ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATES STUDIES

THE IMPACT OF CREDIT RISK MANAGEMENT ON THE FINANCIAL PERFORMANCE OF ETHIOPIAN COMMERCIAL BANKS

BY

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ID NO: SGS/0145/2011A
DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION (MBA)

JULY, 2021
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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATES STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

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DECLARATION

I, Hiwot Anteneh, declare that this paper is prepared for the partial fulfilment of the requirements for Master of Business Administration (MBA) entitled "The Impact of Credit Risk Management on the Financial Performance of Ethiopian Commercial Banks." The paper is prepared with my own effort. I have made it independently with the guidance of my advisor.

_____ _____

Signature **Date**

This research project has been submitted for presentation with my approval as the University supervisor.

_____ _____

Signature **Date**

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DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION (MBA)

CERTIFICATE OF THESIS APPROVAL

This is to certify that the thesis entitled: **The Impact of Credit Risk Management on the Financial Performance of Ethiopian Commercial Banks** is prepared by **Hiwot Anteneh Mekonnen** and submitted in partial fulfilment of the requirements for the Degree of Master of Business Administration complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Name of Advisor	Signature	Date

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ACRONYMS

AQ	Asset Quality
CAMEL	Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity
CAR	Capital adequacy ratio
E	Earning
FIs	Financial Institutions
LDR	Loan Default Rate
LQ	Liquidity
NBE	National Bank of Ethiopia
NPL	Non-performing Loans
ME	Management Efficiency
POLC	Percentage of classified loans
ROA	Return on Asset
ROE	Return on Equity
SPSS	Statistical Package for Social Sciences
VIF	Variance inflation Factor

ABSTRACT

The objective of the study is to examine the impact of credit risk management on the financial performance of Ethiopian commercial banks and to establish the relationship between the credit risk management determinants of CAMEL indicator financial performance, which was proxy by return on asset, of Ethiopian commercial banks. In order to achieve the objective of the study, quantitative research approach is employed based on documentary analysis. A panel data from six selected commercial banks covering the five-year period (2016-2020) is analysed using SPSS. The study used descriptive statistics, correlation analysis and regression analysis to examine the relationships of the depended variable with independent variable. The findings of the study have been presented in the form of tables, graph and regression equation. The result of the regression analysis found that there is a strong relationship between the CAMEL components and financial performance of commercial banks. This has been realised with the r-squared value of 80%, it indicated that 80% of CAMEL components can explain the variability of financial performance. Except management efficiency, all components of CAMEL are significant at 5% significance level as the p-values are less than the standard confidence level of 5%. The research concluded that CAMEL model can be used as a representation for credit risk management and as proxy to measure financial performances of commercial banks in Ethiopia and credit risk management has significant effect on financial performance of commercial banks in Ethiopia. Finally, the study recommended that as CAMEL components are well fitted to explain the variability in financial performance of commercial banks in Ethiopia, banks are highly advised to use CAMEL framework as their regular measurement tools and the values of CAMEL components tell how well banks are doing.

Key Words: Credit Risk Management, CAMEL, Financial Performance, Bank

CHAPTER ONE
INTRODUCTION

Banks are firms that efficiently provide a wide range of financial services for profit. Not surprising, banks have an important role in the economy and the society as a whole. Their central role is to make the community's surplus of deposits and investments useful by lending it to people for various investment purposes (Rundassa & Batra, 2016). Economic development of any nation is largely depends upon its strong financial system (Ali & Dhiman, 2019). The very nature of the banking business is so sensitive because more than 85% of their liability is deposits from depositors. Banks use these deposits to generate credit for their borrowers, which in fact are a revenue generating activity for most banks. This credit creation process exposes the banks to high default risk which might led to financial distress including bankruptcy. All the same, beside other services, banks must create credit for their clients to make some money, grow and survive stiff competition at the market place (Saunders, 2005).

Because of the nature of their business, commercial banks are by default susceptible to the default risk by the counter party to settle its obligations as agreed. Lending is a business for commercial banks and it is the main source of risk-credit risk as well (Rundassa & Batra, 2016). Credit risk is the potential that a credit borrower or counter party fails to meet the obligations on agreed terms. There is always scope for the borrower to default from his commitments for one or the other reason resulting in crystallization of credit risk by the financial institution (Cibulskiene & Rumbauskaite, 2012).

Credit risk is one of the most significant risk that banks face, considering that granting loan is one of the main source of income in commercial banks (Alshatti, 2015). 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 it is closely associated with those risks (NBE, 2010).

Credit risk management is a structured approach of mitigating losses through risk assessment, developing strategies to manage it and mitigation of risk using managerial resources (Sarwadda,

2018). It is a very important to banks as it is an integral part of the loan process (Chali and Reddy, 2016). Effective credit risk management is the process of managing an institution's activities that create credit risk exposures, in a manner that significantly reduces the likelihood that such activities will affect negatively on a bank's earnings and capital. Credit risk is not restricted to a bank's loan portfolio, but can also exist in its other assets and activities. Likewise, such risk can exist in both a bank's on-balance sheet and its off-balance sheet accounts (NBE, 2010). Prudent credit risk assessment and instituting proper credit risk management techniques suitable with the environment in which a bank operates worth to caution the bank's risk (Rundassa & Batra, 2016).

Credit risk is one of the most important types of risks typically faced by Ethiopian commercial banks (Atakelt & Veni, 2015). The credit risk profile of Ethiopian commercial banks had been improving during 2003 to 2012 (Million, Matewos & Sujata, 2015). Tekalagn, Anwen and Bari (2015) also argued that credit risk profile for a financial transaction or commercial market has been improving in the last one decade and the ratio of the non-performing loan is sharply declining in recent past.

Establishing an appropriate credit risk environment and ensuring adequate controls over credit risk are the most influential variables on level of credit risk management practice of Ethiopian commercial banks. There is a significant level of variation the Basel's credit risk management principles and credit risk management practice of Ethiopian commercial banks (Atakelt & Veni, 2015). The high performance of commercial banks in Ethiopia is not related to the ability of banks to control their credit risk, but it is the diversity of their income sources by incorporating non-traditional banking services and control their overhead expenses (Tesfaye, 2014).

Banks provide the required capital to the economy in the form of loan and advances that might have some probability to fail to be paid back which is termed as credit risk, the chance that a loan will not be repaid timely. Hence, the main concern of the banks is credit risk and its management as credit or loans and advances are the main source of income for them. The Ethiopian banking sector is characterised by weak risk management function (NBE, 2009). The high level of provision held for non-performing loans and advances emanated from weak credit risk management function of the Ethiopian commercial banks is affecting the profitability of banks

(Tesfaye, 2014). Examining the impact of credit risk management on financial performance helps to manage credit risk with the desired level by considering its impact on performance.

1.1 Problem Statement

The aim of every banking institution is to operate profitably in order to maintain its stability and improve in growth and expansion. For the commercial banking, lending represents the heart of the industry. Loans are the dominant asset at most banks, generate the largest share of operating income, and represents the bank's greatest risk exposure (Bessis, 2003).

The share of non-performing loan in African banking system is higher than the developed economies and from other developing regions due to the weak risk management function in African banks (Brownbridge, 2015). In line with this, even risk management is a core activity of the banking business, poor risk management function and practice is observed in Ethiopian commercial banks (NBE, 2009; Atakelt & Veni, 2015).

Ethiopian banks are suffering from rising credit default with its reverse repercussions on banks' performance that requires increasing the effectiveness of credit risk management (Gudeta & Chali, 2016). Furthermore, the study conducted by Tesfaye (2014) revealed that the high level of provision held for poorly performing assets mainly loans and advances in Ethiopian commercial banks is affecting the profitability of banks and these is due to weak credit risk management function of the banks. However, recognizing the importance of credit risk management, there are a few local studies that have addressed the impact of credit risk management on the financial performance of Ethiopian commercial banks.

The CAMEL model is the most relevant to identify the determinants of effectiveness of credit risk management (Abdelrahim, 2013). CAMEL model could be used as a proxy for credit risk management (Fredrick, 2012). As far as the knowledge of the researcher, Rundassa and Batra (2016) and Kuhil (2018) are the only researchers that used CAMEL framework as a proxy for credit risk management to investigate its relationship with performance in Ethiopian commercial banks. However, there is inconsistency between the findings of the two studies. Rundassa and Batra (2016) noted that capital adequacy is insignificantly influence the return on asset of Ethiopian commercial banks. While, Kuhil (2018) argued that capital adequacy ratio has a

significant relationship with banks profitability and price performance. The current study shades the gap in the literature by studying the relationship between credit risk management and financial performance in Ethiopian commercial banks by using CAMEL framework as a proxy for credit risk management.

1.2 Research Objectives

The main objective of the research is to examine the impact of credit risk management on the financial performance of Ethiopian commercial banks.

The specific objectives of the study are:

1. To measure the impact of capital adequacy on the return on equity (ROE) of Ethiopian commercial banks.
2. To measure the impact of asset quality on the return on equity (ROE) of Ethiopian commercial banks.
3. To measure the impact of management efficiency on the return on equity (ROE) of Ethiopian commercial banks.
4. To measure the impact of bank's earning on the return on equity (ROE) of Ethiopian commercial banks.
5. To measure the impact of liquidity on the return on equity (ROE) of Ethiopian commercial banks.

