17.18	57.00	36.20	10.29	.274	.309	-.955	.608
LLPR	60	1.46	10.90	3.90	2.21	1.761	.309	3.002	.608
LOGD	60	8.94	10.24	9.65	.305	-.238	.309	-.536	.608
ROA	60	.34	4.02	2.76	.69	-1.340	.309	3.590	.608
Valid N (listwise)	60								

Source: SPSS output, 2015

Accordingly, as can be seen from the above normality distribution table, skewness and Kurtosis of LLPR together with kurtosis of DAR are out of the acceptable range (-1 to +1). But since the

sample size (number of observations) are 60 which is greater than 30, the Central Limit Theorem states that the sampling distribution of statistics will follow a normal distribution and the use of the statistical test with this variables are appropriate. The normality of the independent variables are also confirmed by drawing histogram as well as by P-P plots of regression as they are presented here below respectively.

Table 4.6 is also indicates the descriptive statistics for all variables. Accordingly, the minimum, maximum, mean and Standard deviations of ROA and the three independent as well as significant impact on profitability were described below:

The maximum and minimum value of ROA is 4.02 & 0.34 respectively with a mean of 2.76 unit showing that the most profitable bank has registered 4.02 unit profit per 1 unit of asset where as the least profitable bank registered 0.34 unit profit per 1 unit of asset.
DAR has the highest mean value among the variables used as dependent and independent with a maximum and minimum value 83.62 & 67.67 respectively while the standard deviation of the variable is 4.92

The mean of CAR of the sampled banks was 12.49 unit during the study period where as their standard deviation is 3.12 showing that there is a greater deviation of CAR between the sampled banks as the deviation between the mean is 3.12

LLPR of the sampled banks showed that; the banks had a minimum & maximum value of 1.46 and 10.9 respectively having a mean of 3.9 and standard deviation of 2.21.

The LATAR of the sampled banks had a mean of 36.2 while their maximum and minimum values are 57 & 17.18 respectively. This reveals that on average, the sampled banks have 36.2 unit of liquid asset per the available total.

Figure 4.2: Regression Standardized Residual
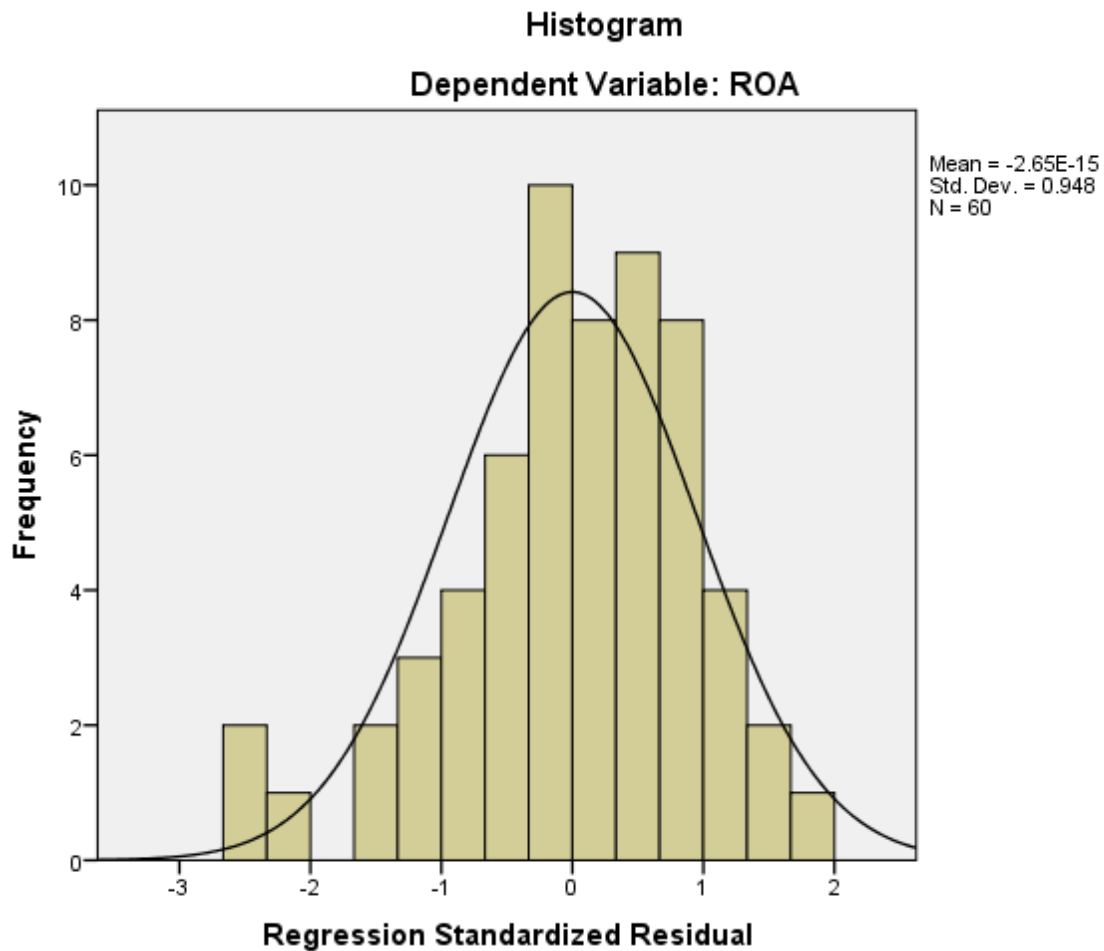
Source: SPSS Regression Output,2015

