ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

BY
TIGIST GIRMA HAILE (ID NO SGS/0194/2012A)

ADVISOR
MOHAMED SEID (ASSISTANT PROFESSOR).

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

DECEMBER, 2021
ADDIS ABABA, ETHIOPIA

EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

BY
TIGIST GIRMA HAILE (ID NO SGS/0194/2012A)

ADVISOR
MOHAMED SEID (ASSISTANT PROFESSOR).

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

DECEMBER, 2021
ADDIS ABABA, ETHIOPIA

ST.MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF GENERAL MBA

EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF PRIVATE COMMERCIAL BANKS IN ETHIOPIA

APPROVED BY BOARD OF EXAMINERS

Dean, Graduates Studies	Signature & Date
---	---
Advisor	Signature & Date
---	---
External Examiner	Signature & Date
---	---
Internal Examiner	Signature & Date
---	---

DECLARATION

I, Tigist Girma, declare that this thesis is my original work, prepared under the direction of Mohamed Seid (Assistant Professor). 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 or diploma.

Name: Tigist Girma (ID NO SGS/0194/2012A)

Signature: _____

Date: _____

CERTIFICATE

This is to certify that Tigist Girma has worked her thesis on the topic effects of working capital management on profitability of private commercial banks in Ethiopia under my supervision. To my belief, this work undertaken by Tigist Girma and it is original and qualifies for submission in partial fulfillment of the requirements for the award of Master of Business Administration.

Name: Mohamed Seid (Assistant Professor)

Signature: _____

Date: _____

ACKNOWLEDGMENTS

First of all, I would like to give glory to almighty GOD for giving me courage and strength in my life and for everything he has delivered.

Next, I would like to thank my Advisor, Mohamed Seid (Assistant Professor) for giving me support towards the accomplishment of this paper. Also I would like to thanks the staff and managements of National Bank of Ethiopia and Dashen Bank S.C. for delivery of the necessary documents. Furthermore I would like to thank ST. Mary's University School Librarians for their assistance in getting reference.

Finally, I would like to give special thanks to my family, my coworkers and neighbors for their thoughtfulness and patience for allowing me to concentrate on the study.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

ALM-Asset–liability management

ALMC-Asset liability committee

CBE –Commercial Bank of Ethiopia

CPP-Creditors Payment Period

DCP-Debtors Collection Period

DGAP- Duration gap

GLM- general linear model

GDP- Gross Domestic Product

L - Liquidity

NPL –Non Performing Loan

ROA –Return on Asset

ROE- Return on Equity

SOB –Size of the Bank

SPSS-Statistical Package for Social Science

WCM –Working Capital Management

WCP-Working Capital Policy

DV-Dependent Variable

IV-Independent Variable

ABSTRACT

Profitability & Liquidity are the major concerns of working capital management for banks and therefore achieving the optimum level of working capital is essential. The main objective of this study was to examine the effect of Working capital management on the Profitability of Private commercial banks in Ethiopia. In order to achieve the research objectives, data was collected from a sample of 13 Private commercial banks in Ethiopia of the period from 2011 to 2020. Working capital management components which related to banks activity (Liquidity, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size, and Credit risk) were analyzed by using descriptive statistics, Pearson's correlation coefficients and Multiple Regression analysis: expanded simple regression equation to represent multiple regression analysis that can take General Linear Model (GLM). Bank's Profitability measured with ROA whereas Liquidity is measured by loan to deposit ratios. The findings of the study revealed that, Liquidity negatively on the other hand Debtors Collection period & Bank size are positively related with Profitability but not significantly so they have no significant effect on Profitability. Based on the two mode formulated in this study Credit risk and Profitability have different or significant positive & positive but not significant relationship. Creditors payment period have significant negative relationship with the Profitability so that it has significant effect on Profitability. The relationship of cash conversion cycle and Profitability of private commercial banks is significant positive. Private commercial banks can reduce the length of its Creditors payment period & lengthened Debtors Collection period to increase its cash conversion cycle so that the Profitability of banks is greatly enhanced as the cash conversion cycle is lengthened. As Liquidity (L) has negative impact on Profitability (ROA) it indicates when Private commercial banks are more Liquid or strong to pay their short term obligation; their Profitability will be low but the result show the relationship is not significant. Private commercial banks can keep optimum level of Working capital to balance Profitability & Liquidity and maximize organizational value through Effective Working capital management.

Keywords: *Liquidity, Profitability, Working Capital Management, Private Commercial Banks.*

CAPTER ONE

INTRODUCTION

This chapter introduces the area of the study by providing the background of the paper. It is organized by different sections: background of the study, statement of the problem, objectives of the study, research question, research hypothesis, significance of the study, scope & limitation of the study and finally organization of the paper is presented.

1.1 BACKGROUND OF THE STUDY

Banks are financial institutions that play intermediary function in the economy through channeling financial resources from surplus economic units to deficit economic units. Especially in developing countries like Ethiopia, the role of capital market is nil, and as a result commercial banks become the most dominant financial institutions in the financial system. For banks to be effectively discharge their responsibilities of availing funds to customers, they must be in a healthy condition. The competition in the banking industry of Ethiopia becomes increasing from time to time as more new private domestic banks are joining to the industry. Especially, it creates competition among banks in terms of resource mobilization which leads to curiosity in liquidity management. Even, the private commercial banks vigilant the public banks to actively compete in the resource mobilization through expanding branch networks and implementation of new strategies (Mekbib, 2016).

The number of banks operating in Ethiopia remained 18, of which 16 were private and 2 state owned. These banks opened 149 new branches during the review period, thereby raising the total number of bank branches to 6,511 of which 70.5 percent were that of private banks. Consequently, one branch on average serves 15,485.91 people. About 34.0 percent of the total bank branches were located in Addis Ababa. At the same time, the banking system had Birr 112.9 billion in capital, of which, private banks accounted for 49.2 percent, while that of state owned banks, namely Commercial Bank of Ethiopia and Development Bank of Ethiopia, constituted 44.0 percent and 6.8 percent, respectively **(**National Bank of Ethiopia, 2020).

Management of Working Capital is also an important part of financial manager. The main objective of the Working Capital Management is managing the Current Asset and Current

Liabilities effectively and maintaining adequate amount of both Current Asset and Current Liabilities. Simply it is called Administration of Current Asset and Current Liabilities of the business concern (C. Paramasivan & T. Subramanian, 2009).

The ultimate objective of any firm is to maximize the profit. But, preserving liquidity of the firm is an important objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Therefore, there must be a tradeoff between these two objectives of the firms. One objective should not be at cost of the other because both have their importance. If we do not care about profit, we cannot survive for a longer period. On the other hand, if we do not care about liquidity, we may face the problem of insolvency or bankruptcy. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm (Raheman & Nasr 2007).

Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). Every firm is required to maintain a balance between profitability and liquidity while conducting its day to day operations. As inadequate amount of working capital impairs a firm's liquidity, holding of excess working capital results in the reduction of the profitability (Henok, 2015).

The performance of the financial institutions in general and private commercial banks in particular is affected by a number of factors. Among the known causes impacting performance of private commercial banks, the management of working capital plays a paramount role. The theory of working capital management explains as to how the entity’s working capital should be managed in achieving organizational objectives by supporting the businesses‟ liquidity, solvency, efficiency, profitability, and shareholder wealth maximization (Gitman J., 1997).

Liquidity in banking is the ability to convert current assets to cash to meet customers’ demand deposits and other short term maturing obligations (James et al, 2014), The inability to meet maturing obligations or at extra cost is called liquidity risk. The term 'profitability' means the ability to earn profits by an enterprise on its static invested capital. It expresses the relationship between profits and capital, of which a firm is said to be successful if its profitability exceeds the weighted average cost of capital to the firm. The profitability acts as a yardstick to measure the

operating efficiency of an enterprise. The term 'Bank Performance' relates to the level of success/failure of the banks in terms of liquidity profitability and risk management (A. Otu & E. John, 2015). Therefore, the purpose of this study is to examine the influence of working capital management components which related to banks activity on profitability and liquidity of private commercial banks in Ethiopia.

1.2 STATEMENT OF THE PROBLEM

Working capital management which deals with the management of current asset and current liabilities is very crucial in corporate finance because it directly affect the liquidity and profitability of the firm (Deloof, 2003; Eljelly, 2004; Rahiman & Nasr, 2007)

A firm increases (decreases) its working capital when it increases (decreases) its level of equity or long-term debt and/ or when it decreases (increases) its level of fixed assets. Therefore, it is crucial to notice that decisions regarding fixed assets and long-term debt and equity are decisions over how to set the appropriate level of working capital. Consequently, working capital should not be considered simply a short-term decision, nor should it be revised or determined solely on a short-term, or operating, basis (Lorenzo & Virginia, 2010)

Firms may have an optimal level of working capital that maximizes their value. Large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying (Deloof & Jegers, 1996). A popular measure of Working Capital Management (WCM) is the cash conversion cycle, i.e. the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer this time lag, the larger the investment in working capital. A longer cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers (Deloof, 2003).

To reach optimal working capital management firm manager should control the tradeoff between profitability and liquidity accurately. An optimal working capital management is expected to contribute positively to the creation of firm value. Liquidity plays a significant role in the successful functioning of a business firm. Liquidity in banking sector frequently consists of

power money created by central banks, broad money created through traditional bank lending system, securitized debts created by capital markets, and derivatives (James et al, 2014).

Under financial crisis situation financial intermediaries encountered specific liquidity problems (withdrawal of funds) as well as "evaporation" of liquidity in the markets that created solvency problems. They were provided with liquidity by the Federal Reserve, bailed out by the government, or became insolvent and had to sell themselves or fail for bankruptcy. This demonstrated that liquidity is a major risk in banking and that liquidity management should be a top priority for bank management and regulators (Dawit, 2016).

Many researchers: Abbasali & Milad (2012), Abuzar (2004), Deloof (2003), Rahiman & Nasr (2007), Mifta (2016), Henok (2015) & James et al. (2014) have studied Working Capital Management in many different ways.

The study made by Mifta (2016), examined the impact of working capital management on profitability of large taxpayer manufacturing share companies in Ethiopia. The author has shown in his research work that working capital components such as average collection period & the cash conversion cycle have a significant effect on and both inventory holding period and accounts payable have insignificant effect on firm's profitability, on the other hand there is a positive relationships between liquidity and profitability so the components of the working capital management need due attention by management.

James et al, (2014) in their study, tried to show the Implications of Working Capital Management on Liquidity Risk by sampling 9 Nairobi Securities Exchange quoted commercial banks in Kenya. The author examine that the collection period and cash conversion cycle have Significantly negative relationship with liquidity and Creditors' payment period have significantly positive relationship with liquidity and recommended that commercial banks should maintain their current assets for meeting their short term obligation thereby increase their liquidity by shortening their debtors' collection period and cash conversion cycle whereas increasing their creditors' payment period for better liquidity position. In general the author has shown how a proper management of working capital can affect liquidity of banks.

There are studies with reference to Ethiopia on working capital management in relation to liquidity, profitability & Performance of commercial banks in Ethiopia. Among them Dawit (2016), studied the Effect of Liquidity Management on the Profitability; Gullilat (2020), studid the Effect of Working Capital Management on the Performance; Yebelay (2017), studid the

Effect of Working Capital Management on the Profitability and Mekbib (2016), Determinants of Liquidity.

Dawit (2016) studied the Effect of Liquidity Management on the Profitability by taking 15 private Commercial Banks in Ethiopia. The researcher took Return on assets (ROA), return on equity (ROE) as a measure of profitability and Deposits to total assets ratio (DAR), Loan to total deposit ratio (LDR), Capital and reserve to total assets ratio (CPAR) and Cash and cash equivalent ratio (CAR) as a measure of Liquidity. The results show that financial performance of the commercial banks in Ethiopia is inconsistent (both positive and negative) and the significant relationship varies from measure to measure dependent on the level of the institutions' liquidity. Financial performance commercial banks in Ethiopia affected by cash and cash equivalent, capital and reserve ratio, loan and advance ratio and deposit ratio have weak effect to profitability of commercial banks in Ethiopia.

Then after all the researcher recommended that research should be launched on identifying better Quantitative measures of profitability, liquidity, risk and managerial efficiency, and relationship between different macroeconomic policies effect on the financial performance of the commercial banks.

Gullilat (2020), studied the Effect of Working Capital Management on the Performance by taking 9 private Commercial Banks in Ethiopia. The researcher took return on equity (ROE), Current Ratio, bank size, debt to equity ratio, loans and advances to total assets Ratio, loans and advances to customer deposits, current asset to total assets and current liabilities to total liabilities and cost to income Ratio as a measure of profitability. The results show that debt to equity ratio and cost to income ratios were found to have significant positive and negative impact on ROE respectively. The remaining six variables were not found significant to influence ROE at 5% level of confidence. Then after all the researcher recommended that Bank managers should have to increase ROE among others, by taking an aggressive working capital financing policy and increasing efficiency by reducing controllable costs.

Many researchers have investigated the impact of working capital on the Profitability & Liquidity of commercial banks across different corners of the world i.e. Yebelay (2017), Gullilat (2020), Serge (2016), James et al. (2014), Benjamin & Michael (2014), Samuel & Benjamin (2011), Godwill et al. (2017), Sujan et al. (2020) and Oluitan (2017). During the review of such research works, it is evident from the recommendations extended by the researchers that a

prudent working capital management is a key for the success of business. Entities though still the research outcome lack consistency. This lack of consistency in the research output by itself triggers extra research works to be made in the subject area to narrow the gap in research outputs found so far. On the other hand up to the knowledge of the researcher, there is a lack of similar researches on the commercial banks operating in the Ethiopian financial sector. This study therefore, examined the influence of working capital management components which related to banks activity on profitability and liquidity of private commercial banks in Ethiopia.

1.3 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

1.3.1 GENERAL OBJECTIVE

The general objective of the study is to examine the effect of working capital management on the profitability of private commercial banks in Ethiopia.