1.3 Hypothesises

There are various credit risk management indicators such as CAMEL model, non-performing loan ratio (NPLR), Loan default rate (LDR), Loan Provision to non-performing loans and Percentage of classified loans (POCL) (Ali and Dhiman, 2019). The aim of the study is to examine the impact of credit risk management determinants by the use of CAMEL indicators on the financial performance of commercial Banks in Ethiopia. The CAMEL model is the most relevant to identify the determinants of effectiveness of credit risk management (Abdelrahim, 2013). The CAMEL framework is the widely used performance-monitoring tool by regulators to set variables and establish relationship with performance. The CAMEL rating system, which was introduced by the Basel and commonly accepted by regulators across countries including the

National Bank of Ethiopia (NBE), considers rating for its individual components: Capital Adequacy Asset Quality, Management Efficiency, Earning and Liquidity (Kuhil, 2018). The study conducted by Fredrick (2012) also revealed that CAMEL model could be used as a proxy for credit risk management.

In order to achieve the above listed objectives of the study, the researcher will test the hypothesises developed for this study. Following the footprints of previous researchers who conducted a research on similar topic of interest like Rundassa and Batra (2016) and Fredrick (2012), the following hypotheses are adopted and tested by the researcher.

1) **Ho1:** There is no statistically significant relationship between capital adequacy and return on equity (ROE) of commercial banks in Ethiopia.
2) **Ho2:** There is no statistically significant relationship between asset quality and the return on equity (ROE) of commercial banks in Ethiopia.
3) **Ho3:** There is no statistically significant relationship between management efficiency and return on equity (ROE) of commercial banks in Ethiopia.
4) **Ho4:** There is no statistically significant relationship between bank's earning and return on equity (ROE) of commercial banks in Ethiopia.
5) **Ho5:** There is no statistically significant relationship between liquidity and return on equity (ROE) of commercial banks in Ethiopia.

1.4 Scope of the Study

The level of credit risk is determined by bank specific variables and macro-economic variables (Million, Mohammed, & Wolde, 2019). The study considered only the bank specific credit risk management determinants, be using CAMEL components. There are various bank specific credit risk management indicators besides CAMEL framework, such as non-performing loan ratio (NPLR), Loan default rate (LDR), Loan Provision to non-performing loans and Percentage of classified loans (POCL) (Ali and Dhiman, 2019). This models are mainly required the NPLs related data of the commercial banks. The researcher can't use NPLs related data as a the proxy credit risk management since non-performing assets related data of Ethiopian commercial banks are not publicly available due to confidentiality.

1.5 Significance of the Study

The findings of the study will be important for different stakeholders, which have an interest in the Ethiopian banking sector. The study findings will help the management of different banks of Ethiopia to properly carryout risk management and know the relationship between credit risk management and the profitability of banks then it enables them to reduce losses and increase profitability. The regulatory body, National Bank of Ethiopia, will also obtain information on the relationship between credit risk management and it helps to develop policy papers and making policy regarding credits and other regulatory requirements of commercial banks in Ethiopia. It can also act as a source of literature for other scholars who intend to carry out further research on the effect of risk management on the profitability of banking institutions. The study will contribute to the general knowledge and form a basis for further research.

1.6 Limitation of the Study

This study is limited to investigating the relationship between credit risk management and performance of Ethiopian commercial banks. Thus, other financial risks are not discussed. In addition, the researcher only used return on equity as a performance measure and CAMEL components as a proxy credit risk management indicators to measure the performance of commercial banks, considered as a limitation for this particular study.

1.7 Organization of the Paper

The study consists of five chapters. The first chapter deals with introductory part which consists of background of the study, statement of the problem, objective of the research, scope of the study, significance of the study and limitation of the study. The second chapter covers the review of theoretical and empirical literature. The third presents the research methodology of the study which consists research design, data type and data source, sampling design and data analysis of the study. The fourth chapter illustrates the analysis and discussions of the results of the study. Finally, in the fifth chapter, based on the analysis summary of major findings, conclusions and recommendations has forward.

CHAPTER TWO
LITERATURE REVIEW

This chapter of the research is demonstrated the theoretical concepts related with credit risk and credit risk management. In addition, the empirical literature review part of the study also is discussed under this part of the study.

2.1. Introduction

Economic development of any nation largely depends upon its strong financial system. Banking industry is one of the biggest suppliers of credit in an economy. Banks as an intermediary role accelerates the economic growth by offering various financial services to the masses. Financial institutions are essentially significant for the economic development of any nation just like blood arteries are vital for the human beings since they put into force the financial possessions from those who are having it to those who are in need (Ali & Dhiman, 2019).

The efficient and excellent performance of the banking sector is a reflection of excellent financial stability in a country (Serwadda, 2018). Financial institutions (FIs) are very imperative in any economy. Their role is similar to that of blood arteries in the human body, because FIs pump financial resources for economic growth from the stocks to where they are required. Commercial banks are FIs and are key providers of financial information to the economy. They play even a most critical role to developing economies where borrowers have no access to capital markets. There is an indication that well-functioning commercial banks accelerate economic growth, while poorly functioning financial institutions hinder economic progress and intensify poverty (Afriyie et al, 2018).

A bank is usually defined as an institution whose current operations consist in granting loans and receiving deposits from the public. Therefore, as a core to their functions, banks need to mobilize deposits (in local and foreign currency) from the public so that they can lend the deposit to borrowers and foreign currency users and earn income in the process (Kuhil, 2018). Banks are germane to economic development through the financial service they provide. Their intermediation role can be said to be a catalyst for economic growth. The efficiency of effective performance of the banking industry over time is an index of financial stabilities and nation, the

extent to which banks extent credit to the public for productive activities accelerates the pace of a nation economic growth and its long-term sustainability (Mutava & Ali, 2016).

Banks are firms that efficiently provide a wide range of financial services for profit. Not surprising, banks have an important role in the economy and the society as a whole. Their central role is to make the community's surplus of deposits and investments useful by lending it to people for various investment purposes. The provision of deposit and loan products normally distinguishes banks' from other types of financial firms. Deposits are liabilities for banks, which must be managed if the bank is to maximise profit. Likewise, they manage the assets created by lending. Thus, the core activity is to act as intermediaries between depositors and borrowers. Other financial institutions, such as stockbrokers are also intermediaries between buyers and sellers of shares but it is the taking of deposits and the granting of loans that singles out a bank, though many offer other financial services (Rundassa & Batra, 2016). Banks are exposed to different types of risks, which affect the performance and activity of these banks, since the primary goal of the banking management is to maximize the shareholders' wealth. In achieving this goal, banks' managers should assess the cash flows and the assumed risks because of directing its financial resources in different areas of utilization (Alshatti, 2015).

2.2. Risks in Banking Business

Risk is the position where the actual return of an investment is different from expected return. Risk means the possibility of losing the original investment and the amount of interests accrued on it (Alshatti, 2015). Management of trade-off between risks and return is important for sustainable profitability of banks and other financial institutions (Million, Matewos & Sujata, 2015).

Risk management is an orderly process for the identification and assessment of pure loss exposure faced by an entity and the adoption of the most appropriate technique to cater for such exposure. It is coherent activities which are undertaken to minimize the negative impact of uncertainty regarding possible losses. From the forgone, the process of risk management includes identification, measurement, administration of selected techniques and control (Mutava & Ali, 2016).

The banking sector plays a crucial role in intermediating surplus units to the deficit units for the development and growth of the economy. It is an important source of financing for most businesses by maximizing the wealth of shareholders. However, while the sector plays those mentioned roles, it has so many risks that challenge the industry. In today's dynamic finance world supervisors and financial institutions have increased the focus on the importance of risk management. As a result, both public and private banks have engaged on upgrading their risk management and control systems for sustaining their better financial performance (Tassew & Hailu, 2019).

A bank raises funds by attracting deposits, borrowing on the interbank market or issuing debt instruments on the financial market. Essentially, the bank's main activity is to buy and sell financial products with different profit and risk characteristics. This transformation from supply to demand side is not without risk. Banks are exposed to credit, market, operational, interest rate and liquidity risk. The appropriate management of these risks is a key issue to reduce the earnings risk of the bank and to reduce the risk that the bank becomes insolvent and that depositors cannot be refunded (Rundassa & Batra, 2016).

Commercial banks are confronted with various risks that can be categorized into three groups; financial [with credit risk being a component], operational and strategic. These risks have diverse impacts on the performance of commercial banks (Afriyie et al, 2018). Financial institutions are exposed to a variety of risks among them; interest rate risk, foreign exchange risk, political risk, market risk, liquidity risk, operational risk and credit risk (Mutava& Ali, 2016). Tekalagn, Anwen and Bari (2015) also noted that banks' risks can be identified as six types: credit risk, liquidity risk, market risk, operational risk, reputation risk and legal risk. Each of these risks might generate harmfully influence the financial institution's probability, market value, liabilities and shareholder's equity. Among those risk, credit risk becomes a key influential factor for bank's performance. If risks in the banking sector are compared (credit, market, operational, liquidity) it is obvious that credit risk is the most important (Cibulskiene & Rumbauskaite, 2012).