As can be seen from the above graph; the value of standard deviation and mean which approaches to 1 and 0 respectively implies that the residuals are normally distributed.

Figure 4.3: Normal P-P plot of Regression Standardized Residual
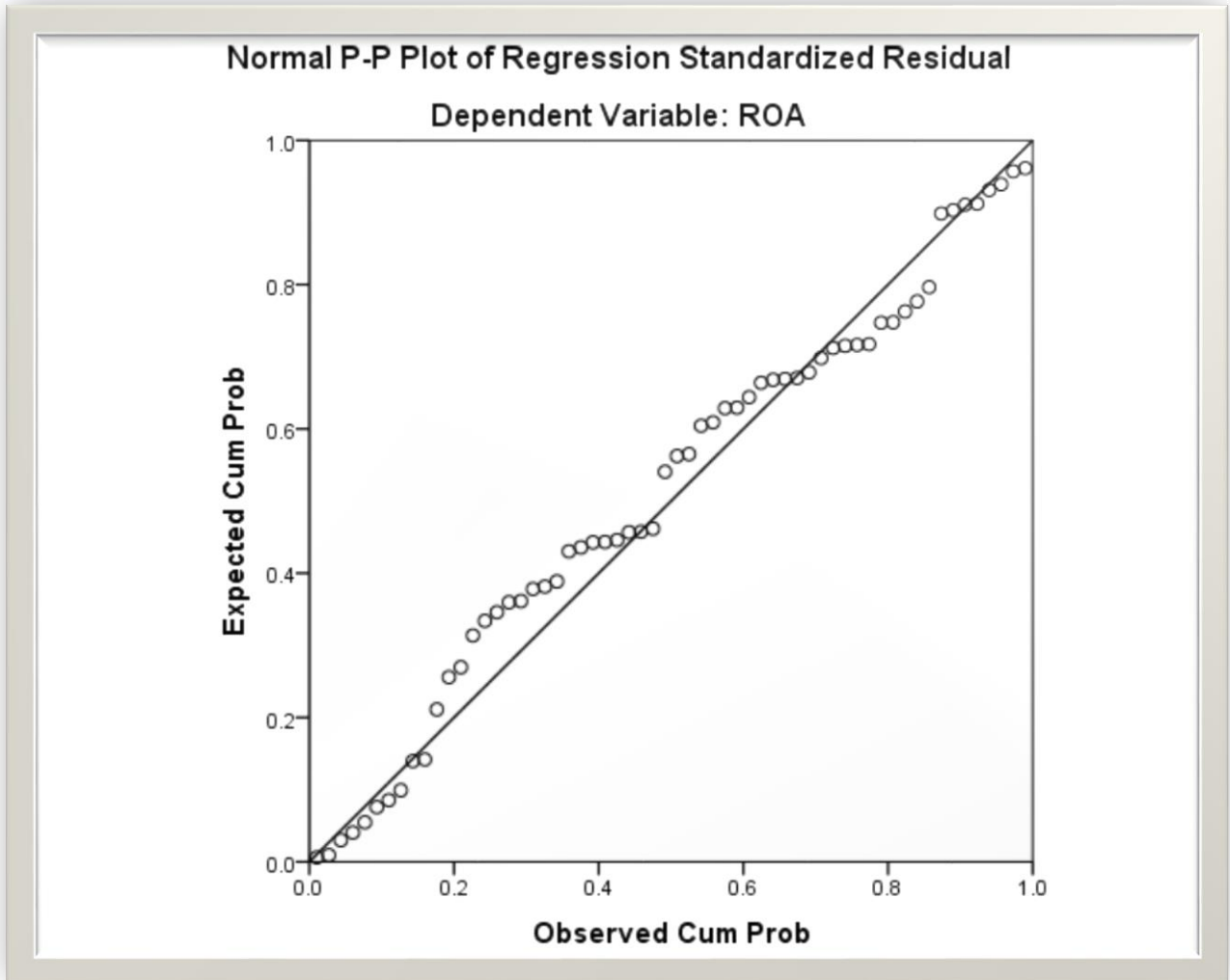
Source: SPSS regression output,2015

As can be observed from figure 2, most of the data are situated around the regression line and hence the residual error between the observed and expected cases of the regression line is similar showing that it is normally distributed.