1.3.2 SPECIFIC OBJECTIVES

The specific objectives of the study are:

- To examine the effect of Bank size on the profitability of private commercial banks in Ethiopia,
- To examine the effect of liquidity on the profitability of private commercial banks in Ethiopia,
- To examine the effect of Cash Conversion Cycle & its components on the profitability of private commercial banks in Ethiopia.
- To examine the effect of the ratio of non-performing loans on total gross loans on the profitability of private commercial banks Ethiopia.

1.3.3 RESEARCH QUESTIONS

To evaluate the elements of working capital management the following research Questions are formulated to conduct the study.

- ✓ What effect does liquidity on profitability of private commercial banks in Ethiopia?

- ✓ What effect does Cash Conversion Cycle & its components on profitability of private commercial banks in Ethiopia?
- ✓ What effect does Bank size on profitability of private commercial banks in Ethiopia?
- ✓ What effect does Credit risk on profitability of private commercial banks in Ethiopia?

1.4 RESEARCH HYPOTHESIS

In contour with the general willpower statement the following hypothesis are hypothesized for study. Hypotheses of the study stands on the theoretical argument & empirical studies results related to working capital management and bank's profitability that has been developed in the previous years. Hence, based on the objective, the present study tested the following hypotheses:

H1: There is significant negative relationship between liquidity and profitability of private commercial banks.

Every firm is required to maintain a balance between profitability and liquidity while conducting its day to day operations. As inadequate amount of working capital impairs a firm's liquidity, holding of excess working capital results in the reduction of the profitability (Henok, 2015). If we do not care about profit, we cannot survive for a longer period. On the other hand, if we do not care about liquidity, we may face the problem of insolvency or bankruptcy. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm (Raheman & Nasr 2007).

H2: There is significant positive relationship between Bank size and profitability of private commercial banks.

It is not easy to draw many conclusions about a firm's performance or prospects just by inspecting the main financial statements that the firm generates, as reported numbers are influenced by many factors such as a firm's size (Lorenzo & Virginia, 2010). Thus it is expected that larger banks that managed their size well and guard against diseconomies of scale are better able to outperform smaller banks (Samuel & Benjamin, 2011). There is positive relationship between bank size and profitability (Meseret, 2018).

H3: There is a significant negative relationship between debtors' collection period and profitability of private commercial banks.

Deloof (2003) find the significant negative relation between the average number of days accounts receivable and gross operating income as a measure of profitability. Yebelay (2017) finding was also based on regression result; debtors' collection period has significant negative relationship with profit

H4: There is significant positive relationship between creditors' payment period and profitability of private commercial banks.

Yebelay (2017) The coefficient of creditors payment period, which is measured by the deposit to interest expense in 365 days ratio was positive and statistically significant and are positively related to banks' profitability. David (2010) investigated that there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability. This means that the longer a firm takes to pay its creditors, the more profitable it is.

H5: There is significant positive relationship between cash conversion cycle and profitability of private commercial banks.

According to James (2014) the cash conversion cycle (CCC) is defined as the number of days between disbursing cash and collecting cash in connection with undertaking a discrete unit of operations. A popular measure of Working Capital Management (WCM) is the cash conversion cycle, i.e. the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer this time lag, the larger the investment in working capital. A longer cash conversion cycle might increase profitability because it leads to higher sales (Deloof, 2003).

H6: There is significant negative relationship between Credit risk and profitability of private commercial banks.

The assets of the bank whether a loan or investment carries credit risk. Credit risk is the risk of losing money when loans default .credit risk or default risk gives rise to problems to bank management the principal reason for bank failures is bad loan (Machiraju, 2008). Credit Risk (its indicator NPL) has a negative and highly significant relationship with profitability in Ethiopian commercial banking sector (Meseret, 2018).

1.5 SIGNIFICANCE OF THE STUDY

The aim of the study is examining the effect of working capital management on private commercial banks in Ethiopia profitability. It is expected that the result of this study could contribute to the current knowledge of the effect of working capital management on profitability of commercial banks.

Efficient financial management requires the existence of some objectives or goals. This is because judgment as to whether or not a financial decision is efficient must be made in light of an appropriate management of working capital while at the same time crating good return & maximize wealth to the shareholders. Policy makers of private commercial banks would be seriously benefited from this study by understanding the relationship between working capital management and profitability and would be able to plan their working capital strategies based on appropriate working capital management policies that enhance profitability and liquidity. The study could have an important source for academicians and future researchers who may wish to investigate the performance of firms in relation to working capital management.

1.6 SCOPE & LIMITATION OF THE STUDY

The study is delimited to the effect of working capital management on the profitability of private commercial banks in Ethiopia. The total sample size of the study is 13 private commercial banks that have ten years of data from year 2011 – 2020 and used secondary data.

Though currently eighteen commercial banks operating in Ethiopia, only sixteen commercial banks become the target population and from those, 13 banks selected as a sample, because the other banks don't have ten years data for the study. Because Commercial bank of Ethiopia is the leading and dominant bank in Ethiopia by its financial performance, Development Bank of Ethiopia is established to promote the national development agenda through finance and close technical provision to feasible project from the urgency areas of the government by mobilizing fund from domestic and foreign sources this two banks are not included in this study. So, the researcher believes that including these two banks in the study could affect the result and it might mislead the conclusion.

In this study Return on assets (ROA) is used as a main profitability measure and Loan to Deposit as a main liquidity measure. The reason for using Return on assets (ROA) as the

measurement of bank Profitability is because Return on assets (ROA) reflects the ability of a bank's management to generate profits from the bank's assets and also indicates how effectively the bank's assets are managed to generate revenues & Profit while Loan to Deposit, Because Liquidity management consists of estimating the requirement for funds and meeting them. And Funds requirement depends on deposit inflows and outflows and loan commitments. This study therefore only examines the independent variables like Loan to Deposit, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size and Credit risk. Other independent control variables also has been looked is Duration gap.

1.7 ORGANIZATION OF THE STUDY

The study consist five chapters; Chapter one is the introduction of the full study which consist background of the study, statement of the problem, objectives of the study& research question, research hypothesis, significance of the study, scope & limitation of the study and how the study is organized. The second chapter, literature reviews dell with the working capital managements and its component parts. The third Chapter presents the research methodology that was used for the study and could give a detailed of the research design, data source, and collection procedures and data analysis method. It also provides the description of the relevant variables that was incorporated in the model. Chapter four dedicated to data analysis and interpretations of the results. At the last In Chapter five conclusion and recommendations of the study are presented.

CHAPTER TWO
LITERATURE REVIEW

This chapter provides the most important issues which are relevant to the research work. It contains the theoretical review; which is the idea of different books auteurs, empirical review; which is the findings of former researchers and summary and knowledge gap.

2.1. THEORETICAL REVIEW

2.1.1 AN OVERVIEW OF WORKING CAPITAL

The standard definition, which states that working capital is obtained by deducting current liabilities from current assets, is so straightforward that one may not be guided to think very deeply about it (Lorenzo & Virginia 2010). According to C. Paramasivan & T. Subramanian (2009) Working Capital is another part of the capital which is needed for meeting day to day requirement of the business concern. For example, payment to creditors, salary paid to workers, purchase of raw materials etc., normally it consists of recurring in nature. It can be easily converted into cash. Hence, it is also known as short-term capital. James (2014) stated that Working capital is the arithmetic difference between two balance sheet aggregated accounts: current assets and current liabilities.

According to Khan & Jain (2008) in practice, a firm has also to employ short-term assets and short-run resources of financing. The management of such assets, described as working capital management or current assets management. Technically, working capital management is an integral part of the overall financial management. Another notable feature of short-term assets is the question of profitability verses liquidity and the related aspect of risk. If the size of such assets is large, the liquidity position would improve, but profitability would be adversely affected as funds will remain idle. Conversely, if the holding of such assets are relatively small, the overall profitability will no doubt increase, but it will have an adverse effect on liquidity position and make the firm more risk prone. Working capital management should, therefor, aim at striking a balance such that there is an optimum amount of short-term assets.

The ultimate objective of any firm is to maximize the profit. But, preserving liquidity of the firm is an important objective too. The problem is that increasing profits at the cost of liquidity can

bring serious problems to the firm. Therefore, there must be a tradeoff between these two objectives of the firms. One objective should not be at cost of the other because both have their importance.

2.1.2. COMPONENTS OF WORKING CAPITAL

Working Capital consists of four main components: Cash in Hand, Cash at Bank, Bills Receivable, Sundry Debtors, Short-term Loans Advances, Inventories, Prepaid Expenses & Accrued Income. current liabilities: Bills Payable, Sundry Creditors, Outstanding Expenses, Short-term Loans and Advances, Dividend Payable, Bank Overdraft & Provision for Taxation (C. Paramasivan & T. Subramanian, 2009). For each type of asset, firms face a fundamental trade-off: current assets (working capital) are necessary to conduct business, and the grater the holding of current assets, the smaller the danger of running out, hence the lower firm's operating risk. However, holding working capital is costly-if inventories are too large, then the firm will have assets that earn zero or even negative return if storage and spoilage cost are high. And of course, firm must acquire capital to buy asset such as inventory. Since this capital has a cost, it increases the downward drag from excessive inventories (or receivables or even cash). So there is a pressure to hold the amount of working capital to the minimum consistent with running the business without interruption (Eugene & Michael, 2001).

C. Paramasivan & T. Subramanian (2009) discussed that Working capital can be classified or understood with the help of the following two important concepts:

- **Gross Working Capital**

Gross Working Capital is the general concept which determines the working capital concept. Thus, the gross working capital is the capital invested in total current assets of the business concern.

- **Net Working Capital**

Net Working Capital is the specific concept, which considers both current assets and current liability of the concern. Net Working Capital is the excess of current assets over the current liability of the concern during a particular period. If the current assets exceed the current liabilities it is said to be positive working capital; it is reverse, it is said to be Negative working capital.

2.1.3. TYPES OF WORKING CAPITAL

According to C. Paramasivan & T. Subramanian (2009) Working Capital may be classified into three important types on the basis of time:

- **Permanent Working Capital**

It is also known as Fixed Working Capital. It is the capital; the business concern must maintain certain amount of capital at minimum level at all times. The level of Permanent Capital depends upon the nature of the business. Permanent or Fixed Working Capital will not change irrespective of time or volume of sales.

- **Temporary Working Capital**

It is also known as variable working capital. It is the amount of capital which is required to meet the Seasonal demands and some special purposes. It can be further classified into Seasonal Working Capital and Special Working Capital.

The capital required to meet the seasonal needs of the business concern is called as Seasonal Working Capital. The capital required to meet the special exigencies such as launching of extensive marketing campaigns for conducting research, etc.

- **Semi Variable Working Capital**

Certain amount of Working Capital is in the field level up to a certain stage and after that it will increase depending upon the change of sales or time.

2.1.4 WORKING CAPITAL MANAGEMENT

According to C. Paramasivan & T. Subramanian (2009) Working capital management is an act of planning, organizing and controlling the components of working capital like cash, bank balance inventory, receivables, payables, overdraft and short-term loans. Stanley and Geoffrey (2002) discussed that; Working capital management involves the financing and management of the current assets of the firm. Managerial decisions must be made." How much inventory is to be carried, and how do we get the fund to pay for it," unlike long-term decisions, there can be no deferral of action. While long-term decision, involving plant and equipment or market strategy, may well determine the eventual success of the firm, short-term decisions on working capital determine whether the firm gets to the long-term.

Working capital management involves two basic questions: (1) What is the appropriate amount of working capital, both in total and for each specific account, and (2) how should working

capital be financed? Finance comes into play in evaluating how effective a firm's operating departments are in relation to others in its industry and in evaluating the profitability of alternative proposals made to improve working capital management. Eugene & Michael (2008), Stephen et al. (2001) stated that managing the firm's working capital is a day-to-day activity that ensures that the firm has sufficient resources to continue its operations and avoid costly interruptions. This involves a number of activities related to the firm's receipt and disbursement of cash. Some questions about working capital that must be answered are the following:

(1) How much cash and inventory should we keep on hand?

(2) Should we sell on credit? If so, what terms will we offer, and to whom will we extend them?

(3) How will we obtain any needed short-term financing? Will we purchase on credit or will we borrow in the short term and pay cash? If we borrow in the short term, how and where should we do it?

Excessive current assets are usually not advisable, because they are generally considered to be the earning assets of the firm .The yield from short term assets is usually low, while return from long term, more permanent assets are usually quit high. So management may also be considered as aggressive or conservative according to its investment in current versus long term assets (Bhalla, 2004).

According to Khan & Jain (2008) the changes in the level of working capital occur for the following reasons: (I) changes in the level of sales and/or operating expenses, (II) policy changes, and (III) changes in technology. Lorenzo & Virginia (2010) stated that to maintain the desired level, the firm will need to adjust its capital structure over time. Notice that the working capital decision implies a choice with respect to the firm's financing: how much of the firm's current assets should the firm finance with long-term capital? A great deal of a treasurer's daily activity and a firm's future profitability is affected by this decision. According to James (2014) although profitability is not an explicit component of working capital, it is included here because any change to working capital components directly impacts profits. In fact, if profit ratios have deteriorated or are below those of competitors, this may indicate working capital improvement problems and opportunities.

A firm should plan its operations in such a way that it should have neither too much nor too little working capital. The total working capital requirement is determined by a wide variety of factors. These factors, however, affect different enterprises differently. They also vary from time

to time. In general; General nature of business, Production cycle, Business cycle, Production policy, Credit policy, Growth and expansion, Vagaries in the availability of raw material, Profit level, Level of taxes, Dividend policy, Depreciation policy, Price level changes and Operating efficiency are factors involved in a proper assessment of the quantum of working capital required (Khan & Jain, 2008).

2.1.5 WORKING CAPITAL MANAGEMENT POLICY

C. Paramasivan & T. Subramanian (2009) discussed that Working Capital Management formulates policies to manage and handle efficiently; for that purpose, the management established three policies based on the relationship between Sales and Working Capital.

1. Conservative Working Capital Policy: Conservative Working Capital Policy refers to minimize risk by maintaining a higher level of Working Capital. This type of Working Capital Policy (WCP) is suitable to meet the seasonal fluctuation of the manufacturing operation.

2. Moderate Working Capital Policy: Moderate Working Capital Policy refers to the moderate level of Working Capital maintenance according to moderate level of sales. It means one percent of change in Working Capital that is Working Capital is equal to sales.