2.3. Credit Risk

Lending has been, and still is, the backbone of banking business, and this is truer to emerging economies where capital markets are not yet well developed (Afriyie et al, 2018:1).Lending is one of the major activities of the banks for generating their revenue. However, lending business inherits default risk in case of non-fulfilment of commitments on the part of borrowers. This situation is termed as credit risk which attracts a lot of attention of the banking regulators to devise and review the stringent credit risk management practices so that the risk in lending activities could be controlled well in time at various stages or minimized to zero (Ali & Dhiman, 2019).

Credit risk is the risk that a financial institution will incur losses because the financial position of a borrower has deteriorated to the point that the value of an asset (including off-balance-sheet assets) is reduced or extinguished (Afriyie et al, 2018). Credit risk arises from the potential that a borrower or counterparty will fail to perform on an obligation (Tekalagn, Anwen & Bari, 2015). Credit risk is the risk that a borrower defaults and does not honour its obligation to service debt. It can occur when the counterpart is unable to pay or cannot pay on time (Alshatti, 2015).

Credit risk is one of the most important risks that should be dealt by policy makers to make sure the smooth operation of banks. Most of the financial crisis and economic downturn experienced by developed, developing and under-developed economies were caused by the banking sector instability. Credit risk circulates in the economy for a long period of time and finally became the cause of financial distress in the global economy. Banks are the backbone of most countries economic stability and smooth functioning; they might also be the source of economic crisis (Million, Mohammed, & Wolde, 2019).

Credit risk refers to the probability of loss due to a borrower's failure to make payments on any type of debt. Credit risk management, meanwhile, is the practice of mitigating those losses by understanding the adequacy of both a bank's capital and loan loss reserves at any given time. It is a process that has long been a challenge for financial institutions (Alshatti, 2015).

2.4. Credit Risk Management

Credit risk is one of the most significant risks that banks face, considering that granting credit is one of the main sources of income in commercial banks. Therefore, the management of the risk related to that credit affects the profitability of the banks (Alshatti, 2015). Banks hold little owners capital relative to the aggregate value of their assets, only a small percentage of total loans need to go bad to push a bank to the brink of failure. Management of credit risk is very important and central to the health of a bank and indeed the entire financial system (Tekalagn, Anwen & Bari, 2015). Banks strictly need to follow credit risk management practices for its survival and growth in the long-run and it helps them to sustain and increase the profitability through establishment of adequate and effective credit risk management policies, systems, environment which involves assessment, identification, monitoring, controlling of credit risk (Ali & Dhiman, 2019).

The global financial and economic crises of 2008 revitalized the need for enhancing credit risk management system and caused a surge of academic works and policy discussions across the developed and developing countries (Million, Mohammed & Wolde, 2019).Higher credit risk interrupts the monetary position of the banks so badly. Therefore, management of credit risk is most important practice that includes identifying, measuring, aggregating, controlling and continuity in monitoring the credit risk (Ali & Dhiman, 2019).

Credit risk is a critical risk area in banking business. If not effectively managed, it causes non-performing loans or bad assets, reduces a bank's profit margins, erodes capital and in extreme cases, may lead to bank failure. Credit risk management thus, has to be a vital banking practice, involving identification, measurement, aggregation, control and continuous monitoring of credit risk (Arora & Singh, 2014). Credit risk can be managed and minimized when formidable strategic approaches are implemented and adhered to. This implies that the strategy operated by a bank is an important consideration for a CRM system to be successful (Afriyie et al, 2018). It is essential to choose the tool of restraining and managing this risk correctly with the aim to minimize credit risk. Most of systemic banking crisis arise because of enormous portfolio of bad loans (Cibulskiene & Rumbauskaite, 2012).

Credit risk management is very important to banks as it is an integral part of the loan process. 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. The global financial crisis revealed the importance of banks' credit risk management in mitigating credit default risk as most banking problems worldwide have been caused by weaknesses in credit risk management. It includes high credit concentration, inadequate credit risk monitoring, ineffective credit risk measuring, poor credit risk rating, insufficient lending procedures, vulnerability to liquidity stresses and sensitivity to market fluctuations (Gudeta & Chali, 2016).

Credit risk management in financial institutions has become crucial for the survival and growth of these institutions. It is a structured approach of uncertainty management through risk assessment, development of strategies to manage it and mitigation of risk using managerial resources (Tekalagn, Anwen & Bari, 2015). 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. The failure in credit risk management is the main source of banking sector crises which possibly leads to economic failure experienced in the past including 2008 global financial crises (Million, Matewos & Sujata, 2015).

Credit risk management in a financial institution starts with the establishment of sound lending principles and an efficient framework for managing the risk. Adequately managing credit risk in financial institutions is critical for the survival and growth of the financial Institution. In the case of banks, the issue of credit risk is greater concern because of the higher levels of risks resulting from some of the characteristics of clients and business conditions that they find themselves in. On the other hand, it involves all means available for humans, or in particular, for a risk management entity. Credit risk management is very important to banks as it is an integral part of the loan process. 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 (Tekalagn, Anwen & Bari, 2015).

Credit risk is one of significant risks of banks by the nature of their activities. Through effective management of credit risk exposure banks not only support the viability and profitability of their

own business but also contribute to systemic stability and to an efficient allocation of capital in the economy (Alshatti, 2015).

2.5. Credit risk management and Bank performance

Risk management including trade transactions and returns are important for the sustainable profitability of financial sectors. Such as risks in banking operation credit risk which is relating to the substantial amount of income generating assets is found to be an important determinant of bank performance (Tekalagn, Anwen & Bari, 2015).

The financial performance of banks is expressed in terms of profitability and the profitability has no meaning except in the sense of an increase of net asset. Profitability is a company's ability to earn a reasonable profit on the owner's investment. The most popular profitability measurements are: Profit margin on sale, Return investment ratios, and return on equity (Mutava & Ali, 2016). The relationship between credit risk and banking sector performance is a controversial topic because we are most concern about poor banking performance that can lead to bank failure and crisis in the financial sector and thus have a devastating effect on the economic growth (Almekhalafi et al, 2016).

The main aim of the financial institutions is to yield returns and reducing the level of risks taken to achieve this ultimate objective. Effective management of credit risk leads to increase in the stability, profitability and optimal allocation of funds. Efficient and effective performance of banking sector supports financial stability of the country (Ali & Dhiman, 2019). Among risks in banking operation credit risk, which is related to substantial amount of income generating assets, is found to be important determinant of bank performance. Credit risk management capability of a bank remained a live academic discourse in finance and economics (Million, Matewos & Sujata, 2015).

Credit remains the core source of income for any bank across the globe though it exposes banks to credit risk (Serwadda, 2018). Credit risk management and its implications on banking sector performance have been fraught with difficulties and challenges that ultimately results to poor banking performance that incubate tendency and leading to unfavourable banking performance with unclear balance sheet, bank failure and crisis in the financial sector leading to a systemic

risk and thus have a negative functional ramification on economic growth. However, among the risks faced by banks credit risk plays a crucial role on banks performance since huge amount of banks revenue are from credit because of interest charged on credit. It is important to note that, interest rate charged is directly correlated with credit risk; high interest rate may increase the chances of credit default (Almekhalafi et al, 2016).

CAMEL analysis is used by the banks to analyse financial performance. Banks adopt CAMEL model analysis to assess various kinds of risks and managing them effectively. Banks use CAMEL rating for examining their financial health and performance (Ali & Dhiman, 2019). The CAMEL approach is the most commonly used method by bank regulators to monitor their performance, and its core aim is exploring factors under the control of the management on banking operational excellence. The CAMELS approach evaluates financial institutions such as banks based on SIX critical dimensions, which are Capital adequacy, Asset quality, Management, Earnings Liquidity, and Sensitivity to Market risk. Nevertheless, the sensitivity to market risk, which requires a well-developed financial market, is not commonly used in the developing countries studies (Kuhil, 2018).

2.6. Empirical Review

Credit risk management is a serious threat to the performance of banks. Consequently, various researchers have examined the effect of credit risk management on banks in varying dimensions in the Ethiopian context of as well as other different scopes. Atakelt and Veni (2015) assessed the credit risk management practice of Ethiopian commercial banks. The study revealed that credit risk, liquidity risk and operational risk are the three important types of risks the Ethiopian banks mostly faced. In addition, the three widely used risk identification method were identified and ranked as financial statement analysis, audit and physical inspection and internal communication. The study also exposed that there is a significant level of variation the Basel's Credit risk management principles and Credit risk management practice of Ethiopian commercial banks. Establishing an appropriate credit risk environment and ensuring adequate controls over credit risk were found to be the most influential variables on level of credit risk management practice of Ethiopian commercial banks. Finally, the study depicted that there is insignificant difference

between public and private commercial banks in all aspect of credit risk management principles and practice.

Rundassa and Batra (2016) investigated the impact of credit risk management on the financial performance of Ethiopian commercial banks. The result revealed that capital adequacy ratio, asset quality and earnings are insignificant to affect the financial performance (RoA) of Ethiopian commercial banks while management soundness and liquidity has a significant influence.

Million, Matewos and Sujata (2015) was also conducted a study on the relationship between credit risk measures and profitability performance of commercial banks in Ethiopia using descriptive statists and panel data regression model. The study showed that the credit risk profile of Ethiopian commercial banks had been improving during the study period (2003-2012). Furthermore, credit risk measures: non-performing loan, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia.