4.1.6 Independence of Residuals

Multiple regressions assume that the residual are independent. Residuals are the prediction errors or differences between the actual score for a case and the score estimated by the regression equation. No serial correlation implies that the size of the residual for one case has no impact on the size of the residual for the next case.

The Durbin-Watson statistic was used to test for the presence of serial correlation among the residuals. The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals were not correlated if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50 - 2.50. Table three depicted above shows that, the value of Durbin Watson is 1.623 which is within the acceptable range which enabled the author for concluding that there was no serial correlation between the residuals.

4.2 Discussions of the Regression Result

This section presents explanation of each coefficient of independent variables with their implication comparing them with prior research results.

When we look the regression analysis and Analysis of Variance(ANOVA) in table 3 and table 2, respectively, it reveals that the explanatory power of the overall regression model is about 62.1% as evidenced by the R-square, where at the same time, the F-stat is 14.474 and is less than 5%, which is significant. This implies the acceptance of the model that "there exist an impact of credit risk management on profitability of commercial banks becomes realized. Thus, it is possible to conclude that 62.1% of the variation in the ROA can be explained by the combined effect of variations of explanatory variables. As per Kayaa & Pastory (2013), with reasonable judgments of R-square & adjusted R-square of above 50% have greater ability to influence the dependent variable, the predicting power of the model is said to be strong.

Operational Model: The research model used by the author to interpret the variables was presented as follows

ROA= -2.602 + 0.077CAR + 0.015LAR + 0.033LATAR + 0.561LogD - 0.187LLPR - 0.029DAR

The intercept of the model is -2.602 which is insignificant. It is a measure of ROA in the absence of credit risk variables implying that the private commercial banks were resulted in a loss of birr 2.602 million during the study period in the absence of the credit risk management variables or in the presence of other variables that are not explained in the research showing that how the variables used as an indicator of credit risk were essential for their profitability.

CAR: Observation of coefficient of capital adequacy ratio is 0.077 and it indicates that there is positive and statistically significant effect at 5% level of significant between dependent variable (return on assets) and independent variable (capital adequacy ratio). Holding other independent variables constant, an increase in one unit of CAR, ROA increase by 0.077 showing that there is a direct relationship between CAR and profitability of private commercial banks during the period. This is consistent with (Almazari, 2014), (Ogbuabor,2013), (Ayadi & Boujelbene,2012), (Charless & Kenneth,2013), (Afriye & Akotey,2012), (Onuonga,2014) & (Obamuyi, 2013) but the research result is contradictory with the research results of (Poudel, 2012), (Almumani,2013), (Tefera,2011), (Gizaw, 2015) where their empirical result shows that CAR is inversely related to performance of commercial banks. Most of the researchers who made research on similar subjects justify their reason for having a positive and significant impact on profitability in the following ways; a bank with high level of capital is assumed to handle any financial risks which come by with ease as compared to one with low levels of capital (Ogbuabor, 2013). As per Obamuyi (2013) the research result indicates that banks with larger capital are able to diversify their business operations by strengthening their ability to assume risk and attract funds at low cost, which will enhance their liquidity position which intern effect in an improvement of their lending, with positive effect on profitability. A bank with a sound capital position is able to pursue business opportunities more effectively and has more time and flexibility to deal with problems arising from unexpected losses, thus achieving increased profitability. It is also supported by Gul et al.(2011), saying that the higher is the CAR, the ability of a bank to absorb external shocks or unforeseen losses will increase and hence the lesser need fund from external source which further enabled to easily adhere to regulatory capital standards and the excess can be used for delivering loan. According to Njanike, (2009) as a bank's capital decreases, its motivation for actions towards survival will be higher and this leads to more dangerous risk taking operations. Capital Adequacy ratio is also very essential for the

solvency because the business of banking is risky due to the possibility that loans may not be paid back leading to financial losses to the bank. Banks are therefore required to have adequate capital, not only to remain solvent, but to avoid the failure of the financial system (Afriyie & Akotey, 2012). So commercial banks should be conscious while they are managing their capital in such a way that it should not affect their operation negatively.