3. Aggressive Working Capital Policy: Aggressive Working Capital Policy is one of the high risky and profitability policies which maintain low level of Aggressive Working Capital against the high level of sales, in the business concern during a particular period.

In fact the goal of many leading companies today including American Standard, Campbell Soup and General Electronic –is zero working capital. Proponents of the zero working capital concept claims that a movement toward this goal not only generates cash but also speeds up production and helps business make more timely deliveries and operate more efficiently. The concept has its definition of working capital: Inventories + Receivables - Payable. Clearly it is not possible for most firm to achieve zero working capital and infinitely efficient production Still focus on minimizing receivables and inventories while maximizing payables will help a firm lower its investment in working capital and achieve financial and production economy (Eugene & Michael, 2001).

2.1.6 IMPORTANCE OF WORKING CAPITAL MANAGEMENT

According to C. Paramasivan & T. Subramanian (2009) Management of Working Capital is also an important part of financial manager. The main objective of the Working Capital Management is managing the Current Asset and Current Liabilities effectively and maintaining adequate

amount of both Current Asset and Current Liabilities. Simply it is called Administration of Current Asset and Current Liabilities of the business concern. Management of key components of working capital like cash, inventories and receivables assumes paramount importance due to the fact the major portion of working capital gets blocked in these assets.

Why is working capital management important? In truth, businesses have not paid sufficient attention to working capital in previous years, and have focused instead on such concerns as raising and using debt and equity capital, choosing information and manufacturing technology to run operations, and attempting to develop domestic and global marketing strategies to sell product. However, recent economic problems have forced companies to consider ways to improve profitability, cut costs, and make business processes efficient. These are not just necessary actions—they are required for survival! (James, 2011).

2.1.7 WORKING CAPITAL RATIOS AND OTHER METRICS

According to James (2014) Ratio analysis and other metrics are used to provide a comparative basis for a company against its industry and its experience in previous years. The various accounts on financial statements (the balance sheet and the income statement) can be used to provide critical information about a company to financial managers, bankers, investors and other interested parties. Lorenzo & Virginia (2010) Ratio analysis allows us to quickly examine a company's financial statements to determine how performance has changed over time and/or against its competitors. There are four sets of ratios in general use: liquidity, activity utilization, profitability, and financial leverage. There are numerous other metrics that can be used to measure the performance of a company's working capital management.

- **The cash conversion cycle (CCC)**

According to James (2014) the cash conversion cycle (CCC) is defined as the number of days between disbursing cash and collecting cash in connection with undertaking a discrete unit of operations. It can be calculated as follow:

$$\text{CCC} = \frac{\text{Average inventory}}{\text{Cost of goods sold}/365} + \frac{\text{Average accounts receivable}}{\text{Revenue}/365} - \frac{\text{Average accounts payable}}{\text{Cost of goods sold}/365}$$

- **Short-term solvency, or liquidity, ratios**

According to Stephen et al. (2001) Short-term solvency, or liquidity, ratios provide information about a firm's liquidity, and these ratios are sometimes called liquidity measures. The primary concern is the firm's ability to pay its bills over the short run without undue stress. It can be calculated as follow:

Current ratio =Current assets/ Current liabilities

- **Profitability ratios**

Stephen et al. (2001) **Profitability ratios** in one form or another, intended to measure how efficiently the firm uses its assets and how efficiently the firm manages its operations. The focus is on the bottom line, net income. It can be calculated as follow:

Return on assets (ROA) =Net income /Total assets

2.1.8 LIQUIDITY

According to James (1998) the term liquid asset is used to describe money and assets that are readily convertible into money. Different assets may be said to exhibit different degrees of liquidity. Money itself is, by definition, the most liquid of assets. Other assets have varying degrees of liquidity, depending on the ease with which they can be turned into cash. For assets other than money, liquidity has two dimensions: (1) the time necessary to convert the asset in to money and (2) the degree of certainty associated with the conversion ratio, or price, realized for asset.

The term liquidity probably brings to mind the relationship of current asset and current liabilities. Liquidity has three ingredients; time, amount, and cost. An essential component of liquidity is the time an asset takes to pay a current liability. More simply, this may be stated as the ability of the firm to pay its bill on time. Liquidity may also be viewed as the ability of firm to augment its future cash flow to cover any unforeseen needs or take advantage of any unforeseen opportunities. This concept of liquidity has been referred to as financial flexibility (Bhalla, 2004).

According to James (1998) Liquidity ratios are used to judge a firm's ability to meet short-term obligations. From them, much insight can be obtained into the present cash solvency of the firm and its ability to remain solvent in the event of adversities. Essentially, we wish to compare shot-

term obligations with the short-term resources available to meet these obligations. One of the most general and most frequently used of these ratios is the current ratio:

Current ratio = current assets / current liabilities

2.1.9 PROFIT MAXIMIZATION

According to Bhalla (2014), from the perspective of economic theory, profit maximization is simply a criterion of economic efficiency. When markets are reasonably competitive, profit provide a yardstick by which economic performance can be judged. There is also broad agreement that under idealized conditions (generally referred to as perfect competition), where all price accurately reflect true values add consumers are well informed, profit maximizing behavior by firms lead to an efficient allocation of resources and maximum social welfare. As financial management is concerned with the efficient use of an important economic resource, namely, capital funds, a good case can be made for profit maximization to serve as the basic criterion for the decision made by the financial managers of privately owned and controlled firms.

Managers should attempt to maximize the market value of a company's shares not the accounting or book value per share. The book value does not consider the risk associated with the assets. Another shortcoming of the simple profit maximization criteria concerns ambiguity. Measuring profit figures can vary widely depending on the accounting conventions employed. Though profits are necessary conditions for the success of any firm, but they are only one ingredient in the total picture when formulating a corporate objective. Profit maximization therefor emphasizes only a partial condition for success. Shareholder wealth maximization is a total picture, although it is difficult to interpret because of its complexity. A variant of profit maximization objective is maximization of the percentage return of investment (Bhalla, 2014).

2.1.10 BANK WORKING CAPITAL MANAGEMENT

Benton (2011) stated that the traditional role of bank capital is to protect depositors against loss, but realistically, the role is much broader than that. Among other things, bank capital provides the working capital required when a new bank is chartered. It also acts as a buffer to absorb temporary losses so that a bank can continue to operate and improve earnings. It is a source of funds necessary to fund growth. However, the real significance of bank capital concerns what is commonly referred to as capital adequacy. Unlike most business concerns, commercial banks are required by federal and state laws to maintain a minimum amount of capital to open a new bank.

Similarly, federal and state laws place limits on the amount of loans to one party, limits on the size of a loan relative to a bank's capital and surplus, and other constraints. Finally, bank regulators have minimum capital standards that they apply to individual banks to determine if the bank is well capitalized.

Because banks are for-profit businesses, management prefers the lowest amount of capital that will permit the bank to grow. If equity capital is kept relatively low, shareholders can earn a higher return on equity (ROE).Therefore, there is a continual struggle between bank managers, who want the minimum amount of capital, and bank regulators, who want more capital for safety and soundness. It is said that beauty is in the eye of the beholder. Similarly, the value of a bank and its financial condition depend on what you are looking for. For example, a stockholder's perspective is different from that of a bank regulator. Stockholders are interested in maximizing their wealth. In contrast, bank regulators are interested in the bank's safety, soundness, and compliance with laws and regulations. Other points of view include large depositors who are interested in high returns but also want to ensure that their funds are safe. Borrowers are interested in the availability and the cost of funds. Finally, communities are also interested in the availability of funds to support their growth (Benton, 2011).

2.1.10.1 ASSET/LIABILITY MANAGEMENT

According to E.Gup (2011) Asset/liability management (ALM) refers to the simultaneous management of both bank assets and liabilities for the purpose of maximizing profits, mitigating interest rate risk (IRR), providing liquidity, assuring its capital adequacy, and enhancing the market value of the bank. It is an integral part of a bank's overall planning process. It is carried out by the bank's asset liability management committee (ALCO) and is usually considered short term in nature, focusing on near-term financial goals. Nevertheless, it is an integral part of the bank's overall planning and risk management processes. The net interest margin (NIM) is a key part of ALM. It is the difference between interest and dividends earned on interest-bearing assets and interest paid to depositors and creditors, expressed as a percentage of average earning assets.
Machiraju (2008) discussed that the success of ALM depends on the effective existence of (1) Information and policies and (2) Risk management system. There should be asset-liability managers and an asset liability committee (ALCO) that manages the bank's balance sheet in such a manner so as to minimize the volatility in its earnings, liquidity and equity to changes in

market conditions. The successful pursuit of the objective would manifest in stable net interest margins, optimal earnings, adequate liquidity and effective control of financial risk. For this purpose, the information base in a bank must be sound and strong. ALCO must be aware of policies which would address asset liability management goals and risk limits and by information that relates directly to its asset-liability position.

According to Moorad (2011) Asset–liability management (ALM) is a generic term that is used to refer to a number of things by different market participants. For bankers, the term is used to denote high-level management of a bank's assets and liabilities; as such it is a strategy level discipline but at the business line level it is also a tactical one. ALM policy may be set within a bank's Treasury division or more usually by its asset–liability committee (ALCO). The principle function of the ALM desk is to manage interest rate risk and liquidity risk. It will also set overall policy for credit risk and credit risk management, although tactical level credit policy is set at a lower level within credit committees. Although the basic tenets of ALM would seem to apply more to commercial banking than investment banking, in reality it is important that it is applied to both functions.

According to Peter and Sylvia (2008) the probability that some of a financial institution's assets, especially its loans, will decline in the value and perhaps become worthless is known as credit risk. because financial firm tend to hold little owner's capital relative to the aggregate value of their assets, only a small percentage of total loans needs to turn bad to push them to the brink of failure. The following are four of the most widely used indicators of credit risk:

- The ratio of nonperforming assets to total loans and leases
- The ratio of net charge-off of loans to total loans and leases
- The ratio of the annual provision for loan losses to total loans and leases or to equity capital
- The ratio of allowance for loan losses to total loans and leases or to equity capital
- The ratio of nonperforming assets to equity capital

Another popular and long standing credit risk measure is

- The ratio of total loans to total deposit

According to Machiraju (2008) the level of non-performing loans is recognized as a critical indicator for assessing banks' credit risk, **asset quality** and **efficiency** in the allocation of resources to productive sectors. Public sector banks have made highly risky loans. The portfolios

of a wide cross-section of public sector banks carry non-performing assets (NPAs) which are defined as a credit facility in respect of which interest has remained unpaid for a period of two quarters. The emergence of non-performing assets is to be traced to the grant of advances under peer pressure, political influence and connections and clout of borrowers rather than evaluation and appraisal of factors and economic considerations. Banks were saddled with implementation of various social objectives without ever considering whether credit (the amount and cost) is the appropriate instrument to set right inequalities of income and wealth especially when such loans are not for viable projects. A large collection of such loans turned into non-performing assets along with those granted on account of extra economic considerations. The growth of NPAs is also attributable to regulatory forbearance in terms of keeping insolvent institutions open and able to incur further losses.

Asset quality became a crucial consideration which cannot be judged in isolation, but in relation to the structure of bank business both on and off balance sheet to see how the assets and liabilities relate to each other and assess the returns and risks. The structured approach the banks adopted to manage their balance sheet and their off balance sheet business came to be known as asset liability management. In addition, off balance sheet business involving varied contingent liabilities has grown significantly, these changes brought many special and additional risks. Unless assets and liabilities are well adjusted, a bank may find itself without adequate liquidity or may incur losses due to changes in interest rates or exchange rates (Machiraju, 2008).

Moorad (2012) stated that there is a range of financial ratios that can be used to assess a bank's asset quality. These include:

- loss reserves/net charge-off level;
- net losses/average level of receivables;
- NPLs/average level of receivables.

However, unlike the more ''concrete'' financial ratios given earlier, there is a higher subjective element with these ratios as banks themselves will designate which loans are non-performing and those loans against which have been assigned charges. Nevertheless, these ratios are useful indicators and may be used to identify trends across the sector as well. The loss reserves/net

charge-off ratio is perhaps the most useful as it indicates the level of ‘‘cushion’’ that a bank has; a falling ratio suggests that the bank may not be adding sufficient reserves to cover for future charge-offs.

Machiraju (2008) stated that financial ratios can only assess indirectly the quality of assets. The ratios provide an historical account of the creditworthiness of a bank’s loan portfolio. Provision for loan losses, loan ratio, charge offs and non-performing assets indicate the quality of a bank’s loan portfolio. Provision for future loan losses may be related to the volume of loans.

$$\text{Provision for loss ratio (\%)} = \frac{\text{Provision for loan losses}}{\text{Total loan}} \times 100$$

Loan ratio reveals the proportion of assets devoted to loans which is calculated as,

$$\text{Loan ratio} = \frac{\text{Net loans}}{\text{Assets}} \times 100$$

Banks have to manage four types of risk to earn profit for maximizing shareholder wealth. These are credit risk; interest rate risk, liquidity risk and operational risk .credit risk arise when a bank cannot get back the money from loan, so we can use non-performing loan and credit risk interchangeably. The assets of the bank whether a loan or investment carries credit risk. Credit risk is the risk of losing money when loans default .credit risk or default risk gives rise to problems to bank management the principal reason for bank failures is bad loan (Machiraju, 2008).