Tekalagn, Anwen and Bari (2015) also examined the impact of credit risk management on the performance of Ethiopian commercial banks by employing descriptive statists and panel data regression model. The study showed that credit risk profile for a financial transaction or commercial market has been improving in the last one decade and the ratio of the non-performing loan is sharply declining in recent past. The study also revealed that the capital adequacy ratio of commercial banks was higher than regulatory requirement at local and international level. The capital adequacy ratio (CAR) and non-performing loans to total loans (NPLR) of the banks are significantly negatively related with ROA and ROE and Loan provision to total loans ratio (LPTLR), Loan provision to non-performing loans ratio (LPNPLR) and Loan provision to total assets ratio (LPTAR) are significantly positively related with ROA and ROE.

Kuhil (2018) studied the effect of bank-specific factors on the profitability and price performance of Ethiopian commercial banks. The study showed that capital adequacy ratio (CAR) remains significant in all the models suggesting statistically significant relationship with bank profitability and price performances. In addition, asset quality has a positive and insignificant relationship with return on asset. Banks' capacity to ensure a diversified business mix remained a significant driver of profitability measure. The management's ability to control

costs has a positive impact RoA and RoE. Furthermore, banks' ability to maintain a reliable liquidity position witnessed a mixed result in the models: a negative and statistically significant relationship with the RoA and net interest margin (NIM) models and a positive statistically insignificant relationship with RoE.

Serwadda (2018) investigated the impact of credit risk management systems on the financial performance of commercial banks in Uganda. The study depicted that credit risk management impacts the performance of Ugandan commercial banks. The results portrayed that banks' performance are inversely influenced by non‐performing loans, which may expose them to large magnitudes of illiquidity and financial crisis. Almekhlafi et al (2016) also assessed the relationship between credit risk and commercial banks' performance in Yemen. The result of the study revealed non-performing loans erode banks profitability and prudent credit risk management positively correlates with profitability.

Alshatti (2015) also studied the effect of credit risk management on financial performance of the Jordanian commercial banks. The study described the non-performing loans/Gross loans ratio has a positive effect on profitability, while there is a negative effect of the Leverage ratio and Provision for Facilities loss/Net facilities ratio on the banks financial performance. Capital adequacy ratio, Credit interest/Credit facilities and the leverage ratio don't affect the profits of the Jordanian commercial banks as measured by ROE. The credit risk management indicators considered by the research (Non-performing loans/Gross loans, Provision for facilities loss/Net facilities and leverage ratio) have a significant effect on financial performance of the Jordanian commercial banks.

2.7. Summary of Literature Review

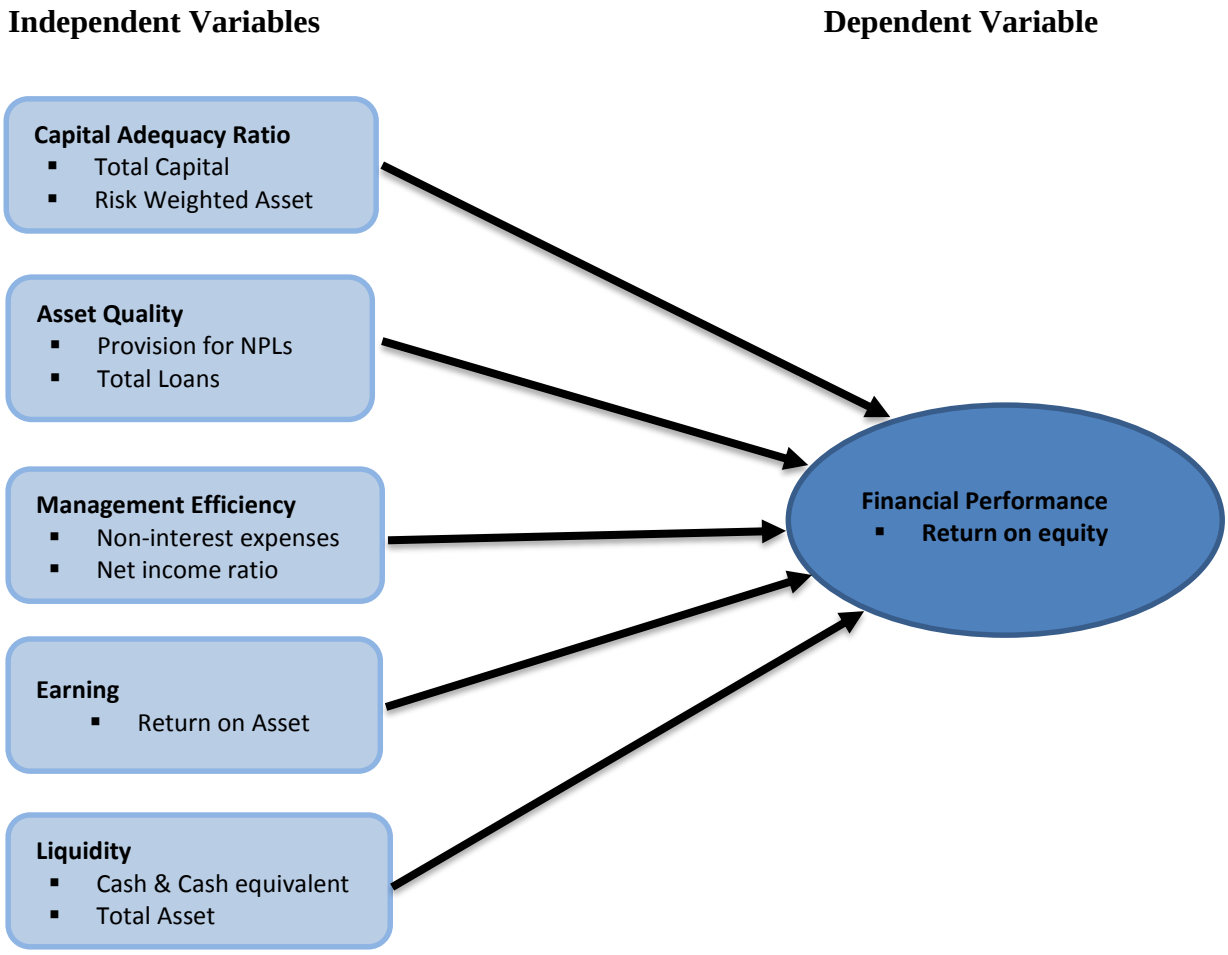
The theoretical and empirical analysis of the study revealed that credit risk management is very important for managing the loans and advances of banks. Most of the studies that tempted to analyze credit risk management and financial performance from the empirical review are inclined towards various methods and techniques of credit risk management used by various institutions. The studies described that credit risk management can contribute to the financial performance of banks but did not establish a clear effect between credit risk management and the

financial performance. It is only stated credit as a factor influencing financial performance. The CAMEL approach has been suggested as the best tool by which banks or supervisory bodies should use in order to investigating their credit risk exposure. These gaps identified in the literature review necessitating the Study.

2.8. Conceptual Framework

An illustration of the key variables and their relationship is diagrammatically shown in the figure below. The figure indicated the adopted conceptual framework of the study.

Figure 2.1 Conceptual Framework



CHAPTER THREE
RESEARCH METHODOLOGY

This part of the study presents the research design applied during the study, the type of data and data sources, the population and the sampling discretion of the study and the data analysis techniques used during the study.

3.1. Research Design

A research design is a framework or blueprint for conducting a research project. It details the procedures necessary for obtaining the information needed to structure or solve marketing research problems (Malhotra & Birks, 2007). Research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design (Creswell, 2014).

The researcher has employed quantitative research approach to achieve the general and specific objectives of the study. Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion (Creswell, 2009).

3.2. Data Type and Data Source

In this study, the researcher has employed quantitative research approach and secondary data is used for the study. The secondary data is collected from the financial statements of the selected banks' annual report. From those banks, the study obtained data by considering the proxy credit risk management indicators of CAMEL and performance proxy indicators of ROE of the period covered from 2016 to 2020.

3.3. Sampling design

Sampling frame is a representation of the elements of the target population that consists of a list or set of directions for identifying the target population (Malhotra & Birks, 2007). A sample is drawn to overcome the constraints of covering the entire population with the intent of generalizing the findings to the entire population.

A population study is a study of a group of individuals taken from the general population who share a common characteristic. The target population of this study is commercial banks in Ethiopia and the result obtained from this study can be as a reference for all the other banks, which are working in the industry. The total number of commercial banks operating in Ethiopia are seventeen. The researcher has employed purposive sampling and from the total 17 commercial banks, six commercial banks are selected. Sample banks are selected based on their asset size and based on the availability of annual report from the period of 2016 to 2020. Commercial Bank of Ethiopia the leader by its asset size in Ethiopian Baking industry. However, the annual report of Commercial Bank of Ethiopia for fiscal year 2029/20 is not available in the Bank's website and it is not considered for this study. Accordingly, the next six banks who have the highest asset size as of June 30, 2020, namely; Awash Bank, Dashen Bank, Bank of Abyssinia, Cooperative Bank of Oromia, United Bank and Nib International Bank, in descending order are selected for the study (NBE, 2020).