LAR: Loan to asset ratio tells us the percentage of assets tied up by loans and it is taken as one credit risk measurement variable to assess the quality of loans (Javaid,et al,2011). Accordingly, Loan to Asset Ratio of the private commercial banks has positive but insignificant relationship with ROA. Its coefficient of variable indicates that 1 unit increase in LAR increases the ROA by 0.015 units. This implies that there is a direct relationship between the dependent variable (ROA) and the explanatory variable (LAR). The research result is in line with other researchers like:(Gul et al.,2011), (Erna & Lace,2013), (Ani et al.,2012), (Alumani,2013), (Onuonga,2014), (Chang Kuo,2010) , (Ayaydin & Karakaya,2014) & (Nigussie,2014) even though their result is significant. According to the research result, the larger the loan, the greater is the profitability of commercial banks as loans are the major sources of income for banks. But, as per (Acaravci & Calim, 2013), the coefficient of this ratio can also be negative as bad loans are expected to reduce profitability of banks because loans are relatively illiquid and subject for increasing default risk than other assets. The inverse relationship of LAR with ROA is supported by different authors like (Muritala & Taiwo, 2013) & (Charless & Kenneth, 2013). Bust most of the researchers made on the topic shows there is a direct relationship between loans and profitability of commercial banks. One of the main reasons mentioned during their empirical study were; loan service is the main service of banks and talent and experience are comprehensive and thus relay on loans for profit (Chang Kuo,2010). Moreover, the higher the loan ratio is associated with higher interest income which suggests that risk adverse shareholders seek larger earnings to compensate higher credit risk (Ayaydin & Karakaya, 2014). Under the basis of high risk and high returns approach, increasing the total loans to total assets ratio should have a positive influence on bank performance; however, if the risk management is ineffective, which causes the NPLs ratio to be too high and erodes profitability (Chang Kuo, 2010).

LATAR: Liquid asset to total assets of the private commercial banks, obtained from the empirical research data shows that there is a positive and significant relationship with ROA. The coefficient of variable reveals that 1unit increase in LATAR increases ROA by 0.033unit. Adebayo (2011) defined bank liquidity as the ability of the bank to ensure the availability of funds to meet financial commitments or maturing obligations at a reasonable price at all times. To this effect the survival of commercial banks depends greatly on how liquid they are since illiquidity being a sign of imminent distress which can easily erode the confidence of the public in the banking sector. Consequently, the banks operation reduces drastically and then results in reduction in profit (Ojong, 2014). Alper & Anbar (2011) revealed that insufficient liquidity is one of the main reasons for banks failure in other words the higher the ratio, the greater is the profitability of commercial banks. The argument of Alper & Anbar (2011) is also shared by (Berrios, 2013) saying that lower liquidity diminishes the flexibility of banks to full fill their cash obligations when due. Currently, NBE requires the private commercial banks to hold liquid assets 15% of their net current liability which together with reserve requirement and requirement of Bill purchase for every 27% of their loan disbursement with a maturity period of 5 year reduce the liquidity of the banks. In order to fulfill the requirements of the directive, Commercial banks are obliged to stop disbursement of loan to their customers until they collect equivalently for the disbursed loans which adversely affect their profitability.

LLPR: Observation of the empirical result indicates that there is an inverse and significant relationship between loan loss provision and profitability of the commercial banks. Holding the other independent variables constant, a 1 unit increase in loan loss provision ratio decreases ROA by 0.187 units. It is the strongest & significant of all independent variables. The negative relationship of LLPR with ROA is in line with (Adebayo, 2011), (Funso et al., 2012), (Mekasha, 2011),(Kaaya & Pastory,2013) & (Nigussie,2014). Loan provisioning is the determination or estimation of the amount of non-performing loans which are likely to be uncollectible and providing for those on the basis of aging and risk class category of the loans concerned (NBE,2008). It is a measure of capita as well as credit quality of banks. When banks invest their asset on a risky environment & lack the expertise to control their lending operation, it will probably result in higher loan loss provision in order to cover the risk (Mustafa et al., 2012). The major portions of banks operations are lending, they phase challenges of credit risk and hence