2.1.10.2 DURATION GAP AND ECONOMIC VALUE OF EQUITY

According to E.Gup (2011) & Machiraju (2008), while the dollar gap analysis focuses on a bank’s short-term net interest income, the duration gap takes a longer view and focuses on the economic value of equity. *Duration* is defined as the weighted average time to maturity to receive all cash flows from a financial instrument. Time is measured in terms of years and months. Duration is a widely used measure of interest rate sensitivity. The concept of duration originated in 1938, when Frederick R. Macaulay wanted an alternative to the term to maturity for measuring a bond’s life. Duration is the weighted average time to maturity of the present value

of all cash flows received from bonds, stocks, or the financial assets. The *duration gap* compares the effects of changes in interest rates on the duration of a bank's assets and liabilities to determine the economic value of stockholders' equity. The *economic value* is the theoretical value of the bank's equity, taking into account the duration of both the assets and liabilities. It is *not* the market value of the equity. The duration gap is equal to:

$$DGAP = DA - WDL$$

Where:

DGAP=Duration gap

DA=Average duration of assets

DL=Average duration of liabilities

W=Ratio of total liabilities to total assets

Machiraju (2008) discussed that Liquidity risk is closely related to interest rate risk. If a bank desires to have more interest sensitive liabilities than assets (liability sensitive position), it reduces the liquidity position of the bank. When a bank structures its portfolio in order to achieve a positive duration gap (the duration of assets exceeds the duration of liabilities) the liquidity of the assets is reduced. If interest rates increase the value of long-duration assets will decline more than short-duration assets and asset sales would involve losses. These derivative instruments allow a bank to alter interest rate exposure and each has advantages and disadvantages compared with the other. When taken together they give a bank enormous flexibility in managing interest rate risk. If a bank has a negative duration gap (the duration of assets is less than the duration of liabilities) it could extend the duration of its assets or reduce the duration of its liabilities or establish a long position in the financial futures market. In the case of positive duration a bank could reduce the duration of assets, increase the duration of liabilities or execute a short or sell position in financial futures.

2.1.10.3 BANKS LIQUIDITY

Moorad (2011) stated that the continuous process of raising new funds or investing surplus funds is known as liquidity management. If we consider that the gap today is funded–thus balancing assets and liabilities and squaring off the book – the next day a new deficit or surplus is generated which also has to be funded. The liquidity management decision must cover the amount required to bridge the gap that exists the following day and to position the book across

future dates in line with the bank's view on interest rates. Usually, in order to ascertain the maturity structure of debt a target profile of resources is defined.

One of the most important tasks the management of any financial institution faces is ensuring adequate liquidity at all times, no matter what emergencies may appear. A financial firm is considered to be "liquid" if it has ready access immediately spendable funds are needed. This suggest that a liquid financial firm either has the right amount of immediately spendable fund on hand when they are required or can raise liquid funds in timely fashion by borrowing or selling assets. Indeed, lack of adequate liquidity can be one of the first signs that a financial institution is in trouble. For example, a troubled bank that is losing deposits will likely be forced to dispose of some of its safer, more liquid assets. Other lending institutions may become increasingly reluctant to lend the troubled firm any new funds without additional security or the promise of higher rate of interest, which may reduce the earnings of the beleaguered institution and threaten it with frailer. The cash shortages that financial service providers experience make clear that liquidity needs cannot be ignored. A financial firm can be closed if it cannot raise sufficient liquidity even though, technically, it may still be solvent (Peter & Sylvia, 2008)

According to Machiraju (2008) Liquidity of bank may be defined as the ability to meet anticipated and contingent cash needs. Cash needs arise from withdrawal of deposits, liability maturities and loan disbursals. The requirement for cash is met by increase in deposits and borrowings, loan repayments, investment maturities and the sale of assets. A minimum criterion of liquidity is the ability both to meet commitments when due and to undertake new transactions when desirable. According to E.Gup (2011) *Liquidity* refers to the ability to liquidate an asset quickly with little or no loss in market value and the ability to raise funds through the sale of an asset or by borrowing. *Liquidity risk* is the risk to earnings and capital related to a financial intermediary's ability to meet its financial obligations to depositors or borrowers. Thomas (2015) discussed that funding and liquidity risk is defined by the bank for international settlement (BIS-2008) as the risk that the firm will not be able to meet efficiently both expected and unexpected current and future cash flow and collateral needs without affecting either daily operation or the financial condition of the firm.

According to Moorad (2011) there is clearly risk exposure as a result of liquidity mismatches between assets and liabilities. Maturity terms will not match, thereby creating a liquidity gap.

The amount of assets and liabilities maturing at any one time will also not match (although overall, by definition, assets must equal liabilities). Liquidity risk is the risk that a bank will not be able to refinance assets as liabilities become due, for any reason.1 to manage this, the bank will hold a large portion of assets in very liquid form.2 a surplus of assets over liabilities creates a funding requirement. If there is a surplus of liabilities, the bank will need to find efficient uses for these funds. In either case, the bank has a liquidity gap. This liquidity can be projected over time, so that one knows what the situation is each morning, based on net expiring assets and liabilities. The projection will change daily, of course, due to the new business undertaken each day.

In contrast to other risk, managing liquidity risk is not about holding more capital (Thomas, 2015). According to E.Gup (2011) Sound practices of liquidity risk management include the following corporate governance issues:

- Effective corporate governance consisting of oversight by the board of directors and active involvement by management in controlling the institution's interest rate risk.
- Appropriate strategies, polices, procedures, and limits to manage and mitigate interest rate risk.
- Comprehensive measurement and monitoring systems that is commensurate with the complexity and business activities of the institution.
- Active management of intraday liquidity and collateral.
- An appropriate diverse mix of existing and potential funding sources.
- Adequate levels of highly liquid marketable securities free of legal, regulatory, or operational impediments that can be used to meet liquidity needs in stressful situations.
- Comprehensive contingency funding plans that sufficiently address potential adverse liquidity events and emergency cash flow requirements.
- Internal controls and internal audit processes to determine the adequacy of the liquidity risk management processes.

Thomas (2015) discussed that if customers do not believes that the bank or insurer can cover its obligations, then they will seek to recover their deposit and redeem their policies, representing a draw on the firm's liquidity and creating a self-fulfilling down wads spiral. Additional capital will not help once the spiral is initiated. Liquidity risk management is about advocating the spiral in the first place. As the consequence of the asymmetry, the trade-off between having too much

or too little liquidity need to be evaluated not based on the risk/reward analysis around the "beast estimate" or "business as usual" scenario but relative to an extreme worst-case scenario. In general, banks and insurers have little appetites for funding liquidity risk preferring to meet their obligations with a very high degree of confidence under wide variety of stress scenarios.

Peter and Sylvia (2008) stated that a financial institution's need for liquidity-immediately spendable fund-can be viewed within a demand-supply frame work. What activities give raise to the demand for liquidity? And what sources can be relied upon to the supply adequate liquidity? These various sources of liquidity demand and supply come together to determine each financial firm's net liquidity position at any moment in time. When the demand for liquidity exceeds its supply (i.e., Lt < 0), management must prepare for a liquidity deficit, deciding when and where to raise additional funds. On the other hand, if at any point in time the supply of liquidity exceeds all liquidity demands (i.e., Lt > 0), management must prepare for liquidity surplus, deciding when and where to profitably invest surplus liquid funds until they are needed to cover cash needs. That net liquidity position (L) at time t is:

- A financial firm's net liquidity position (Lt) = supplies of liquidity flowing into the financial firm – Demanded on the financial firm for liquidity
- A financial firm's net liquidity position (Lt) = (incoming deposit (inflows) +revenues from the sale of non-deposit service +customer loan repayments +sales of assets +borrowing from the money market) – (deposit withdrawals (outflows) +volume of acceptable loan requests +repayments of borrowings +other operating expenses +dividend payments to stockholders)

Machiraju (2008) discussed that; in the context of increased competition and decreased profit margin, the need to improve efficiency of operation through competent liquidity management has become imperative. Liquidity management consists of estimating the requirement for funds and meeting them. Funds requirement depends on deposit inflows and outflows and loan commitments. The potential requirement for funds can be met by asset liquidity and liability liquidity. Asset liquidity depends on near cash assets including funds lent to other banks, interbank deposits, money market securities and securitisation of loans. It should be noted that cash and balances with the Central Bank are frozen assets which are not available for purchase of assets or reduce liabilities. The ratio measures used to evaluate bank liquidity are:

• Loans to deposits.

• Loans to non-deposit liabilities.

• Unencumbered liquid assets/non-deposit liabilities.

• Near cash assets/large denomination liabilities.

If loans/deposits ratio is high the bank either has a large loan portfolio or using non-deposit or purchased funds to finance assets. When the ratio is relatively high banks would be less inclined to lend and to invest. Banks become selective and as standards are increased and credit more strictly allocated, interest rates tend to rise. The loan deposit ratio has increased over the years in US for instance which is explained primarily by the ability and willingness of large banks to solve their liquidity problem by liability management or borrowing in the market rather than rely on asset adjustments. If the loans/non-deposit liabilities ratio is high the bank relies heavily on non-deposit funds. If the unencumbered liquid asset /non deposit ratio is relatively high the bank has considerable secondary reserves (money market instruments). If it is low the bank is borrowing funds to finance loans and investments. Near cash assets/large denomination liabilities ratio measures the ability of the bank to use liquid assets to cover wholesale funds (Machiraju, 2008).

2.1.10.4 BANKS PROFIT & PROFITABILITY RATIOS

According to Wiley (2018) Banks earn income from interest revenues, which are generated from lending and interest-earning assets, and non-interest revenues, which come from fees and commissions a bank charges its customers in return for the sale and provision of financial services and profits from trading of financial instruments. Net interest income is interest revenue minus the cost of funds. Non-interest revenues consist of fees and commission income and trading income. Retail banks typically focus on net interest income. Investment banks, on the other hand, derive most of their revenues from fees and commissions and from trading income. Profit before tax is calculated by deducting expenses such as operating (non-interest) expenses, loan-loss provisions and trading losses (and ignoring tax) from core operating income. Net income is calculated by deducting tax from bank profit. Attributable income is calculated by deducting the amount due to minority interest from net income.

As stated by Peter & Sylvia (2008) while the behavior of a stock's price is, in theory, the best indicator of a financial firm's performance because it reflects the market's evaluation of that

firm, this indicator is often not available for smaller banks and other relatively small financial service corporations. Because stock issued by smaller institution frequently not available traded in international or national markets. This fact forces financial analysts to fall back on surrogates for market's value indicators in the form of various profitability ratios. Among the most important ratio measures of profitability used today are the following:

Return on equity capital (ROE) = Net Income/Total equity capital

Return on assets (ROA) = Net income/Total assets

Thus, return on assets (ROA) is primarily an indicator of managerial efficiency; it indicates how capable management has been in converting assets into net earnings. Return on equity (ROE), on the other hand, is a measure of the rate of return flowing to shareholders. It approximates the net benefit that the stockholders have received from investing their capital in the financial firm (i.e., placing their funds at risk in the hope of earning a suitable profit).

Wiley (2018) stated that In considering the management of assets and liabilities and the various approaches to Asset–liability management (ALM), it is also important to keep in mind the difference between accounting profits and economic profits, which can be significant. A bank that is profitable on paper may actually not be profitable in reality as the risk factors and the opportunity costs of not doing other business are taken in to account. Accounting profits, then, are total earnings calculated based on accounting principles and typically exclude costs of doing business such as depreciation, interest and taxes. Economic profits are actual, real life profits: the revenue derived from the sale of products and services and the opportunity costs of the inputs that went into producing those outputs. Another name for economic profit is 'economic value added' (EVA). When calculating economic profits, opportunity costs have to be deducted from revenues because opportunity costs are other returns that were foregone in using specific inputs. Economic profits for banks are determined using a ratio such as RAROC which considers expected loss, which is a risk measure of the degree of riskiness of the loan portfolio it puts in its balance sheet. RAROC has the benefit of taking into account risk factors and costs.

RAROC is defined as:

= Expected profit/ Economic capital

= (Profit−expected loss−fees) /Economic capital

2.2 EMPIRICAL REVIEW

Deloof (2003) Surveyed on Belgian Firms to find out whether the working capital management affects profitability, using correlation and regression tests he found a significant negative relationship between corporate profitability and number of days accounts receivable, inventories and accounts payable of Belgian firms. On the basis of these he suggested that manager could increase corporate profitability by reducing the number of day's accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

David (2010) investigated the impact of working capital management components (average collection period, inventory conversion period, and average payment period) on corporate profitability measured by the net operating profit. Both the pooled OLS and the fixed effects regression models were used. The result of the study shows that (1) There exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability. (2) There exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability. (3) There exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability. Based on the findings he suggested that the management of a firm can create value for their shareholders by increasing inventories to a reasonable level, taking long to pay creditors to the optimum level and reducing the cash conversion cycle to its minimum.

Tewodros (2010) examined the effect of working capital investment and financing policies on firms' profitability by using audited financial statements of a sample of 11 manufacturing private limited companies in Tigray region, Ethiopia for the period of 2005 to 2009. The results show that longer accounts receivable and inventory holding periods are associated with lower profitability. There is also negative relationship between accounts payable period and profitability measures; however, except for operating profit margin this relationship is not statistically significant. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms. No significant

relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand, findings show that a highly significant positive relationship between current liabilities to total assets ratio and profitability. Finally, negative relationships between liquidity and profitability measures have also been observed.

The study made by Mifta (2016), examined the impact of working capital management on profitability of large taxpayer manufacturing share companies in Ethiopia. The author has shown in his research work that working capital components such as average collection period & the cash conversion cycle have a significant effect on and both inventory holding period and accounts payable have insignificant effect on firm's profitability, on the other hand there is a positive relationships between liquidity and profitability so the components of the working capital management need due attention by management.

Ntui et al., (2014) conduct a study to find out the effect of working capital management on company profitability by examining the statistical significance between company's working capital management and profitability. The key findings from the study were; there exists a positive relationship between cash conversion cycle and profitability of the firm, there is a negative relationship between liquidity and profitability, there exists a highly significant negative relationship between average collection period and profitability, there is a highly significant positive relationship between average payment period and profitability and there exists a highly significant negative relationship between inventory turnover in days and profitability.

Serge (2016) examined the effect of working capital management on the profitability of Afriland First Bank of Cameroon. The researcher used Time series data from 2002 to 2013. Correlation analysis and ordinary least square regression were used to determine how working capital affects profitability. The finding of the study shows that working capital management effectively influences the performance of Afriland First Bank. The analysis shows that customer deposits, the size of the bank, outstanding expenditure and return on assets all have a positive impact on bank profitability and are statistically significant, however, an increase in reserves leads to a reduction of profitability while other factors such as leverage have a positive effect on bank profitability.