3.4. Data Analysis

In order to achieve the objective of the study, the study mainly concentrated on quantitative data analysis. To analyse, interpret and summarize the data, the researcher has employed a descriptive and inferential statistics. Descriptive statistics is used to show the trends of the banks' financial performance. The data that is collected from secondary sources is presented using tables and graphs.

The inferential statistics is used to make inference based on the findings regarding the effect and relationship between financial performance and credit risk management determinant variables. This is done by establishing a regression model to identify and measure the effect of credit risk

management on financial performance of Ethiopian commercial banks. The researcher used SPSS version 27 software package to conduct the data analysis part of the study.

Multiple regression of financial performance against credit risk management was applied to establish the relationship between variables. The model considers financial performance of private commercial banks as dependent variable while the independent variable is credit risk management. The dependent variable (financial performance) was measured by Return on Equity (ROE), whereas the independent variables were the CAMEL components. Capital Adequacy was measured by the ratio of Capital (regulatory capital) to Total Risk Weighted Assets (TRWA), whereas Asset Quality (AQ) was measured by loan loss provision to total loans. Management Efficiency (ME) was measured by the Non-Interest Expense to Net Income, while Earnings (E) was measured by the Return on Asset (ROA) and Liquidity was measured by the Cash and Cash Deposits with other banks and National Bank of Ethiopia to Total Assets.

The analysis model equation is represented in the regression model as follows:

$$Y=\beta_0+ \beta_1 X_1+ \beta_2 X_2+ \beta_3 X_3+ \beta_4 X_4+ \beta_5 X_5+\epsilon$$

Where: Y = Dependent Variable

β_0 = Constant term

X_1 = Capital Adequacy

X_2 = Asset Quality

X_3 = Management Efficiency

X_4 = Earnings

X_5 = Liquidity

The significance of the analytical model was tested by the use of SPSS version 27. A regression analysis was done to find out the relationship between credit risk management and financial performance.

3.5. Components of CAMEL Rating System

3.5.1 Capital Adequacy

The dimension of capital adequacy is an important factor to help the bank in understanding the shock attractive capability during risk. In this study, capital adequacy is measured by using the equity to total risk weighted asset ratio (Vong & Chan, 2009). That means, capital adequacy enables a bank to meet any financial unexpected condition due to FX risk, credit risk, market risk, interest rate risk. Capital adequacy protects the interest of depositors of a bank.

3.5.2 Asset Quality

The dimension of asset quality is an important factor to help the bank in understanding the risk on the exposure of the debtors. In this paper, this parameter is measured by the provision for loan loss reserve to total loan ratio (Merchant, 2012). This ratio assures to cover the bad and doubtful loans of the bank. This parameter will benefit the bank in understanding the amount of funds that have been reserved by the banks in the event of bad investments. All banks maintain loan loss allowances to cover estimated potential losses in their loan portfolios. As the aftereffects of the subprime crisis have subsided, the allowance for loan losses for the industry have exhibited a declining trend. As the asset quality improves, banks are setting aside less allowance for potential defaults. Improved asset quality means fewer charge-offs and higher profits for banks. The banking sector's asset quality indicators are generally moving in the right direction.

3.5.3 Management Efficiency

Management efficiency reflects the management soundness of a bank, the existence of well-trained staffs, having clean and logical strategy, management experiences and well-regulated environment. The management acts as a safeguard to operate the bank in a smooth and decent manner and is called excellence management or skilful management, whenever it controls its cost and increases productivity, ultimately achieving higher profits. Here, this parameter is measured by non-interest expenses to net income ratio. Since a bank's operating expenses are in the numerator and its revenue is in the denominator, a lower efficiency ratio means that a bank is operating better. It is believed that a ratio of **50%** is the maximum optimal efficiency ratio (Paramasivan & Subramanin, 2008).

3.5.4 Earnings

Earning is an important parameter to measure the financial performance of an organization. Earning quality mainly measures the profitability and productivity of the bank, explains the growth and sustainability of future earnings capacity (Paramasivan & Subramanin, 2008). In the same way, bank depends on its earning to perform the activities like funding dividends, maintaining adequate capital levels, providing for opportunities for investment for bank to grow, strategies for engaging in new activities and maintaining the competitive outlook. Here earning is determined by return on asset.

3.5.5 Liquidity

Liquidity ratio in a bank measures the ability to pay its current obligations (Hazzi & Kilani, 2013). For having sound banking operations, it needs to have liquidity solvency. If any bank faces liquidity crisis, bank cannot meet up its short-term obligations. Liquidity crisis seems to be a curse to the image of banks. Therefore, it is a prime concern to banks. Cash and investments are the most liquid assets of a bank. An adequate liquidity position means a situation, where institution can obtain sufficient funds, either by rising liabilities or by converting its assets quickly at a reasonable cost. Here, liquidity performance is measured by cash and cash deposits in other banks and NBE to total asset ratio.

CHAPTER FOUR
RESULT AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis part of the research. From the target population of the study, five private commercial banks, which have highest asset size as at June 30, 2020, are selected for the purpose of this study. The data, financial statements of the sample commercial banks, was collected from annual report's of the respective commercial banks from their official website.

The financial statements contained of financial performance represented by return on equity (ROE) and CAMEL Model (Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity). Capital adequacy was measured by total capital (TC) to total risk weighted asset ratio (TRWA), asset quality (non-performing loans to total loans and advances ratio), management efficiency (non-interest expense to net income ratio), earning (profit after tax to total asset ratio), and liquidity (cash and cash deposits by other banks and NBE to total asset ratio). The research applied both descriptive and inferential statistics to analyse the data.

4.2 Descriptive Statistics of the data

The descriptive statistics of the dependent and independent variables is illustrated in the table below. The dependent variable is financial performance measured by ROE. The independent variables are Capital Adequacy Ratio (CAR), Asset quality (AQ), Management efficiency (ME), Earning (E) and Liquidity (LQ). The following table 4.1 clearly presented the descriptive statistics of the study variables of commercial banks in Ethiopian from 2016 to 2020.

Table 4.1 Descriptive statistics of Dependent and Independent variables

	Mean	Min.	Max.	Std. Deviation	Observations
ROE	17.5777	3.03	25.24	4.16785	30
CAR	15.1873	8.43	21.28	3.35016	30
AQ	1.7447	.22	9.93	1.76621	30
ME	59.8433	42.88	93.21	9.89341	30
E	2.0443	.35	3.26	.55491	30
LQ	15.6750	10.72	25.69	3.70931	30

Source: Author's Compilation from Banks' Financial Statements- analysed through SPSS

Return on Equity (ROE) is measured by the ratio of net-profit after tax to total capital ranges from 3.03 to 25.24%. It has a mean value of 17.58% showing relatively the lowest deviation of 4.17% from its mean value. This shows that commercial banks in Ethiopia earn 17.58% return averagely from their equity per year. Return on equity between 15% and 20% are generally considered good (Richard, 2015; Investing.com, 2014; Boudless.com, 2021), the average commercial banks mean value of 17.58% return on equity indicates that the Ethiopian banking industry is the sector that with a good profit. Nevertheless, literature of Guruswamy and Hedo (2013) argued that the Ethiopian banking sector is highly characterised by low competition and the higher level of ROE in Ethiopian Commercial banks is resulted from low competition within the industry.

Capital Adequacy Ratio (CAR) is measured by the ratio of total capital to risk weighted assets having a mean value of 15.19% and standard deviation of 3.35% with a minimum and maximum value of 8.43% and 21.28%, respectively. Capital adequacy ratio refers to the amount of equity and other reserves, which the bank holds its risky assets. The purpose of this reserve is to protect the depositor from any unexpected loss. The BASEL accord II requires banks to hold capital adequacy at least 8% of their risky assets (Getahun, Anwen & Bari, 2015). The National Bank of Ethiopia (NBE), the regulatory organ of the Ethiopian financial sector, has also set 8% minimum requirement CAR similar with BASEL accord II requirements. The mean value of 15.19% indicated that the average CAR of the Ethiopian Banks is well above the limit set by the NBE as well as the standard set by BASEL accord II. Furthermore, the minimum value of 8.43% indicates that the CAR of the sample commercial banks in Ethiopia during the study period is above the minimum requirement set by the NBE. This indicates that Ethiopian commercial banks have adequate capital to absorb losses without a bank being required to cease trading and this may be due to strict regulation of NBE on the banks' CAR level. The higher CAR indicates that Ethiopian commercial banks have good financial strength, they can protect the interest of the depositors, and it promote the stability and efficiency of financial systems.

Asset quality is measured by ratio of loan loss provision to total loans and advances (LLPTLR). The result of the data analysis of the study shows that the LLPTLR of the Ethiopian commercial banking sector have a mean value of 1.74% with standard deviation of 1.77%. The maximum LLPTLR value is 9.93%, which is registered in year 2016 by Cooperative Bank of Oromia and

the minimum value of 0.22%. The standard deviation of 1.77% also indicate that there is no that much variation among banks credit risk exposures. Regarding the measurement of the Basel accord, banks that have average less than 1.25% is said to be the asset quality of the industry is in the good situation (Basel, 2006). All the banks in this study have an average of 1.77%, which is above the threshold set by the standard. However, this indicates that the asset quality of Ethiopian commercial banks is weak compared with the standard. This may resulted from the higher level of non-performing loans in Ethiopian commercial banks and the provision which required for those non-performing loans.