create a loan loss provision to lessen the risk. This affects profitability of the bank adversely because the provisions are deducted on annual bases from their income and when the amount of provision is high, it decreases the bank's ability to give a loan reducing their profitability. Loan loss provision matters because loss on loan is loss on asset from the balance sheet perspective however, on operating bases, because of the loan loss provision, cash flow remains available. The loan loss provision ensures that banks will have sufficient funds to provide services to its depositors. But the research result indicts that the ratio of loan loss provision is higher indicating that reduction of loan quality because of non-performing loans as higher level of non-performing loans are associated with high rates of provisioning (Hasan and Wall, 2004). Berrios (2013) explained that more risky lending practices lead banks to keep a higher provision or allowance for loan losses due to estimated uncollectible loans, relative to their net loans. For this reason, the higher the value of the allowance for loan losses as a percentage of net loans, the lower the prudence or greater likelihood of risk of loan losses. But the research result is contrary with (Charless & Kennet, 2013) & (Gizaw, 2014). Their justification for having direct relationship with profitability is that: Provisions are liability accounts formed as reserves for potential or actual losses emanating from bad loans. When provisions increase, the bank will be in a better position to withstand default on loans, and therefore has a better credit policy. As banks expect some loans do not perform as expected; a loan loss provision which is an expense that is reserved for defaulted loans will be held to cover all or portion of the loss. From the research result, it can be said that greater loan losses imply lower cash flows from loan principal and interest collections and hence banks are required to observe the quality of their loan carefully.

LOGD: The size of deposit was measured by natural logarithm of total deposit. This is consistent with Francis, (2013) where he has used the same logic to measure bank deposit growth in Sub Saharan Africa. Moreover, Tariq et al,(2014) has also used natural logarithm of deposit to measure deposits as size of banks. So basing those researchers as well as to make consistent with the other ratios in the model, the size of deposit was measured in terms of natural logarithm. Accordingly, the research result shows that the size of deposit has a direct but insignifant relation with ROA. Holding other explanatory variables constant, 1 unit increase in the size of deposit increase ROA by 0.561. As more deposits are collected, it can be a source of interest

income because the deposits can be converted to loan showing a positive impact on profitability (Erna & Lace, 2013). But the empirical result obtained by the SPSS output under table 4.4 shows that it is insignificant as the value is much higher than 0.05.

There is a possibility for profits of commercial banks to be negatively related with the size of deposit when the deposit collected is not converted to loan (Bentum, 2012). Other things being constant, Naceur (2003) sited by Francis (2013) explained that more deposits are transformed into loans for earning interest incomes from borrowers. The higher the interest rate margins, the higher the profits and banks are able to shield themselves against hazards of credit risk resulting from adverse selection and moral hazard.

DAR: The deposit to asset ratio was used as one variable to increase the contribution of deposit in credit risk management. Deposit to asset ratio is a variable measuring the amount of deposit relative to the size of the bank (Asset).The research result shows that DAR is inversely related to profitability of commercial banks. A 1 unit increase in DAR decreases ROA by 0.029. Implying that there is an inverse relationship of DAR with profitability during the period. The result is supported by Alper & Anbar (2011) who made an empirical study on the variable shows that deposit to asset ratio is negatively and insignificantly related to ROA. Bentum, (2012) justified the reason for inverse relationship of deposit with profitability of commercial banks by saying the ratio would be negatively related to the profits of the bank when the deposit collected is not converted to loan as fixed, term & time deposits attract interest from banks to depositors. Moreover, Mustafa et al., (2012) described that the negative association of DAR with profitability of banks was an indication of high competition in market due to which banks have to give higher interests on deposits to attract depositors. This ultimately reduces profits of banks. But contrary to the research result, as per Davydenko,(2010) cited by Acaravci & Calim,(2013); deposits are the main sources of funds which can be used to give loans showing a positive impact on profitability of the banks. Naceur & Goaied, (2001) has also agreed on the positive relationship of the variable with profits by revealing that: the banks which have high deposits compared to their assets and using those to strength the equity to enhance the performance of the bank are the better developing banks.

4.3 Discussion of Respondents Result

As is discussed under the introductory as well as methodology part of the study, the author has prepared structured interview questionnaire and conducted an interview with credit risk managers of each sampled banks in order to confirm with the regression results. Accordingly, the respondents' answers were summarized segregating them with each of the variables here below:

Size of Deposit and Deposit to Asset Ratio

Most of the respondent's answers regarding the variables were similarly responded in that; As the main roles of banks are transforming mobilized deposit into loan able fund, increasing the deposit amount and converting them in to more loan means banks are in a position to obtain more interest showing a positive and significant impact on the profits of the bank. As to deposit to asset ratio is concerned, most of the respondents have responded similarly saying that the ratio is directly related to profit of the bank because of the availability of deposit (opposed to the regression result). But the inverse relationship of the ratio with profits of the bank may be due to availability of bad loans that absorb interest but the bank is paying interest for the depositors, as per discussion made with them. They also added that as the deposits are not stable, frustration of converting them to loan may also the reason in order to fulfill depositors' withdrawal and hence it becomes cost for the bank. One of the interviewed officials of the bank has responded with regard to the ratio saying that as the ratio is higher and higher, the bank will pursue more risk with regard to credit and credit related activities and hence there can be an inverse relationship with profit. The other interviewed official for inverse relation of deposit to asset ratio with profit has related with purchase of bill and disbursement with 40:60 ratio (40% for short term and 60% long term).