James et al, (2014) in his study, tried to show the Implications of Working Capital Management on Liquidity Risk by sampling 9 Nairobi Securities Exchange quoted commercial banks in

Kenya. The author examine that the collection period and cash conversion cycle have Significantly negative relationship with liquidity and Creditors' payment period have significantly positive relationship with liquidity and recommended that commercial banks should maintain their current assets for meeting their short term obligation thereby increase their liquidity by shortening their debtors' collection period and cash conversion cycle whereas increasing their creditors' payment period for better liquidity position. In general the author has shown how a proper management of working capital can affect liquidity of banks.

Dawit (2016) studied the Effect of Liquidity Management on the Profitability by taking 15 private Commercial Banks in Ethiopia. The researcher took Return on assets (ROA), return on equity (ROE) as a measure of profitability and Deposits to total assets ratio (DAR), Loan to total deposit ratio (LDR), Capital and reserve to total assets ratio (CPAR) and Cash and cash equivalent ratio (CAR) as a measure of Liquidity. The results show that financial performance of the commercial banks in Ethiopia is inconsistent (both positive and negative) and the significant relationship varies from measure to measure dependent on the level of the institutions' liquidity. Financial performance commercial banks in Ethiopia affected by cash and cash equivalent, capital and reserve ratio, loan and advance ratio and deposit ratio have weak effect to profitability of commercial banks in Ethiopia.

Meron (2018) tried to identify the determinants of liquidity on selected Ethiopian commercial banks by taking Gross domestic product, Unemployment as Macro-economic variables and Investment in domestic Banks, Market share and Non-performing loan as Bank specific variables. In order to achieve the research objective the study applies fixed effect panel regression for six commercial banks as a sample covering the period from 2000 to 2017 by applying nonprobability sampling method type which is purposive sampling. The findings of the study implies that among the five factors affecting banks liquidity, Market share, investment in domestic banks has positive and statistically significant impact on banks liquidity whereas Non performing loan has negative but significant impact on banks liquidity. GDP growth rate and unemployment rate had statistically insignificant impact on banks liquidity.

Gullilat, (2020), studied the Effect of Working Capital Management on the Performance by taking 9 private Commercial Banks in Ethiopia. The researcher took return on equity (ROE) as a measure of profitability, Current Ratio, bank size, debt to equity ratio, loans and advances to total assets Ratio, loans and advances to customer deposits, current asset to total assets and

current liabilities to total liabilities and cost to income Ratio as independent variables. The results show that debt to equity ratio and cost to income ratios were found to have significant positive and negative impact on ROE respectively. The remaining six variables were not found significant to influence ROE at 5% level of confidence. Then after all the researcher recommended that Bank managers will have to increase ROE among others, by taking an aggressive working capital financing policy and increasing efficiency by reducing controllable costs.

Zebiba (2019) examined internal determinants of liquidity of commercial banks in Ethiopia by taking 11 Commercial Banks in Ethiopia. The researcher took Asset quality, Capital Adequacy, Bank size, Loan Growth and Profitability (ROA) as bank liquidity determinants. The results show that Asset quality and Profitability (ROA) had statistically significant impact on bank liquidity. The remaining three variables were not found significant to influence liquidity at 5% level of confidence. Then after all the researcher recommended that since loans are illiquid assets, banks should be alert and always adjust the amount of loans they provided and follow their NPL states and Bank managers should work for their Profitability (ROA).

Mekbib (2016) conduct a study intended to identify the determinants of liquidity of Ethiopian private commercial banks by taking 6 private Commercial Banks in Ethiopia. The researcher took Asset quality, Capital Adequacy, Bank size, Loan Growth, Non-performing loans, Profitability, Interest rate margin, Interest rate on Loans & Advances, Gross domestic product, Inflation and Short term interest rate as bank liquidity determinants. The findings of the study revealed that, bank size and loan growth has negative and statistically significant impact on liquidity; while nonperforming loans, profitability and inflation have positive and statistically significant impact on liquidity of Ethiopian private commercial banks. However, capital adequacy, interest rate margin, real GDP growth rate, interest rate on loans and short term interest rate have no statistically significant impact on the liquidity of Ethiopian private commercial banks.

Yebelay (2017) examine the impact of working capital management on the profitability of private commercial banks in Ethiopia. In his study financial statements of a sample of six (6) Private commercial banks were used for a period of eleven years (2005-2015). The study examined variables such as debtors collection period, creditors payment period, cash conversion cycle, and liquidity in relation to return on asset (ROA).In addition the study used credit risk, as

measured by loan losses amount in relation to total loan amount; size of banks, as measured by logarithm of asset; efficiency as measured by the ratio of non -interest expense to net income, as control variables. The key findings from the study are; debtors' collection period and cash conversion cycle are statistically significant and negative relationship with private commercial banks' profitability. On the other hand, variables like creditors' payment period and liquidity are statistically significant and positive relationship with private commercial banks' profitability.

2.3 SUMMARY AND KNOWLEDGE GAP

The literature review indicates that working capital management has impacts on of a firm. However, the literature review indicates that working capital management has impact on the profitability & liquidity of firms, there is ambiguity regarding the appropriate variables, hypotheses and findings. Entities though still the research outcome lack consistency. This lack of consistency in the research output by itself triggers extra research works to be made in the subject area to narrow the gap in research outputs found so far.

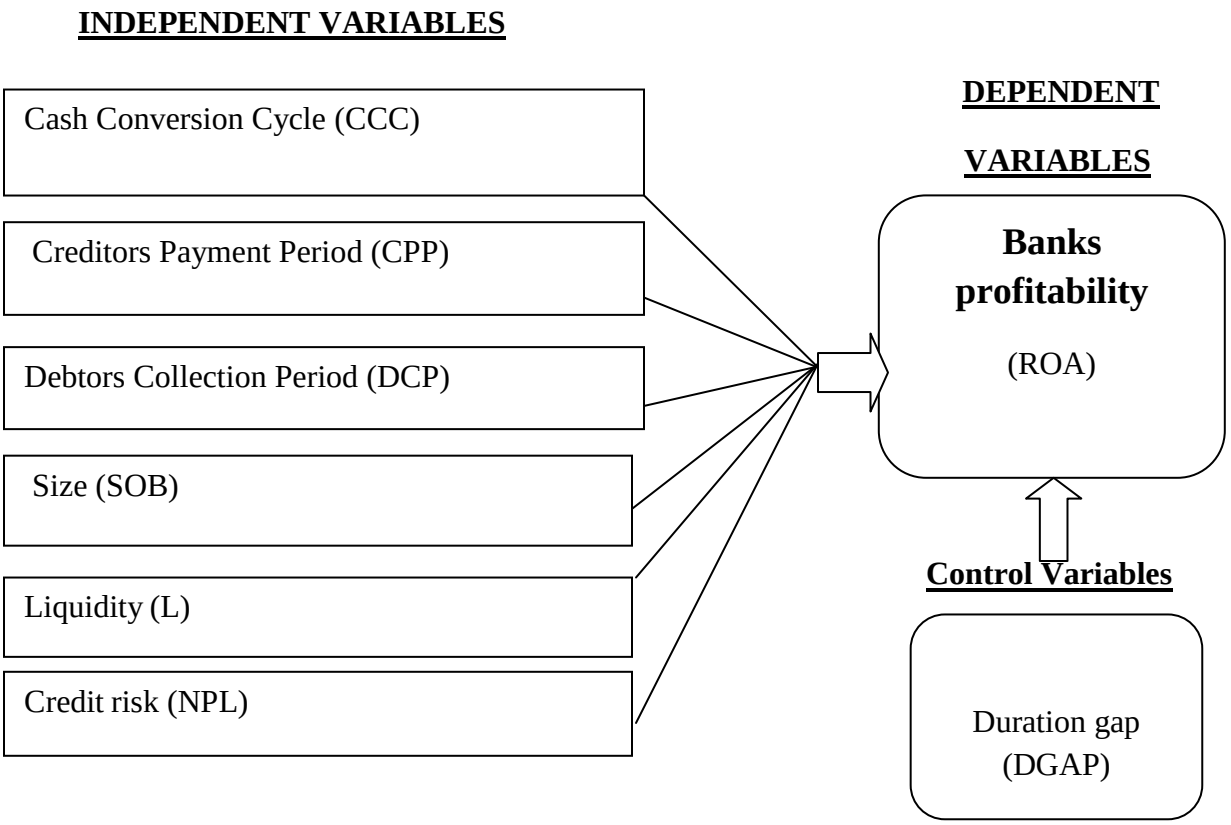
On the other hand it is clear from the empirical evidence; there is no communal result on the impact of Working Capital Management on Profitability. This may be due to lack of not incorporating all relevant and most important variables. Therefore, this study included the major important variables and provides useful support for better understanding of the effect of working capital management on commercial banks profitability.

Finally, up to the knowledge of the researcher, in Ethiopia context, it's not possible to get a study which took; measurement of profitability Return on Asset (ROA) which could be affected by working capital management components (liquidity, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size, and Credit risk) to test the independent variables effects on banks profitability.

The current study therefore would contribute to the literature gap on the subject matter by taking measurements of profitability Return on Asset (ROA) and also taking into consideration the working capital management components which related to banks activity could have impact on profitability like liquidity, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size and Credit risk. In addition to this, the researcher attempted to examine the relationship of independent variables (liquidity, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size, and Credit risk), and the dependent variable Return on

Asset (ROA). Hence the researcher examined the influence of working capital management components which related to banks activity on profitability of private commercial banks in Ethiopia.

Figure 2.1: Conceptual Frame Work



Source: own design based on different literatures.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter provides information about how the research work designed; methodology used to collect data and analyzed the collected data.

3.1 RESEARCH APPROACH AND DESIGN

The descriptive research design is used in this research. As stated by Zikmund et al. (2010), Descriptive research design by definition provide answers to the questions of who, what, when, where, and how associated with a particular research problem.

The researchers also used a quantitative approach. As stated by Mark et.al. (2009), Quantitative analysis techniques such as graphs, charts and statistics allow us to do this; helping us to explore, present, describe and examine relationships and trends within our data. Virtually any business and management research you undertake is likely to involve some numerical data or contain data that could usefully be quantified to help you answer your research question(s) and to meet your objectives.

Research question can be both descriptive and explanatory Studies that establish causal relationships between variables may be termed explanatory research. The emphasis here is on studying a situation or a problem in order to explain the relationships between variables (Mark et al., 2009). The study therefore adopted an explanatory (causal) and descriptive research design that use quantitative approach to address the purpose (aim) of the study and the research question.

3.2. POPULATION, SAMPLING TECHNIQUE AND SAMPLE SIZE

3.2.1 POPULATION

Commercial banks operating in the Ethiopian financial sector are 18. Of which 16 are private and 2 state owned. Though working capital management applies to all commercial banks, in the study, the target populations are only the sixteen Private commercial banks operating in Ethiopia.

Table 3.1: List of Commercial Banks in Ethiopia.

No.	Bank Name	Year of Establishment	Ownership
1	Commercial Bank of Ethiopia	1963	Public
2	Development Bank of Ethiopia	1909	Public
3	Awash International Bank	1994	Private
4	Dashen Bank	1995	Private
5	Bank of Abyssinia	1996	Private
6	Wegagen Bank	1997	Private
7	United Bank	1998	Private
8	NIB International Bank	1999	Private
9	Cooperative bank of Oromia	2005	Private
10	Lion International Bank	2006	Private
11	Oromia International Bank	2008	Private
12	Zemen Bank	2009	Private
13	Bunna International Bank	2009	Private
14	Birhan International Bank	2010	Private
15	Abbay Bank	2010	Private
16	Addis International Bank	2011	Private
17	Debub Global Bank	2012	Private
18	Enat Bank	2013	Private

Source: National Bank of Ethiopia, from financial statements of Commercial Banks in Ethiopia, 2021.

3.2.2 SAMPLING TECHNIQUE AND SAMPLE SIZE

Non-probabilistic sampling technique is used in this research and among the non-probabilistic sampling methods; this research used purposive sampling. Thus the researcher used purposive

sampling by applying Extreme case or deviant sampling in considering the availability of full data for the selected time period.

In Ethiopia, there are eighteen commercial banks of which two of them are publicly owned and sixteen of them are privately owned. Among the sixteen private commercial banks, 13 of them have more than 10 years' financial statement data. However Addis International Bank established in 2011 its financial statement for the year 2011 was not found. Therefore; the sample banks are; Dashen Bank, Awash International Bank, Bank of Abyssinia, Wegagen Bank, NIB International Bank , United Bank, Oromia International Bank, Cooperative Bank Of Oromia, Abay Bank, Berhan International Bank, Buna International Bank, Lion International Bank & Zemen Bank . In order to have balanced panel data for 10 years (from 2011 – 2020), those private commercial banks which have less than 10 years in operation are not selected for this study. Therefore, 13 private commercial banks selected and it is possible to draw a relationship among variables using 130 observations (13 banks x 10 year's data).

3.3. VARIABLES, DATA SOURCES AND DATA COLLECTION METHOD

3.3.1. DATA SOURCES AND DATA COLLECTION METHOD

The researcher collected secondary data of the 13 private commercial banks in Ethiopia (Dashen Bank, Awash International Bank, Bank of Abyssinia, Wegagen Bank, NIB International Bank , United Bank, Oromia International Bank, Cooperative Bank Of Oromia, Abay Bank, Berhan International Bank, Buna International Bank, Lion International Bank & Zemen Bank) that have ten years of data (financial statement) for the period from 2011 to 2020 and the sources of the data was the National Bank of Ethiopia. National bank of Ethiopia was asked to cooperate with a supporting letter issued by St. Mary's university and the Banks voluntarily issued the data for the research work.