Management efficiency is measured by non-interest expenses to net income ratio, which lower efficiency ratio means that a bank is operating better. The mean value of the efficiency ratio is 59.84% with the standard deviation of 9.89%. It is believed that a ratio of 50% is the maximum optimal efficiency ratio (Paramasivan & Subramanin, 2008). The mean efficiency ratio of the Ethiopian banking sector is 59.84%, which is beyond the 50% maximum optimal efficiency ratio. This indicates that the management efficiency of the banking sector is poor compared with the expected maximum optimal efficiency ratio and the management is week in managing the non-interest expenses. The minimum and maximum management efficiency ratio is 42.88% and 93.21%, respectively. This shows that some Ethiopian commercial banks are at worst condition in managing their non-interest expense and there is a significant difference among banks in their management efficiency.

The earning is determined by return on asset (ROA) with a mean value of 2.04% with standard deviation of 0.55%. The minimum and maximum value of ROA is 0.35% and 3.26%, respectively. The Basel accord states if banks returns on asset greater than or equal to 1% is said to banks performance is in good position. The banks under this study has an average score of 2.04%, which is greater than the minimum level set by the accord. In addition, Olweny and Shipo (2011) state that if banking industry scored above 1.5% the banks is said to be strong, the mean value of the ROA of banks under study also above the 1.5% level and it is possible the earning of the Ethiopian banking sector is strong.

The liquidity level of a bank is measured by the ratio of cash and cash equivalents to total asset. The mean value of liquidity ratio is 15.68% indicating the average liquidity level of the

Ethiopian commercial banks over the study period is within the minimum 15% regulatory limit set by NBE. The maximum liquidity ratio is 25.69%, which is registered by Awash Bank in the year 2019. The minimum liquidity ratio is 10.72%, which is registered by United Bank in the year 2019 and which was far below the 15% regulatory limit set by NBE. This indicates that Ethiopian commercial banks are strict to comply the liquidity regulatory limit set by the NBE. In addition, the NBE has been collected weekly liquidity level of banks periodically and all banks are strictly required to report the same to NBE, which shows that strong follow-up of NBE on banks liquidity, helps banks to maintain a better liquidity position.

4.3 Correlation analysis

To test one of the key assumption of regression model, the study sought to establish and test the linearity between dependent and independent variables. Correlation measures the degree of linear association between variables. Pearson correlation matrix is used to test the linearity of variable. The dataset for dependent and independent variables were used for the five-year period (2016-2020). The table below 4.2 shows the correlation matrix among dependent and independent variables.

Table 4.2: Descriptive statistics of Dependent and Independent variables

		ROE	CAR	AQ	ME	Earning	LQ
ROE	Pearson Correlation	1					
	Sig. (2-tailed)						
CAR	Pearson Correlation	.016	1				
	Sig. (2-tailed)	.935					
AQ	Pearson Correlation	-.577**	-.394*	1			
	Sig. (2-tailed)	.001	.031				
ME	Pearson Correlation	-.704**	-.439**	.748**	1		
	Sig. (2-tailed)	.000	.015	.000			
E	Pearson Correlation	.801**	.371*	-.650**	-.913**	1	
	Sig. (2-tailed)	.000	.018	.000	.000		
LQ	Pearson Correlation	.157	-.016	.345	-.026	.069	1
	Sig. (2-tailed)	.408	.931	.062	.890	.717	

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

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

Source: Author's Compilation from Banks' Financial Statements- analysed through SPSS

Pearson correlation is used to analyse the correlations between the independent variables and dependent variables. The above table 4.2 revealed the correlations matrix of the CAMEL indicators to financial performance.

As shown from the above table 4.2, CAR has a value of correlation coefficient (r) = 0.116 with p-value of 0.935. This revealed that CAR has insignificant positive relationship with Ethiopian commercial banks financial performance measured by return on equity (ROE). The p-value of capital adequacy shows that it is statistically insignificant. Asset quality has a value of correlation coefficient (r) = -0.577 and p-value = 0.001. This indicated that asset quality has a strong negative relationship with financial performance of Ethiopian commercial banks.

Management Efficiency (ME) with correlation coefficient (r) = -0.704 and p-value of 0.000 has a strong negative relationship with financial performance of Ethiopian commercial banks. The p-value and coefficient of management efficiency indicated that a well-managed bank would have a better financial performance. As the p-value indicated, Management efficiency significantly affects the financial performance of Ethiopian commercial banks. The result of Pearson Correlation indicated that Earning (E) is strongly related with the financial performance of Ethiopian commercial banks with a correlation coefficient (r) = 0.801 with p-value = 0.000. This shows that Earnings is significantly affects the financial performance of Ethiopian commercial banks.

Liquidity with correlation coefficients (r) = 0.157 with p-value = 0.408 has insignificant positive relationship with financial performance of Ethiopian commercial banks. This indicates that liquidity is insignificant to measure the impact of financial performance of Ethiopian commercial banks.

In overall, as showed in the above table 4.2, CAR, and Earning and Liquidity are positively correlated with ROE, whereas asset quality and management efficiency are negatively correlated with ROE. Besides, earning is significantly correlated with ROE; asset quality and management efficiency have medium correlation with ROE and CAR and liquidity are insignificantly correlated with ROE.

In order to further determine the linearity of the model, the researcher ran linear regression and it is discussed hereunder.

4.4 Regression Analysis Model

In the following analysis, a multivariate model was applied to find out the effect of credit risk management on the financial performance of commercial banks in Ethiopia. A liner regression model of commercial bank financial performance represented by return on equity versus credit risk management represented by CAMEL factors were applied to examine the relationships.

Table 4.3: Variables that explain credit risk management in Ethiopian banking system

Symbol	Explanation	Expected sign
CAR	Capital adequacy ratio	(+)
AQ	Loan loss provision to total loans and advances ratio	(-)
ME	Non-interest expense to net income ratio	(-)
E	Profit after tax to total asset	(+)
LQ	Cash and cash equivalent to total asset	(+)

The relationships model was represented by the following liner equation:

$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon$

Whereby: Y = Financial performance represented by Return on Equity (ROE)

α = Constant term

β = Beta coefficient

X1 = Capital adequacy ration

X2 = Asset Quality

X3 = Management Efficiency

X4 = Earnings

X5 = Liquidity Ratio

Table 4.4: Overall Model Adequacy Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.894[a]	.800	.758	2.05110	1.678

a. Predictors: (Constant), CAR, AQ, ME, E, LQ

b. Dependent variable: Return on equity

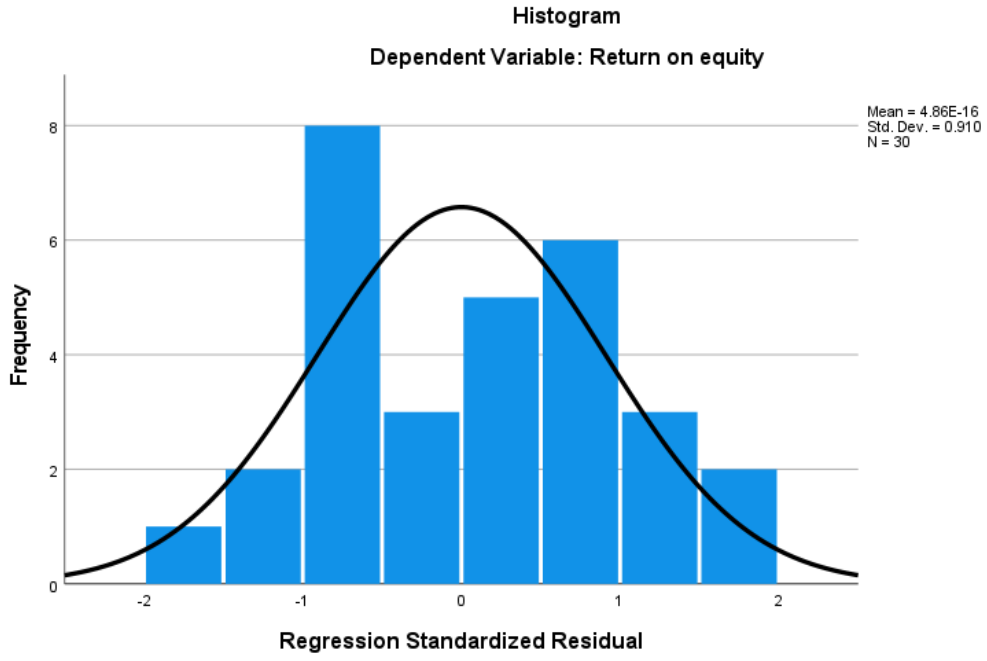
The above table 4.4 shows that the output of the overall model fitness. The R coefficient of .894 shows that the predictors of the model which are Capital adequacy Ratio, Asset Quality, Management Efficiency, earnings and liquidity ratios have a correction of 89.4% with dependent variable of return on equity. The value of r squared also indicates that 80% of the variability of return on equity can be explained by CAMEL components.

4.4.1 Autocorrelation Test

The value of DW test in the above table 4.2 illustrated that the assumption of no autocorrelation will not be rejected, as it is 1.678, which approaches to two.