Liquidity and capital adequacy ratios

Four of the sampled bank officials were responded the impacts of liquid asset to total assets of the bank with profit saying positive justifying that liquidity is a basic requirement for all of the

banks and maintaining sufficient amount of the ratio to meet the demands of their depositors is unquestionable. But the level of liquidity should be monitored in such a way that it should not be too high and too low but to the extent of NBE's requirement (15% of the liability) in the case of credit demand. The other interviewed officials have responded the significant & positive impacts of the ratio on profit saying that excess liquidity is inversely related to profits of the bank un less and otherwise most of the liquid assets of the bank are foreign assets where it has a positive impact on profits. The Capital Adequacy Ratio is concerned: there is no deviation among the respondents where their response is similar with the regression result as well as theoretical reviews. That is Capital is an indicator of the bank's ability in withstanding any default risk which will eventually lead to reputation risk unless properly dealt with. It is therefore true that a stronger capital adequacy is a sign of improved standing in the overall performance of the bank. Therefore the positive and significant effects of the ratio on the profits of the banks were acceptable.

Loan Loss Provision to Loan Ratio

As is the case for capital adequacy ratio, all of the respondents' answers were similar as well as with the regression result. Their justification for the inverse relationship of the variable with profits was: the increase in loan loss provision was resulted in the allocation of more money towards provision (expense) and this will ultimately reduce the banks performance. As banks are deducting the share holders capital in order to offset the loss arrived from NPL, their impact is negative. Accordingly, each of the interviewed officials has forwarded their views regarding the managements of such ratio as follows:

- Intensive discussion for the root causes of bad loans and working towards their remedies are issues or agenda in management meetings.
- Intensive discussion with the appropriate body like branch managers
- Proper follow up of the loan portfolio growth and composition together with regular monitoring of the situation by portfolio management committee
- Communicating each member of the concerned body through memo and circulars.
- Undertaking loan revenue function as transaction level and identify flows that trigger default risk and present to board for subsequent action.

- As it is a signal for the increments of NPL, every concerned body of the bank especially who are involved in loan processing are trying to minimize it at least to make it below the supervisors requirements and lowering the loan loss provision amount
- The mgt has to reduce high risk segments/portfolios from the loan segment.
- The officials were also responds the management of such loans by renegotiation and rescheduling to manage NPL ratio.

Impacts of directives issued by NBE on profits of the bank

With regard to capital reserve and liquidity ratio of the directive on profit of the bank is concerned, all respondents have answered the saying that the directives have positive impact on their profitability. Capital adequacy of 8% as suggested by Basel Committee and reduced requirement of liquidity from 20% to 15% will have a positive impact to the overall performance of the bank as the bank's strong capital adequacy and the availability of more funds for the bank's operation will eventually result in absorption of unexpected situation and hence safeguarding the financial sector and the interests of the public at large showing a positive impact on profits of the bank. As to the directive with regard to bill purchase is concerned, all respondents answer by saying that the NBE-bill purchases directive has a negative impact on profitability as it bears only 3% interest income but the bank is paying 5% interest for depositors. Even the invested amount of the bill is for long term while customers deposit is short term. This has reduced the amount of loan able fund available to borrowers and hence reduced the interest income to be generated resulting in reduction of profit. But one of the interviewed official of the bank, supporting with empirical research data, indicate that the bill seems contributed positively to performance via moping the excess liquidity of banks or to invest excess funds in earning government securities than the customary practice of holding liquid asset in zero earning accounts at the NBE.

Mechanisms of managing the quality of loans

The respondents' answers regarding the mechanisms of managing the quality of loans is summarized here below:
- The management of loan quality starts from credit origination and incorporates the entire process of loan analysis. Loans are supposed to be risky starting from the beginning up to

the end. A loan properly designed and analyzed was ultimately self liquidating. Most importantly, the integrity of all involved in loan processing and approving play a critical role in managing the quality of loan.