3.3.2. DESCRIPTION AND MEASUREMENT OF VARIABLES

3.3.2.1 DEPENDENT VARIABLE

- **Profitability**

According to Peter & Sylvia (2008) while the behavior of a stock's price is, in theory, the best indicator of a financial firm's performance because it reflects the market's evaluation of that

firm, this indicator is often not available for smaller banks and other relatively small financial service corporations. Because stock issued by smaller institution frequently not available traded in international or national markets. This fact forces financial analysts to fall back on surrogates for market's value indicators in the form of various profitability ratios. Among the most important ratio measures of profitability used today are the following:

**** Return on assets (ROA) = Net income/Total assets***

3.3.2.2 INDEPENDENT VARIABLE

- **Short-Term Solvency, or Liquidity (L)**

According to Stephen et al. (2001) as the name suggests, short-term solvency ratios as a group are intended to provide information about a firm's liquidity, and these ratios are sometimes called liquidity measures. The primary concern is the firm's ability to pay its bills over the short run without undue stress. Consequently, these ratios focus on current assets and current liabilities. According to Machiraju (2008) Liquidity of bank may be defined as the ability to meet anticipated and contingent cash needs. Cash needs arise from withdrawal of deposits, liability maturities and loan disbursals. The ratio measures used to evaluate bank liquidity are:

**** Liquidity (L) = Loans / deposits***

- **Size (SOB)**

According to Mekonnen [2011, cited by, Benjamin & Michael 2014] long standing relationship between firm size and profitability has been as a result of economies of scale and increased customers bargaining power. Large banks with huge total assets based that are managed well and tend to cause increased in bank profit level and are able to outperform smaller banks with small total assets based. Larger banks also measure a lower average costs (Mekonnen, 2011).

- **Credit Risk (NPL)**

According to Machiraju (2008) Banks assume credit risk when they act as intermediaries of funds and credit risk management lies at the heart of commercial banking. Credit risk covers all risks related to a borrower not fulfilling his obligations on time. Even where assets are exactly matched by liabilities of same maturity, the same interest rate conditions and the same currency, the only on balance sheet risk remaining would be credit risk.

- **Cash Conversion Cycle (CCC)**

Yebelay (2017) & Benjamin & Michael (2014) cited Brigham & Houston (2003) who defined the Cash Conversion Cycle (CCC) as the length of time funds are tied up in working capital, or the length of time between paying for working capital and collecting cash from the sale of the working capital. According to Brigham & Houston [2007, cited by Yebelay (2017) & Benjamin & Michael 2014] the cash conversion cycle is a measure of the efficiency of working capital management as it indicates how quickly current assets are converted into cash.

Cash Conversion Cycle (CCC) = Debtors Collection period (DCP) - Creditors payment period (CPP)

- **Debtors Collection period (DCP)**

Yebelay (2017) All efforts the financial manager makes in setting credit standard, credit terms and credit collection periods are geared towards establishing an optimal credit policy for the firm. An optimal credit policy is one which maximizes a firm's value, and it is a point where Pandey [2005, cited by Yebelay 2017] assets that the incremental or marginal rate of return of an investment is equal to the incremental or marginal cost of funds used to finance that investment. In these study debtors collection period is calculated as follows:

Debtors Collection period (DCP) = Bank current asset/Interest income*365

- **Creditors' payment period (CPP)**

Accounts payables are largely dependent on the firm's purchases which, in turn, will depend on the volume of production Yebelay (2017) Thus, a decision as to whether to take trade discount or not, or to stretch accounts payables or not, should be based on the cost and benefits analysis of a firm's credit policy in relation to profitability and or liquidity of the enterprise. According to Benjamin & Michael (2014), Umoren & Udo (2015) and Samuel & Benjamin (2011) Creditors payment period can be measured by the following formula:

Creditors payment period (CPP) = Bank short-term debt /Interest expense *365

3.3.2.3 CONTROL VARIABLE

- **Duration gap (DGAP)**

According to E.Gup (2011) & Machiraju (2008) it compares the effects of changes in interest rates on the duration of a bank's assets and liabilities to determine the economic value of stockholders' equity. The *economic value* is the theoretical value of the bank's equity, taking into account the duration of both the assets and liabilities. Liquidity risk is closely related to interest rate risk. If a bank desires to have more interest sensitive liabilities than assets (liability sensitive position), it reduces the liquidity position of the bank.

****The duration gap is equal to: DGAP = DA − WDL***

Where:

DGAP=Duration gap DL=Average duration of liabilities

DA=Average duration of assets W=Ratio of total liabilities to total assets

Table 3.2: Variable Descriptions and Measurement

To address all the research questions, the following variables listed in the following table, categorized in to two as dependent variable: Profitability and the others as independent variables.

Description of variables		**Measurement**
Name	**Definition**	**Measurement**
Profitability	how efficiently the firm uses its assets and how efficiently the firm manages its operations	Return on assets (ROA) = Net income/ Total assets
Liquidity	Short-Term Solvency (ability to meet anticipated and contingent cash needs)	Liquidity (L) = Loans / deposits
Cash Conversion Cycle	The difference between Debtors Collection Period and Creditors Payment (Cash coverage ratio)	Cash Conversion Cycle (CCC) = Debtors Collection period (DCP) - Creditors payment period (CPP)
Debtors Collection Period	The ratio of Bank current assets to interest income in 365 for Bank in	Debtors Collection period (DCP) = Bank current

	time (Receivables turnover)	asset/Interest income*365
Creditors Payment Period	The ratio of bank short-term debt to interest expense in 365 for Bank in time	Creditors payment period (CPP) = Bank short-term debt /Interest expense*365
Size	The Log of total assets for the bank in time	Bank Size (SOB) = total assets of the bank in time/ total assets of all banks in time
Credit risk	loan loss provision in relation to total loans (The ratio of non-performing loans on total gross loans)	Non-performing Loan ratio or Provision for loss ratio (%) (NPL) = (Provision for loan losses / Total loan) * 100
Error term	Any Working Capital Management component which is not included in this research	Error term = ε

3.4 DATA ANALYSIS METHOD

The study used two types of data analysis; descriptive and relational analysis. First Descriptive analysis has been done to present the output of the study in terms of maximum, mean, minimum and standard deviation of the variables to be considered in the study. To properly apply the relational analysis; the researcher used Multiple regression analysis that can take the general linear model (GLM) and correlation Tests has been done by using a data processing package called SPSS version 20.

3.5 MODEL SPECIFICATIONS

In this study two models formulated by applying the expanded simple regression equation to represent multiple regression analysis that can take general linear model (GLM) which is:

$Yi = b0 + b1X1 + b2X2 + b3X3 + \ldots + bnXn + ei$

Where:

Yi = Dependent variables

$\boldsymbol{\beta}_0$ = the intercept of equation

$\boldsymbol{\beta}_{1\text{-}n}$= Coefficient of independent variables

$X_{1\text{-}n}$ = Independent variables

ei = Error term

Finally, the above expanded general linear model (GLM) has been converted into specified variables as follows:

$ROA = \beta_0 + \beta_1 CCC + \beta_2 SOB + \beta_3 NPL + \beta_4 L + \boldsymbol{\varepsilon}i$ …….....…… (1)

****Equations 1 have been formulated to include CCC while equation 2 included the components of the CCC (CPP and DCP) as the specified independent variables.***

$ROA = \beta_0 + \beta_1 DCP + \beta_2 CPP + \beta_3 SOB + \beta_4 NPL + \beta_5 L + \boldsymbol{\varepsilon}i$ ……..…...…… (2)

Where:

ROA= Return on Asset

L = liquidity

CCC= Cash conversion cycle

DCP=Debtors collection period

CPP= Creditors payment period

SOB=Size of the bank

NPL=Credit risk

$\boldsymbol{\varepsilon}$ =Error term

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

This chapter is divided into six sections. The first section presents descriptive analysis of the data and variables of the study, the second section discusses the correlation analysis between dependent and independent variables and test; the third section provides tests for multiple regression assumptions, the fourth section provides multiple regression analysis and in the fifth section is testing the hypothesis finally the sixth section is summary of finding.

4.1 DESCRIPTIVE STATISTICS

This part presents the result based on the descriptive statistics of both the dependent and independent variables which are described under the following sections. Table 4.1 below which, presents descriptive statistics for 13 private commercial banks in Ethiopia for a period of ten years from 2011 to 2020. Key figures, including mean, standard deviation, minimum and maximum value were reported. This was generated to give overall description about data used in the model and served as data screening tool to spot unreasonable figure.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CCC (Cash Conversion Cycle)	130	-.49	-.02	-.0609	.04474
CPP (Creditors payment period)	130	.06	.74	.1075	.06340
DCP (Debtors Collection period)	130	.03	.25	.0466	.02148
L (Liquidity)	130	40.49	91.46	63.5065	9.00318
NPL (Credit risk)	130	.00	8.83	1.9093	1.23747
ROA (Profitability-ROA)	130	-1.16	6.35	2.8970	.85740
SOB (Size)	130	.01	.23	.0769	.04883
Valid N	130				

Source: SPSS output from financial statements of banks, and own computation, 2021.

Based on, Table 4. 1. For the total sample, the mean of ROA was 2.9% with a minimum of -1.16% and a maximum of 6.35%. That means, the most profitable bank among the sampled

banks earned 6.35 cents profit after tax for a single birr invested on the bank assets. On the other hand, the least profitable bank of the sampled banks earned -1.16 cents of profit after tax (loss) for a single birr invested in the assets of the firm. The standard deviation statistics for ROA was 0.86 which indicates that the profitability variation between the selected banks was very small.

To check the short term solvency of the Ethiopian private commercial banks, the average L (loan to deposit) ratio for Ethiopian private commercial banks is 63.5% with the maximum L is 91.46% and the minimum ratio is 40.49% with a standard deviation of 9%. From this we can say that Ethiopian private commercial banks have current asset could covered only 63.5% of current liabilities and someone can conclude that the liquidity position of Ethiopian private commercial banks is somewhat weak.

It also indicates that from the sampled Ethiopian private commercial banks to have a minimum debtors' collection period of .03 and maximum of .25 days with an average of .0466, which is equivalent to 7,833 day. Private commercial banks also have minimum of 0.06 and maximum of .74 of creditors' payment period and the average creditors' payment period is .1075which is equivalent to 3,395 day. Based on the finding private commercial banks have not advantage of long term credit from their customers. Sample of Ethiopian private commercial banks appeared to have a minimum of cash conversion cycle of -.49 and maximum of -.02 and the average cash conversion cycle is -.06 which is to about 6,083 days on a 365-day cycle. This implies that private commercial banks take longer collection period to collect their receivables.

Finally one can see that the mean value of log of assets is 0.08 % and the maximum log of assets for a bank in a year is 0.23% while the minimum log of assets is 0.01% with the standard deviation of 0.05. On the other hand NPL ratio has the mean of 1.9%, the minimum NPL of 0% and a maximum of 8.83%. Credit risk has experienced with standard deviation equal to 1.2.

Up to the knowledge of the researcher there is no research work which is delimited as this study is delimited as with total sample size of 13 private commercial banks and take financial statements year 2011 – 2020 as data to examine the effect of working capital management on the profitability and liquidity of private commercial banks in Ethiopia and no similar result with this research to compar.

4.2 ANALYSIS FOR PEARSON'S CORRELATION COEFFICIENT

Pearson's Correlation analysis, which is also known as bivariate correlations, has been performed in order to determine and identify if there is any significant strong relationship between the independent and dependent variables such as the working capital components towards the profitability of firms of private commercial banks in Ethiopia. The summary of the Pearson's correlation matrix is presented as follow.

Table4.2: Correlations

	CCC(Cash Conversion Cycle)	CPP(Creditors payment period)	DCP (Debtors Collection period)	L (Liquidity)	NPL (Credit risk)	ROA (Profitability)	SOB (Size)
CCC(Cash Conversion Cycle)	1	-.980**	-.809**	.084	.163	.320**	.149
CPP(Creditors payment period)	-.980**	1	.910**	-.203*	-.118	-.286**	-.162
DCP(Debtors Collection period)	-.809**	.910**	1	-.425**	-.007	-.177*	-.168
L(Liquidity)	.084	-.203*	-.425**	1	-.254**	-.137	.041
NPL(Credit risk)	.163	-.118	-.007	-.254**	1	.251**	.019
ROA(Profitability)	.320**	-.286**	-.177*	-.137	.251**	1	.076
SOB(Size)	.149	-.162	-.168	.041	.019	.076	1

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

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

Source: SPSS output from financial statements of banks, and own computation, 2021.

According to Mark et al. (2009), a correlation coefficient enables you to quantify the strength of the linear relationship between two ranked or numerical variables. This coefficient (usually represented by the letter r) can take on any value between -1 and +1. A value of +1 represents a perfect positive correlation. This means that the two variables are precisely related and that, as values of one variable increase, values of the other variable will increase. By contrast, a value of -1 represents a perfect negative correlation. Again, this means that the two variables are precisely related; however, as the values of one variable increase those of the other decrease. Correlation coefficients between -1 and +1 represent weaker positive and negative correlations, a value of 0

meaning the variables are perfectly independent. Brian (2018), Coefficients close to 1.0 or –1.0 represent a strong relationship. In general, correlations with an absolute value greater than 0.7 are considered strong. Correlations with an absolute value less than 0.3 are considered weak. Correlations with an absolute value between 0.3 and 0.7 are considered moderate. Positive correlations indicate that as one variable gets larger, the other variable also gets larger. Negative correlations indicate that as one variable gets larger, the other variable gets smaller. Significant correlations are flagged with asterisks. A significant correlation indicates a reliable relationship, but not necessarily a strong correlation. With enough participants, a very small correlation can be significant.

The Above table shows the correlation coefficient among the profitability measures ROA and the independent variables of the study. Table4.2. Shows weak but significant negative correlation between debtors' collection period (DCP) and profitability measures (ROA). From the table, one cane notices that correlation coefficient of debtors' collection period with ROA is-.177 significant at the 0.05 level and it indicates that the shorter debtors' collection period are associated with high profitability and longer debtors' collection period is associated with lower profitability. The result of this study was consistent with the findings of Yebelay (2017), negative correlation coefficient between debtors' collection period and profitability measures but contradict with Samuel & Benjamin (2011) finding.

Unexpectedly there is weak but significant negative correlation between creditors' payment period (CPP) and profitability measures (ROA) which indicates when the private commercial bank's Creditors' payment period shorter, profitability (ROA) will be high or when bank's Creditors' payment period is longer, profitability (ROA) will be low. The correlation coefficient of Creditors' payment period with ROA is -.286 significant at the 0.01 level. The result of this study was contradict with the findings of Yebelay (2017), negative correlation coefficient between debtors' collection period and profitability measures but agreed with Samuel & Benjamin (2011) finding.