4.4.2 Normality Test

Graph 4.1- Histogram for Normality Test



One of the assumption of regression analysis is the assumption of normal distribution of the data under the study. To check its normality, the researcher took histogram using SPSS. The SPSS result is presented below. As indicated in the graph 4.1, the data under the study is systematically and it is normally distributed. Hence, the assumption of Normal distribution will not be rejected.

4.4.3 Multicollinearity Test

The other assumption of liner regression is the test for multicollinearity. In a regression analysis, the presence of multicollinearity implies that one is using redundant information in the model, which can easily lead to unstable regression coefficient estimates (Raykov & Marcoulides, 2006). The study used Tolerance and a Variance Inflation factor (VIF) to observe the presence of multicollinearity among the variables. The below Table 4.5 illustrates the result of Tolerance and VIF test.

Table 4.5. Test for Multicollinearity

Collinearity Statistics			
Model		**Tolerance**	**VIF**
1	Capital adequacy ratio	.793	1.262
	Asset quality	.303	3.299
	Management efficiency	.116	8.621
	Earning	.163	6.122
	Liquidity	.695	1.440

As shown in the above table 4.5, the values of Tolerance and VIF (Variance Inflation Factor) are binding for not rejecting the null hypothesis no multicollinearity. As the value of VIF is less than 10 and Tolerance is greater than 0.1 and thus there is multicollinearity among the independent variables.

4.5 Regression analysis

The results of all the tables and the graph above indicated that it is feasible to use the liner regression model to test the effect of estimated model and test the effect of credit risk

management in the financial performance of Ethiopian commercial banks. Below is the result of the coefficients which is ran using SPSS.

Table 4.6 Regression Coefficient[a]

Model 1	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.530	10.383		0.319	0.960		
CAR	-0.445	0.128	-0.358	-3.487	0.002	0.793	1.262
AQ	-1.034	0.392	-0.438	-2.639	0.014	0.303	3.299
ME	0.124	0.113	0.295	1.098	0.283	0.116	8.621
E	6.764	1.698	0.901	3.983	0.001	0.163	6.122
LQ	0.278	0.123	0.248	2.259	0.033	0.695	1.440

a. Dependent Variable: Return on equity

The established regression equation based on the SPSS out was:

ROE = 0.530 + -0.445*CAR + -1.034*AQ + 0.124 * ME + 6.764*E + 0.278*LQ

The above table 4.6 indicates that the regression coefficient for the model and it tells that financial performance measured by ROE will be 0.53 holding capital adequacy, asset quality, management efficiency, earnings and liquidity constant.

The Table 4.6 illustrates that a unit increase in capital adequacy will lead to a 0.445 decrease in financial performance (RoE) and a unit increase in asset quality (loan loss provision to total loan ratio) will lead to 1.034 decrease in financial performance (RoE). A unit increase in management efficiency will lead to 0.124 increase in financial performance and a unit increase in earnings will lead to a 6.764 increase in financial performance. Similarly, a unit increase in liquidity would cause a 0.278 decrease in financial performance (RoE). As per the result of the regression coefficient, capital adequacy, asset quality, earnings and liquidity are statistically significant as their p-value is less than 0.05. However, the value of management efficiency is not statistically significant. The p-value of management efficiency and liquidity is 0.283, which are greater than 0.05. The result of r square is indicated that 80% of CAMEL components can explain the

variability of financial performance. Except management efficiency all components of CAMEL are significant at 5% significance level as the p-values are less than the standard confidence level. Thus, the null hypothesis of banks which use the CAMEL rating system can better manage their financial performance will not be rejected.

4.6 Discussion of the Regression Results

The main objective of the study is to evaluate the effect of credit risk management on the financial performance of Ethiopian commercial banks. By referring literatures and considering the findings of the previous studies, the results of each explanatory variables including their effect on the level ROE of Ethiopian commercial banks is presented as follows: .

4.6.1 Capital Adequacy Ratio (CAR)

According to the result shown in Table 4.6, the coefficient of the capital adequacy ratio variable is an indicator that capital adequacy ratio has a negative impact on the financial performance (ROE) of Ethiopian commercial banks. In addition, the variable is statistically significant in explaining the effect of capital adequacy ratio on financial performance (ROE) of Ethiopian commercial banks. The negative sign shows that there is an inverse relation between capital adequacy ratio and ROE. Therefore, the result indicates that one unit change in bank's capital adequacy ratio has a result of 0.445 unit changes on the level of ROE in the reverse direction.

The result is consistent with the hypothesis developed in this study. The study hypothesised that there is a significant relationship with the level of capital adequacy ratio (CAR) and financial performance (ROE) of Ethiopian commercial banks. In addition, the result is supporting the results of Gizaw, Kebede and Sujata (2015), Getahun, Anwen and Bari (2015) and Kuhil (2018) found that capital adequacy ratio has a negative impact on the financial performance of commercial banks. In this respect, Ezike and Oke (2013) argued that maintaining capital beyond the optimal level would inversely affect the efficiency and profitability of commercial banks.

On the other hand, this result is in contrary of Ali and Dhiman (2019) and Chali and Reddy (2016) findings that found that there is a positive relationship between capital adequacy ratio and financial performance of banks. Capital adequacy ratio is the amount of funds available to the

banks in case of losses and it serves as the protection to depositors and promoting the stability in the banks. They have agreed on capital adequacy ratio is expected to have positive relation with financial performance that well-capitalized banks face lower costs of going bankrupt, which reduces their costs of funding and risks. This may due to those banks, which kept sufficient amount of funds in capital to remain solvent and absorb loss in adverse situations.

4.6.2 Asset Quality

Based on the result illustrate in Table 4.6, the ratio of loan loss provision to total loans and advance, which is a proxy to measure asset quality, has a negative impact on the financial performance of Ethiopian commercial banks. In addition, asset quality is statistically significant in defining the impact of credit risk management on financial performance (ROE) of Ethiopian commercial banks. The negative sign shows that there is an inverse relation between the ratio of loan loss provision to total loans and ROE. Therefore, the result indicates that one unit change in bank's loan loss provision to total loans ratio has a result of 1.034 unit changes on the level of ROE in the reverse direction.

The result is consistent with the hypothesis developed in this study. The study hypothesised that there is a significant relationship with the loan loss provision to total loans ratio and financial performance (ROE) of Ethiopian commercial banks. Besides, this study finding is supported in the result of many literatures. Kuhil (2018), Felix and Claudine (2008) found out the same result, the highest risk facing a bank is loses derived from delinquent loans and it highly affects performance of commercial banks. Hence, the deterioration in credit quality reduces ROE. This has an implication of whenever there is small credit risk, there is a good performance of banks and at the same time whenever high credit risk, the bank performance gets poorest. This is due to that the provision amount held for loss loans reduces a banks profit with the same amount.

However, some studies, Chali and Reddy (2016) and Serwadda (2018) in contrary of what this study had found that there is a positive relationship with loan loss provision to total loans and performance of commercial banks. Such situation can only happen in cases of countries having a well-managed credit risk as revealed in the lowest share of nonperforming loans from their loan books.

4.6.3 Management Efficiency

The result of the regression analysis shows that management efficiency, which is proxy by the non-interest expense ratio to net income ratio, has a positive relationship with ROE of Ethiopian commercial banks. However, the level of management capacity is statistically insignificance effect on ROE, the significance value is 0.283, which is above 0.05. Accordingly, probability of 0.283 don not enable the researcher to reject the null hypothesis and to accept the alternative. This indicates that an increase in non-interest expense ratio to net income ratio has insignificance impact on financial performance. Accordingly, management efficiency have insignificance influence on the financial performance of Ethiopian commercial banks and the improvement in management capacity would have insignificant impact on the financial performance of Ethiopian commercial banks. This may resulted from the presence of loss competition in Ethiopian banking industry.

This finding is contrary the findings revealed by Ali and Dhiman (2019) as they report that management efficiency have a significant impact on the profitability of banks. Management quality shows the ability of the management in carrying out banking activities efficiently and effectively.

4.6.4 Earning

The result of the regression analysis revealed that earning has a positive relationship with financial performance (ROE) of Ethiopian commercial banks at regression coefficient 6.2764. Besides, the level of earning is statistically significant impact on ROE, which the significance value of 0.0001. Therefore, the result indicates that one unit change in bank's earning to total loans ratio has a result of 6.764 unit changes on the level of ROE in the similar direction. The hypothesis is failed to be accepted since the estimated probability value is smaller than the alpha value of 0.05 ($0.0001<0.05$) and alternate hypothesis is accepted.

This finding is similar to Chali and Reddy (2016); Rundassa and Batra (2016); Ali and Dhiman (2019); as they report that increase in earning would tend to result in the increase in profitability of the banks. Earnings show the ability of banks to earn consistently and their potential growth in the future.

4.6.5 Liquidity

According to the regression analysis of the study, the coefficient of the liquidity is an indicator that liquidity has a positive and significant impact on the financial performance (ROE) of Ethiopian commercial banks with coefficient value of 0.278. In addition, the variable is statistically significant in explaining the effect of liquidity on financial performance (ROE) of Ethiopian commercial banks with significance value of 0.033. The positive sign shows that there is a direct relation between liquidity and ROE. Therefore, the result indicates that one unit change in bank's liquidity ratio has a result of 0.278 unit changes on the level of ROE in a similar direction. This shows that an increase in a bank liquidity position would also result an increase in its financial performance in terms of ROE.