- Moreover, Setting limits on sector loans as well as loan approval limit for different organs, credit risk management and follow up of repayments, Granting loans on a sound and collectable bases, presenting dependable collateral, restructuring of loans before going the loan status to NPL, setting limits on aggregate loan, rigorous follow up of loans and timely measures, repayment scheduling, Prudent analysis, consulting as well as visiting customers in order to check whether the approved loan was used for the intended purpose or not, availability of competent personnel, availability of effective credit policy & procedures, Proper analysis as part of loan approval process with sound credit principles, efficient portfolio mgt for appropriate rating of respective risks, implementing credit mgt information systems. Above all sound loan policies and procedures and implementation in practice were the respondents' answers regarding the mechanisms of managing the quality of loans.

CHAPTER FIVE: Conclusions and Recommendations

This chapter was classified in to two parts; conclusion and recommendation. The conclusion part summarizes the whole picture of the research paper while the recommendation part was used to forward suggestions basing the research result.

5.1 Conclusions

➢ The study was generally aimed at to know the impact of credit risk management on profitability of six private commercial banks in Ethiopia specifically in order to know the relationship between each credit risk indicator variables with profitability. Panel data of sixty observations were selected using purposive sampling techniques covering from 2005 G.C to 2014 G.C and then analyzed using multiple linear regressions method. The secondary data were collected from the annual reports of each banks and from NBE while the primary data were collected from credit risk managers of the sampled banks through an interview. Six explanatory variables (LLPR, CAR, LATAR, DAR, LAR, & LOGD) were used as credit risk indicator regressing against one dependent variable (ROA) as profitable variable.

➢ Before the regression analysis was run, diagnostic tests were performed in order to check Linearity, Multicollinearity, Homoscedasticity, Independent of the residual & Normality of the variables. Accordingly, the test result shows that there was no correlation among the independent variables (showing no multicollinearity), the variables were normally distributed, there was no hetroscedasticity, there was no serial correlation among the residuals as the value of Durbin Watson Statistics is within the acceptable range even though it approaches to the minimum value. The model was significant (P<0.001) as the F value (14.474) is less than the significance level (0.05) showing again that there was a significant relationship between the credit risk variables and the profitable variable. The model is said to be strong as the R-value is 0.788 and hence the coefficient of determinant (R2) and adjusted R2 were 0.621& 0.578 respectively implying that 62.1% of the variations in the ROA is explained by the credit risk management variables. Once

the tests were completed, regression analysis was run using SPSS software and the implications of each credit risk variables on profitability is explained here below:

➤ The loan loss provision ratios of the sampled banks shows that it is the strongest of all credit risk variables in showing negative and significant impact on the profitability of the commercial banks. An increase of 1 unit in LLPR decreases ROA by 0.187 units. As the ratio is a signal for asset quality of the bank, the higher the ratio indicates the poorer is the quality and then the higher the risk of the loan portfolio will be. It shows the level of credit risk the banks are exposed and hence more profits are reduced due to the presence of more bad loans.

➤ CAR is the other credit risk management variable used for the study. The result reveals that CAR has a positive and significant impact on the profitability of the banks. A 1 unit increase in CAR increases ROA by 0.077 units. Indicating that well capitalized banks can be used as resources to absorb possible future losses and handle risk exposure of the share holders on assets as well as it is used to protect depositors and other lenders.

➤ The regression result on LATAR showed a positive and significant impact on the profitability of commercial banks. A 1 unit increase in LATAR increases ROA by 0.033 unit. It is a liquidity ratio used as credit risk measurement variable. The result indicates that the more liquid the banks are, their ability to serve their current obligation will increase. Currently, NBE requires commercial banks to hold 15% of their net current liability as a liquid asset to meet withdrawal demand of depositors and failing to meet results in liquidity risk.

➤ LOGD & LAR are the other two variables that show a positive but insignificant impact on profit of the commercial banks. 1 unit increase in the size of deposit (LOGD) results in an increment of ROA by 0.561 units. The result is bigger as compared with other explanatory variables having a positive impact on ROA. This has an advantage for the banks as deposits are the cheaper sources of funds and results in a positive impact on profit as far as the deposits are converted to credit. The LAR shows the portion of loans that is tied up by the asset and the result indicates that 1 unit increase in LAR results in an increment of ROA by 0.015 units. The larger the ratio, the bigger the profits of the banks will be as loans are the bigger sources of income for the commercial banks.

- The last variable used as credit risk indicator is DAR which shows an inverse relationship with profitability. That is 1 unit increase in DAR results in a decrement of ROA by 0.029 units. One possible reason for inverse relationship with profit could be due to as banks pay interest for the collected deposit and hence reduce their income as far as the deposit is not converted to loan.