On the other hand the Cash conversion cycle (CCC) which is the difference of debtors' collection period (DCP) and Creditors' payment period (CPP), is weak but significant positively correlated with profitability measures (ROA) which indicates when the private commercial

bank's Cash conversion cycle (CCC) shorter, profitability (ROA) or when bank's Cash conversion cycle (CCC) is longer, profitability (ROA). The correlation coefficient of Cash conversion cycle (CCC) with ROA is .320, significant at the 0.01. The result of this study was agreed with the findings of Samuel & Benjamin (2011) negative correlation coefficient between debtors' collection period and profitability measures but contradict with Yebelay (2017), Benjamin & Michael (2014), Umoren & Udo (2015) finding.

As different literature indicates there is a tradeoff between Liquidity and profitability objectives. And as it is observed from the results (Table4.2) and analysis of Pearson's correlation coefficient, liquidity (L) is weakly and negatively correlated with profitability (ROA) which indicates when private commercial banks are more liquid or strong to pay their short term obligation; their profitability will be low. The correlation coefficient of liquidity (L) and profitability (ROA) -.137 and the relationship is not significant. The result of this study was agreed with Simachew (2018), Asnake (2018), Melis (2018), contradict with Mekbib (2016), Yebelay (2017), Belay (2017) and Gullilat (2020) finding.

There is positive and significant at the 0.01 level Correlation profitability (ROA) with credit risk (NPL) but the result contradict with (Meseret, 2018) findings. And there is positive Correlation between profitability (ROA) with size (SOB) which indicates that large bank size performs better than the smaller banks but the relationship is not significant. The positive Correlation between profitability (ROA) with size (SOB) is consistent with Serge (2016), Umoren & Udo (2015), Lemlem (2017), Wubishet (2016) & Melis (2018).

4.3 TESTS FOR MULTIPLE REGRESSION ASSUMPTIONS

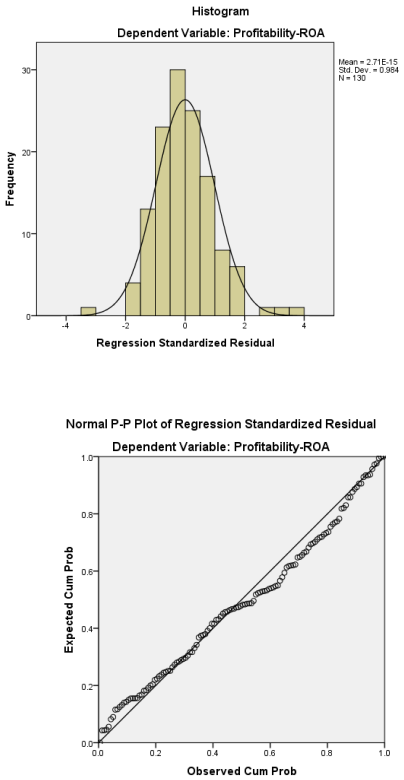
When calculating a regression equation you need to ensure the following assumptions are met: The relationship between dependent and independent variables is linear (Linearity), The extent to which the data values for the dependent and independent variables have equal variances (homoscedasticity), Absence of correlation between two or more independent variables (collinearity or multicollinearity), as this makes it difficult to determine the separate effects of individual variables and The data for the independent variables and dependent variable are normally distributed (normality) (Mark et al., 2009). In this study therefore normality, homoscedasticity, Independence of residuals and multicollinearity tests were carried out to

ensure that the data fits the basic assumptions, to calculate the regression models and the results for model misspecification tests are presented as follows:

4.3.1 NORMALITY OF DATA

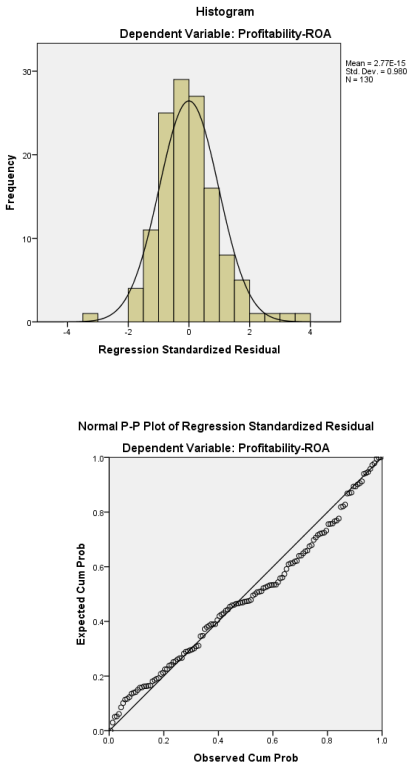
Brooks (2008) noted that in order to conduct hypothesis test about the model parameter, the normality assumption must be fulfilled. The normality assumption is about the mean of the residuals is zero. (Zikmund et al., 2010), One of the most common probability distributions in statistics is the normal distribution, commonly represented by the normal curve. This mathematical and theoretical distribution describes the expected distribution of sample means and many other chance occurrences. The normal curve is bell shaped, and almost all (99 percent) of its values are within ±3 standard deviations from its mean.

Figure 4.1: Histogram & Normal P-Plot (Normality test for model 1)



Source: SPSS output from financial statements of banks, and own computation, 2021.

Figure 4.2: Histogram & Normal P-Plot (Normality test for model 2)



Source: SPSS output from financial statements of banks, and own computation, 2021.

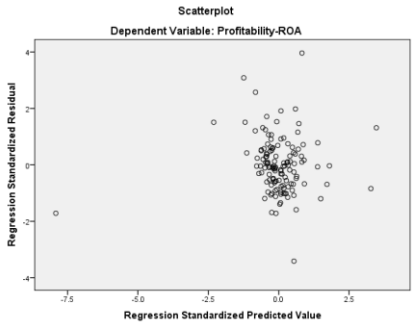
The researcher used graphical methods of testing for the normality of data as shown above in Figure 4.1 & 4.2: Histogram & Normal P-Plot of regression standardized residual of each models. The shapes of the histogram for both models are bell shaped: so the data is normally distributed around its mean of zero. Hence the normality assumption is fulfilled. Therefore it is possible to determine that the inferences that the researcher made about the population parameter from the sample is valid.

4.3.2 HOMOSCEDASTICITY (HETROSCEDASTICITY)

According to Mark et al. (2009), homoscedasticity Extent to which the data values for the dependent and independent variables have equal variances. If heteroscedasticity (that is, unequal variances) exists, it may still be possible to carry out your analysis. Brooks (2008) disused that; it has been assumed thus far that the variance of the errors is constant, σ2 - this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be

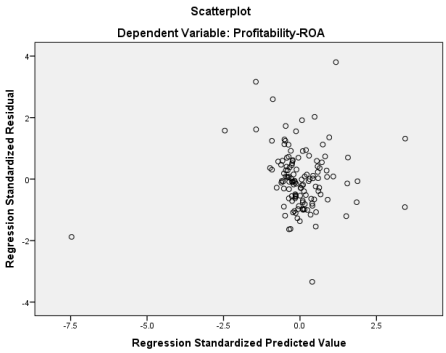
heteroscedastic. Multiple regressions assume the range of variance for the DV is uniform for all values of the IV. According to Field (2005) if the pointes are randomly and evenly dispersed throughout the plot, the pattern will be indicative of a situation in which the assumption of linearity and homoscedasticity have been met.

Figure 4.3: Scatterplot (A Homoscedasticity Assumption test for model 1)



Source: SPSS output from financial statements of banks, and own computation, 2021.

Figure 4.4: Scatterplot (A Homoscedasticity Assumption test for model 2)



Source: SPSS output from financial statements of banks, and own computation, 2021.

Therefore, the researcher used graphical methods of testing the Homoscedasticity (Hetroscedasticity) of data values for the dependent and independent variables as shown above in Figure 4.3 & 4.4: Homoscedasticity Assumption of each models. However, inspection of the plots shows good variability in the plots, the researcher proceed with the analysis assuming homoscedasticity is not a major problem.

4.3.3 INDEPENDENCE OF RESIDUALS (AUTOCORRELATION)

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. According to Mark et al. (2009), If you are using regression for your time series analysis, the Durbin-Watson statistic can be used to discover whether the value of your dependent variable at time t is related to its value at the previous time period, commonly referred to as t − 1. This situation, known as autocorrelation or serial correlation, is important as it means that the results of your regression analysis are less likely to be reliable.

The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are not correlated if the Durbin-Watson statistic is approximately 2. According to Brooks (2008) autocorrelation value near 2 indicates nonexistence of autocorrelation (though there is a no sign of autocorrelation it is not worrisome). On the other hand, a value near to 0 indicates positive autocorrelation, and a value near to 4 indicates negative autocorrelation.

Table4.3: Test for Independence of Residuals for model 1

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.396[a]	.157	.130	.79968	1.306

a. Predictors: (Constant), CCC Cash Conversion Cycle, L Liquidity, SOB Size, NPL Credit risk

b. Dependent Variable: ROA Profitability-ROA

Source: SPSS output from financial statements of banks, and own computation, 2021.

Table4.4: Test for Independence of Residuals for model 2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.399[a]	.159	.125	.80205	1.318

a. Predictors: (Constant), DCP Debtors Collection period, NPL Credit risk, SOB Size, L Liquidity, CPP Creditors payment period

b. Dependent Variable: ROA Profitability-ROA

Source: SPSS output from financial statements of banks, and own computation, 2021.

The researcher used the Durbin-Watson (to assess autocorrelation) or Test for Independence of Residuals for each model as shown in Table 4.3& 4.4: Test for Independence of Residuals Assumption for each model. Therefore the researcher could see the nonexistence of autocorrelation because the Durbin-Watson statistic values of both models are near to 2.

4.3.4 MULTICOLLINEARITY

Collinearity is the extent to which two or more independent variables are correlated with each other it is also termed as multicollinearity. According to Mark et al. (2009), the simplest diagnostic is to use the correlation coefficients, extreme collinearity being represented by a correlation coefficient of 1. The rule of thumb is that the presence of high correlations (generally 0.90 and above) indicates substantial collinearity. Hair et al. [2006, cited by Mark et al. 2009], other common measures include the tolerance value and its inverse – the variance inflation factor (VIF). Hair et al. [2006, cited by Mark et al. 2009], recommend that a very small tolerance value (0.10 or below) or a large VIF value (10 or above) indicates high collinearity. According to Zikmund et al. (2010), when multicollinearity is too high, the individual parameter estimates become difficult to interpret.

Table4.5: Test for Multicollinearity for model 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.697	.599		6.176	.000		
	L Liquidity	-.011	.008	-.120	-1.398	.165	.919	1.088
	NPL Credit risk	.119	.060	.172	1.984	.049	.901	1.110
	SOB Size	.581	1.459	.033	.399	.691	.977	1.024
	CCC Cash Conversion Cycle	5.692	1.626	.297	3.501	.001	.937	1.067

a. Dependent Variable: ROA Profitability-ROA

Source: SPSS output from financial statements of Commercial Banks in Ethiopia, and own computation, 2021.

The researcher therefore used the tolerance value and its inverse – the variance inflation factor (VIF) for each model as shown above & below in Table4.5 & 4.6: Test for Multicollinearity Assumption for each model. And the researcher could see all of the tolerance values are greater than .10 and the VIF is less than 10 so Multicollinearity is not a problem in both models. However, when two variables are highly correlated, they both convey essentially the same information; hence the purpose of this research is only to predict the change in the DV from a set

of IV; multicollinearity does not adversely affect the regression equation. But, to recommend to the policy maker by understanding the predictive power of each IV, multicollinearity can be a problem.

Table4.6: Test for Multicollinearity for model 2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.415	.812		4.205	.000		
	L Liquidity	-.008	.010	-.088	-.827	.410	.602	1.661
	NPL Credit risk	.117	.060	.169	1.940	.055	.897	1.114
	SOB Size	.643	1.468	.037	.438	.662	.970	1.031
	CPP Creditors payment period	-7.058	3.116	-.522	-2.265	.025	.128	7.826
	DCP Debtors Collection period	10.708	9.889	.268	1.083	.281	.110	9.051

a. Dependent Variable: ROA Profitability-ROA

Source: SPSS output from financial statements of Commercial Banks in Ethiopia, and own computation, 2021.

4.4 MULTIPLE REGRESSION ANALYSIS

In the previous section the researcher could identify the relationships of each variable and how each working capital components associate with profitability. The weak side of the above section is that they do not allow identifying how much is the impact of each of the components of working capital on profitability. To overcome this limitation, the researcher conducted regression analysis. The results of the regression analysis are presented below for each econometric model.

As presented in the third chapter the econometric model used in the study in order to examine the effect of working capital components on profitability of private commercial banks in Ethiopia was delivered as follows. The following two models are regressed separately because the 2nd model includes the two components of CCC; DCP and CPP, and these two variables were not regressed with CCC since it's not allowed regressing similar variables in one model.

$ROA = \beta_0 + \beta_1 CCC + \beta_2 SOB + \beta_3 NPL + \beta_4 L + \varepsilon i$ ……. 1

$ROA = \beta_0 + \beta_1 DCP + \beta_2 CPP + \beta_3 SOB + \beta_4 NPL + \beta_5 L + \varepsilon i$ ……. 2

Table4.7: Regression Results for model 1

Coefficients [a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
1	**B**	**Std. Error**	**Beta**		
(Constant)	3.697	0.599		6.176	0
L Liquidity	-0.011	0.008	-0.12	-1.398	0.165
NPL Credit risk	0.119	0.06	0.172	1.984	0.049
SOB Size	0.581	1.459	0.033	0.399	0.691
CCC Cash Conversion Cycle	5.692	1.626	0.297	3.501	0.001

Model Summary[b]		**ANOVA[a]**		
R	.396[a]	**F statistic**		5.823
R Square	0.157	**Sig.(Prob of F -statistic)**		.000b
Adjusted R Square	0.13	**Df(degrees of freedom)**	4	125
Std. Error of the Estimate	0.79968			
Durbin-Watson	1.306			

a. Dependent Variable: ROA Profitability-ROA

b. Predictors: (Constant), CCC Cash Conversion Cycle, L Liquidity, SOB Size, NPL Credit risk

Source: SPSS output from financial statements of banks, and own computation

Table 4.7 discloses the summary statistics of regression model 1. The multiple correlation coefficient (R) and coefficient of determination (R2) are .096 and .157 respectively. This indicates the model can explain 15.7% of the variation in the dependent variable is by the variables used in the model. The overall model is significantly useful in explaining Profitability (ROA), F (4,125) = 5.823, P< .05.