The result is consistent with the hypothesis developed in this study. The study hypothesised that there is a significant relationship with the level of liquidity ratio and financial performance (ROE) of Ethiopian commercial banks. This result is similar with the findings of Ali and Dhiman (2019); Chali and Reddy (2016), which revealed that higher liquidity position of the banks would tend to higher profitability. Liquidity parameter states the ability of bank in meeting its financial commitments and it is measured as a ratio of liquid assets to total assets.

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented the data analysis results and discussion part of the study. This chapter presents the conclusions drawn based on the findings of the study and recommendations are drawn accordingly to the finding and conclusions. Conclusions are discussed based on researcher insights gained regarding study findings.

5.2 Conclusion

The main objective of this study was to examine the impact of credit risk management on the financial performance of Ethiopian commercial banks based on panel data analisys for the period of 2016 to 2020. The study established that credit risk management by use of CAMEL indicators has a strong impact on financial performance of commercial banks in Ethiopia. This study, therefore, concludes that CAMEL model can be used as a proxy for credit risk management. The CAMEL indicators in this study had strong impact on the financial performance with CAMEL components being able to explain variations of up to 80% on financial performance of commercial banks.

The study concluded that capital adequacy ratio, asset quality, earning and liquidity has a statistically significant relationship with the financial performance of Ethiopian commercial banks. However, the result of the regression analysis revealed that management efficiency has insignificant effect on the financial performance of banks.

According to the regression results, the findings indicated that banks credit risk management measured in terms of capital adequacy ratio has a negative and statistically significant impact on the financial performance of Ethiopian commercial banks. The negative sign is unexpected result, while it was due to maintaining capital beyond the optimal level would inversely affect the efficiency and profitability of commercial banks.

In addition, the study found that the ratio of loan loss provision to total loans and advance, which is a proxy to measure asset quality, has a negative and statistically significant impact on the financial performance of Ethiopian commercial banks. This indicates than banks which can keep lower loan loss provision, it is achieved by improving the asset quality of the bank, can increase their return on asset.

The result of the regression analysis revealed that earning has a positive and statistically significant relationship with financial performance (ROE) of Ethiopian commercial banks. Therefore, the result indicates that increase in earning would tend to result in the increase in financial performance of Ethiopian commercial banks. In addition, according to the regression analysis of the study, liquidity has a positive and statistically significant impact on the financial performance (ROE) of Ethiopian commercial banks. Therefore, the result indicates that higher liquidity position of the banks would tend to higher profitability. This indicates that optimal liquidity position is critical in the financial healthy strategy of banks. Obtaining optimal liquidity position would enhance the financial performance of a bank by minimizing the cost of acquiring liquid fund to meet unexpected demand of cash.

In general, the researcher concluded that CAMEL components has an impact on the financial performance of Ethiopian commercial banks and from CAMEL variables capital adequacy ratio, asset quality, earning and liquidity has a significant impact on the financial performance of Ethiopian commercial banks, while management efficiency has no significant impact in Ethiopian banks profitability. Thus, it can be concluded that the profitability of Ethiopian banks is largely driven by CAMEL components.

5.3 Recommendations

Based on the findings and conclusions of the study the following recommendations are given.

- The study suggested that commercial banks that maintained the capital adequacy ratios beyond optimal could possibly harm the profitability of banks and which in turn could affects the shareholders wealth. Accordingly, study recommends that Ethiopian commercial banks should maintain only the required capital adequacy ratio level. This

helps shareholders to invest their money in the profitable business other than it is just hold as a capital by banks.

- The study also recommended that with regard to credit risk management, the management of an Ethiopian commercial bank should undertake measures to improve their asset quality, earning and liquidity; it would help to improve their financial performance.

- Finally, the study suggests that a further study should be done on the impact of credit risk management on profitability of Ethiopian Banks by taking additional bank specific factors other than CAMEL components and macro-economic factor determinants.

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Appendices

Appendix I

Raw data collected from annual reports sample banks form 2016-2020

Bank Name	Year	CAR	AQ	ME	E	LQ	ROE
Bank of Abyssinia	2016	18.81	1.37	58.74	2.23	18.44	17.64
	2017	15.30	1.28	60.41	2.07	13.32	18.41
	2018	15.62	1.18	63.53	1.76	14.04	13.26
	2019	14.66	1.34	61.10	1.98	11.38	15.70
	2020	10.70	1.22	70.95	1.50	11.17	15.04
Awash Bank	2016	13.37	1.55	48.28	2.39	18.60	18.90
	2017	12.14	1.48	47.38	2.39	16.68	20.85
	2018	12.20	0.82	49.84	2.70	21.05	22.98
	2019	18.10	0.87	42.88	3.26	15.23	25.24
	2020	15.99	1.04	48.32	2.90	16.17	21.64
Dashen Bank	2016	20.46	1.68	51.58	2.54	24.04	21.65
	2017	20.08	1.93	58.52	2.18	16.04	18.94
	2018	18.65	0.99	59.53	2.05	15.50	15.83
	2019	17.82	0.65	62.67	1.81	10.83	14.85
	2020	16.34	0.22	62.23	2.25	12.81	18.48
Cooperative Bank of Oromia	2016	11.78	9.93	93.21	0.35	19.97	3.03
	2017	9.80	4.38	78.13	1.17	15.36	13.70
	2018	9.59	2.44	65.29	1.75	25.69	22.03
	2019	8.43	3.36	71.13	1.57	17.16	20.00
	2020	11.22	2.80	64.82	2.25	13.00	23.14
United Bank	2016	17.89	1.32	60.30	1.96	16.90	16.36
	2017	15.91	1.24	63.28	1.54	14.48	13.64
	2018	18.09	1.32	59.49	2.05	16.15	19.42
	2019	14.52	0.52	57.57	2.11	10.72	19.49
	2020	15.90	0.69	62.04	2.08	12.37	16.69
Nib International Bank	2016	21.28	1.80	55.83	2.25	18.81	14.17
	2017	16.00	1.92	51.95	2.34	15.55	16.65
	2018	15.63	1.18	57.84	1.93	14.56	15.23
	2019	14.54	0.99	54.80	2.14	11.66	16.34
	2020	14.86	0.85	53.26	2.46	12.57	18.03

Appendix II

Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Return on equity	30	3.03	25.24	17.5777	4.16785
Capital adequacy ratio	30	8.43	21.28	15.1873	3.35016
Asset quality	30	.22	9.93	1.7447	1.76621
Management efficency	30	42.88	93.21	59.8433	9.89341
Earning	30	.35	3.26	2.0443	.55491
Liquidity	30	10.72	25.69	15.6750	3.70931
Valid N (listwise)	30				

Appendix III

Correlative Analysis

		Return on equity	Capital adequacy ratio	Asset quality	Management efficiency	Earning	Liquidity
Return on equity	Pearson Correlation	1	.016	-.577**	-.704**	.801**	.157
	Sig. (2-tailed)		.935	.001	.000	.000	.408
	N	30	30	30	30	30	30
Capital adequacy ratio	Pearson Correlation	.016	1	-.394*	-.439*	.371*	-.016
	Sig. (2-tailed)	.935		.031	.015	.043	.931
	N	30	30	30	30	30	30
Asset quality	Pearson Correlation	-.577**	-.394*	1	.748**	-.650**	.345
	Sig. (2-tailed)	.001	.031		.000	.000	.062
	N	30	30	30	30	30	30
Management efficiency	Pearson Correlation	-.704**	-.439*	.748**	1	-.913**	-.026
	Sig. (2-tailed)	.000	.015	.000		.000	.890
	N	30	30	30	30	30	30
Earning	Pearson Correlation	.801**	.371*	-.650**	-.913**	1	.069
	Sig. (2-tailed)	.000	.043	.000	.000		.717
	N	30	30	30	30	30	30
Liquidity	Pearson Correlation	.157	-.016	.345	-.026	.069	1
	Sig. (2-tailed)	.408	.931	.062	.890	.717	
	N	30	30	30	30	30	30

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

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

Appendix IV

Regression Analysis

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.894[a]	.800	.758	2.05110	1.678

a. Predictors: (Constant), Liquidity, Capital adequacy ratio, Earning, Asset quality, Management efficiency

b. Dependent Variable: Return on equity

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	402.790	5	80.558	19.149	.000[b]
	Residual	100.968	24	4.207		
	Total	503.758	29			

a. Dependent Variable: Return on equity

b. Predictors: (Constant), Liquidity, Capital adequacy ratio, Earning, Asset quality, Management efficency

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.530	10.383		.051	.960		
	Capital adequacy ratio	-.445	.128	-.358	-3.487	.002	.793	1.262
	Asset quality	-1.034	.392	-.438	-2.639	.014	.303	3.299
	Management efficiency	.124	.113	.295	1.098	.283	.116	8.621
	Earning	6.764	1.698	.901	3.983	.001	.163	6.122
	Liquidity	.278	.123	.248	2.259	.033	.695	1.440

a. Dependent Variable: Return on equity