- The author has also collected data from credit risk managers of each sampled banks through an interview in order to supplement the quantitative data obtained through regression analysis. In general, the respondent's answers were similar with the regression results especially, with regard to capital adequacy ratio, loan loss provision, size of deposit as well as impacts of bill purchase of the private commercial banks on profitability explaining there is enhancement in profitability by having more CAR and collecting more deposit while reduction in profit is expected by having more LLP and more bill purchase as draining the loan able fund is expected from the bill purchase. But with regard to liquidity, the respondents agree that their positive impact on profit is to the extent of the directive issued by NBE, to hold the minimum liquidity ratio, where as if it is beyond the level its impact will be negative. Accordingly, the quality of loans should be managed before going to bad status where rigorous follow up, restructuring, sound credit analysis, revising credit policy & procedure and strict follow up of the policy were some of the mechanism forwarded by the bank officials in order to manage the quality of loans.

- Most of the loans disbursed by the sampled banks, survey result of their financial report, were diversified which enable them reduce risks related to concentration.

- In general, the research result showed that credit risk management is major predictor of banks profitability as 62.1% of variations in ROA arrived from the credit risk variables and hence the better credit risk management variables are, the higher the profitability of the commercial banks would be.

5.2 Recommendations

Based on the findings of the research and conclusions, the author has recommended the following points:

- Capital adequacy, loan loss provision as well as liquidity were among the variables which are affecting the profits of the private commercial banks significantly. So bank personnel's especially managers should focus their main activities towards those variables in the way that should not affect the profits of the bank negatively. Moreover, the National Bank of Ethiopia, while issuing directives related to credit facility, should not affect the profits of the banks -the empirical result of liquidity shows positive and significant on profitability. But the loan disbursement of the private commercial banks are limited which partly is due to directives from NBE: Bill purchase on 27% of every disbursement even urging to disburse 40% of the approved loans for short term while the remaining 60% for medium and long term. This has definitely affected their illiquidity negatively hence NBE has to revise its directive with regard to bill purchase in a way that the directives should not affect the profits of the private banks.

- Private banks should hold back impact of loan quality (credit risk) by prudent lending through proper analysis together with regular monitoring, by updating credit policy, following up the financial status of the borrowers and gathering sufficient information about the borrowers since improper credit risk management increases loan loss provisions and hence reduce the banks' profitability.

- As the author of this research paper is based on the financial statement variables of internal factors, the author suggested further research to be carried out by including additional variables; like number of branches as non-financial bank specifics and inflation & GDP of the external factors that would affect profitability basing this research paper as a stepping stone. Even researchers can expand the number of observations(Samples) which will enable to make a conclusive on the topic of the research as well as it may enable to find the un explained portion of the regression model that is 37.9%.

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Interview Questions

St. Mary University
Faculty of Business

Dear Respondents

This is an interview questionnaire designed to collect data on "**The Impact of Credit Risk Management on Profitability of Private Commercial Banks in Ethiopia"** to be used as an input for partial fulfillment of Masters in Business Administration (MBA). The research paper is quantitative where regression analysis was run using SPSS soft ware. But in order to incorporate your ideas about the results, preparing interview question became mandatory considering that your genuine response is highly important for fulfilling the objective of the research paper.

I want to say thank you in advance for giving me your time. The information obtained from you is used only for academic purpose and is so confidential.

1) According to the regression result; size of deposit and loan to asset ratio were positively related to the profitability of your bank but the deposit to asset ratio was negatively related even though the impact is insignificant. What do you think is then their implications?

2) Liquidity ratio (liquid assets to total asset) and Capital adequacy ratio (capital to total asset) of regression analysis results were positive and had a significant impact on the profit of your bank. What is their implication then on your banks performance?

3) NBE has issued directives related to capital adequacy (capital reserves), liquidity and also Bill purchase up on 27% of every disbursed loan. How do you reflect the impacts of the directives on the profitability of your bank?

4) The regression result on your bank showed that the loan loss provision ratio (Loan loss provision to total asset) was negative and had significant impact on the profits of the bank. How would you plan to accommodate in your management meetings?

5) What are the mechanisms used for managing the quality of loans at your bank?

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of <u>Zenegnaw Abiy (PHD)</u>. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

<u>Nega Andegzer Betura</u>   _____

      Name   Signature

St. Mar's University, Addis Ababa   June, 2015

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for Examination with my approval as a University Advisor.

Zenegnaw Abiy (PHD)   _____

Advisor   Signature

St. Mary's University, Addis Ababa   June, 2015