On the other hand NPL (Credit risk), SOB (Size) & CCC (Cash Conversion Cycle) have positive relationship with ROA (Profitability) but the relationship of SOB (Size) is not significant and based on the result the one unit increase in NPL, SOB & CCC result on the ROA increases by 0.119, 0.581 & 5.692 units respectively. Whereas L (Liquidity) have negative relationship with ROA (Profitability) but the relationship is not significant and with one-unit increase in L (Liquidity) the ROA decreases by 0.011 units. Therefore the model could be stated ROA =3.697+ 5.692CCC + 0.581SOB + 0.119NPL-0.011L + $\boldsymbol{\varepsilon}$i. In general the regression analysis

results of this study presented in table 4.7 among the 4 predictors only NPL (Credit risk) & CCC (Cash Conversion Cycle) were significantly related with ROA (Profitability).

Table4.8: Regression Results for model 2

Coefficients [a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
2	**B**	**Std. Error**	**Beta**		
(Constant)	3.415	0.812		4.205	0
L Liquidity	-0.008	0.01	-0.088	-0.827	0.41
NPL Credit risk	0.117	0.06	0.169	1.94	0.055
SOB Size	0.643	1.468	0.037	0.438	0.662
CPP Creditors payment period	-7.058	3.116	-0.522	-2.265	0.025
DCP Debtors Collection period	10.708	9.889	0.268	1.083	0.281

Model Summary[b]		**ANOVA[a]**		
R	.399[a]	**F statistic**		4.684
R Square	0.159	**Sig.(Prob of F -statistic)**		.001[b]
Adjusted R Square	0.125	**Df(degrees of freedom)**	5	124
Std. Error of the Estimate	0.80205			
Durbin-Watson	1.318			

a. Dependent Variable: ROA Profitability-ROA

b. Predictors: (Constant), DCP Debtors Collection period, NPL Credit risk, SOB Size, L Liquidity, CPP Creditors payment period

Source: SPSS output from financial statements of banks, and own computation

Table 4.8 discloses the summary statistics of regression model 2. The multiple correlation coefficient (R) and coefficient of determination (R2) are .399 and .159 respectively. This indicates the model can explain 15.9% of the variation in the dependent variable is by the variables used in the model. The overall model is significantly useful in explaining Profitability (ROA), F (5,124) = 4.684, P< .05.

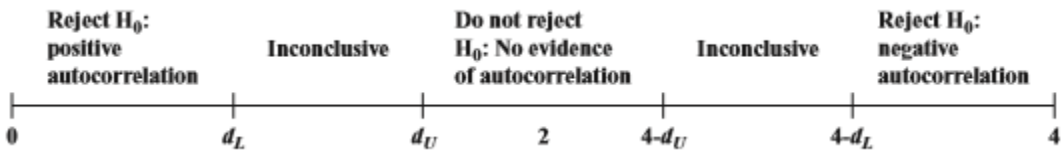
On the other hand NPL (Credit risk), SOB (Size) & DCP (Debtors Collection period) have positive relationship with ROA (Profitability) but their relationship with not significant and based on the result the one unit increase in NPL, SOB & DCP result on the ROA increases by 0.117, 0.643 & 10.708 units respectively. Whereas L (Liquidity) & CPP (Creditors payment

period) have negative relationship with ROA (Profitability) but the relationship of L (Liquidity) is not significant and based on the result with one-unit increase in L (Liquidity) & CPP (Creditors payment period) the ROA decreases by 0.008 & 7.058 units respectively. Therefore the model could be stated as ROA =3.415+ 10.708DCP -7.058CPP + 0.643SOB + 0.117NPL-0.008L + $\boldsymbol{\varepsilon}$i. In general the regression analysis results of this study presented in table 4.8 among the 5 predictors only CPP (Creditors payment period) were significantly related with ROA (Profitability).

4.5 HYPOTHESIS TEST & DISCUSSION OF THE REGRESSION RESULT

According to Mark et al. (2009) If the probability of your test statistic or one more extreme having occurred by chance alone is very low (usually $p < 0.05$ or lower), then you have a statistically significant relationship. Statisticians refer to this as rejecting the null hypothesis and accepting the hypothesis, often abbreviating the terms null hypothesis to H0 and hypothesis to H1. Consequently, rejecting a null hypothesis will mean rejecting a testable statement something like 'there is no significant difference between . . .' and accepting a testable statement something like 'there is a significant difference between . . .'. If the probability of obtaining the test statistic or one more extreme by chance alone is higher than 0.05, then you conclude that the relationship is not statistically significant. Statisticians refer to this as accepting the null hypothesis. There may still be a relationship between the variables under such circumstances, but you cannot make the conclusion with any certainty.

Zikmund et al. (2010), A "null" hypothesis can be thought of as the expectation of findings as if no hypothesis existed (i.e., "no" or "null" hypothesis). In other words, the state implied by the null hypothesis is the opposite of the state represented by the actual hypothesis. According to Brooks (2008) there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected! The rejection, non-rejection, and inconclusive regions are shown on the following diagram:



Source: Brooks C. (2008)

So, to reiterate, the null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value; the null hypothesis is rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value; the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper and 4 minus the upper limits.

H1: There is significant negative relationship between liquidity and profitability of private commercial banks.

As different literature indicates there is a tradeoff between Liquidity and profitability objectives. And as it is observed from the results in both model 1 and model 2analysis of multiple regressions, liquidity (L) is negatively related with profitability (ROA) but not significantly, which indicates when private commercial banks are more liquid or strong to pay their short term obligation; their profitability will be low. The result of this study was varying with the findings of Gullilat (2020), Belay (2017), Yebelay (2017) & Mekbib (2016) but agreed with Simachew (2018), Asnake (2018), Melis (2018) finding. In conformity with hypothesis, the measurement of profitability (ROA) is negatively related with liquidity in both models but the relationship is insignificant. Therefore, the hypothesis will be neither accepted nor rejected; it is neutral based on the finding.

H2: There is significant positive relationship between Bank size and profitability of private commercial banks.

As it is observed from the results in both model 1 and model 2analysis of multiple regressions, SOB (Bank size) is positively related with profitability (ROA) but not significantly, which indicates that larger banks in size performs better than the smaller banks. The positive relationship between profitability (ROA) with size (SOB) is consistent with Serge (2016), Umoren & Udo (2015), Lemlem (2017), Wubishet (2016) & Melis (2018). In conformity with hypothesis, the measurement of profitability (ROA) is positively related with size (SOB) in both models but the relationship is insignificant. Therefore, the hypothesis will be neither accepted nor rejected; it is neutral based on the finding.

H3: There is a significant negative relationship between debtors' collection period and profitability of private commercial banks.

The model that includes the two components of CCC (Cash Conversion Cycle) which are DCP (Debtors Collection period) & CPP (Creditors payment period) imply DCP (Debtors Collection period) have positive relationship with the profitability (ROA). But DCP has no significant effect on ROA. Because the main source of revenue for banks is interest, the lengthened DCP result in an increase their interest, the positive relationship could be supported theoretically. The results contradict with earlier studies of Yebelay (2017) and Deloof (2003) but consistent with study made by Samuel & Benjamin (2011). Therefore, the hypothesis stated there is a significant negative relationship between debtors' collection period and profitability of private commercial banks should be rejected based on the result obtained in this study.

H4: There is significant positive relationship between creditors' payment period and profitability of private commercial banks.

The model that includes the two components of CCC (Cash Conversion Cycle) which are DCP (Debtors Collection period) & CPP (Creditors payment period) imply CPP (Creditors payment period) have negative relationship with the profitability (ROA). And also CPP has significant effect on ROA, with one-unit increase in CPP (Creditors payment period) the ROA decreases by 7.058 units. Because Shortened CPP reduces interest expenses, the negative relationship could be supported theoretically. The results contradict with earlier studies of Yebelay (2017) but agreed with study made by Samuel & Benjamin (2011) and Deloof (2003). Therefore, the hypothesis stated there is significant positive relationship between creditors' payment period and profitability of private commercial banks should be rejected based on the result obtained in this study.

H5: There is significant positive relationship between cash conversion cycle and profitability of private commercial banks.

The relationship of cash conversion cycle (CCC) and profitability (ROA) of private commercial banks is significant positive based on the result showed in model 1. Hence with one-unit increase in CCC, the ROA increases by 5.692 units. In other words as banks could reduce the length of its CPP (Creditors payment period) & lengthened DCP (Debtors Collection period) to increase its cash conversion cycle (CCC) so that the profitability of banks is greatly enhanced as the CCC is

lengthened through shortened CPP and lengthened DCP. According to E.Gup (2011) & Machiraju (2008), while the dollar gap analysis focuses on a bank's short-term net interest income, the duration gap takes a longer view and focuses on the economic value of equity. When a bank structures its portfolio in order to achieve a positive duration gap (the duration of assets exceeds the duration of liabilities) the liquidity of the assets is reduced. If interest rates increase the value of long-duration assets will decline more than short-duration assets and asset sales would involve losses.

The result supports the previous empirical works that of Samuel & Benjamin (2011). But the finding of this study contradicts from the empirical works by Yebelay (2017), Benjamin & Michael (2014), Deloof (2003) and Umoren & Udo (2015), obtain a negative relationship between CCC and firm profitability. Based on the findings of this study the hypothesis stated there is significant positive relationship between cash conversion cycle and profitability of private commercial banks should be accepted.

H6: There is significant negative relationship between Credit risk and profitability of private commercial banks.

Based on model 1of this study NPL (Credit risk) and profitability (ROA) have significant positive relationship; with one-unit increase in NPL, the ROA increase by 0.119 units. On the other hand based on model 2 of this study NPL (Credit risk) and profitability (ROA) have a positive but not significant relationship. The result also consistent to the study made by Meseret (2018) but contradict with Umoren & Udo (2015) finding which stated that: no relationship between profitability and credit risk. Based on the findings of this study the hypothesis stated that there is significant negative relationship between Credit risk and profitability of private commercial banks should be rejected.

4.6 SUMMARY OF FINDING

The findings of the study revealed that, Liquidity negatively on the other hand Debtors Collection period & Bank size are positively related with profitability but not significantly so they have no significant effect on profitability. Based on the two mode formulated in this study Credit risk and profitability have different or significant positive & positive but not significant relationship. Creditors payment period have significant negative relationship with the profitability so that it has significant effect on profitability. The relationship of cash conversion

cycle and profitability of private commercial banks is significant positive. Private commercial banks can reduce the length of its Creditors payment period& lengthened Debtors Collection period to increase its cash conversion cycle so that the profitability of banks is greatly enhanced as the cash conversion cycle is lengthened. As Liquidity (L) has negative impact on profitability (ROA) it indicates when private commercial banks are more liquid or strong to pay their short term obligation; their profitability will be low but the result show the relationship is not significant.

CHAPTER FIVE

CONCLUSION & RECOMMENDATIONS

In this chapter the conclusions and recommendations of the researcher have been provided based on the findings of the study. It is organized into two sections: the conclusions and the recommendations.

5.1 CONCLUSIONS

Working Capital is another part of the capital which is needed for meeting day to day requirement of the business concern. Bank capital provides the working capital required when a new bank is chartered. It also acts as a buffer to absorb temporary losses so that a bank can continue to operate and improve earnings. Holding excess balance of working capital would improve the liquidity position, but profitability would be adversely affected as funds will remain idle. The main objective of the Working Capital Management is managing the Current Asset and Current Liabilities effectively and maintaining adequate amount of Working Capital.

The research paper was aimed at filling the gap in literature by extending literature on the effect of working capital management on profitability to the banking sector. In order to achieve this objective; The researcher collected secondary data of the 13 private commercial banks in Ethiopia that have ten years of data (financial statement) for the period from 2011 to 2020 as the research case. The main results of the former researchers reveal that efficient working capital management is a factor influencing the profitability of private commercial banks in Ethiopia. This study therefore included the major important variables and provides useful support for better understanding of the effect of working capital management on commercial banks profitability and only examines the independent variables like liquidity, Cash Conversion Cycle, Debtors Collection Period, Creditors Payment Period, Size, and Credit risk.

The findings of the study revealed that, Liquidity negatively on the other hand Debtors Collection period & Bank size are positively related with profitability but not significantly so they have no significant effect on profitability. Based on the two mode formulated in this study Credit risk and profitability have different or significant positive & positive but not significant

relationship. Creditors payment period have significant negative relationship with the profitability so that it has significant effect on profitability. The relationship of cash conversion cycle and profitability of private commercial banks is significant positive. Private commercial banks can reduce the length of its Creditors payment period& lengthened Debtors Collection period to increase its cash conversion cycle so that the profitability of banks is greatly enhanced as the cash conversion cycle is lengthened.

As different literature indicates there is a tradeoff between Liquidity and profitability objectives. And as it is observed from the results of this study Liquidity (L) have negative impact on profitability (ROA) which indicates when private commercial banks are more liquid or strong to pay their short term obligation; their profitability will be low but the result show the relationship is not significant.

5.2 RECOMMENDATIONS

In order to improve private commercial banks performance, efficient working capital management is necessary. Therefore, from the results obtained and based on the study findings, the researcher could make the following recommendations which include:

I. The study found CPP (Creditors payment period) have significant negative relationship with the profitability (ROA). And also CPP has significant effect on ROA. This may be a result of imbalanced interest income and interest expense. Therefore, the researcher recommends that private commercial banks should pay their debt with in shorter period as possible. Other ways should look for appropriate strategies, polices, procedures, and limits to manage and mitigate interest rate risk such as many interest free deposits.

II. On the other hand DCP (Debtors Collection period) have positive relationship with the profitability (ROA). But DCP has no significant effect on ROA. The in significant relationship maybe because of there is a probability of some of a financial institution's assets, especially its loans, will decline in the value and perhaps become worthless which is known as credit risk (non-performing loan). Therefore the researcher recommends to the Asset/liability management (ALM) of the private commercial banks should be aware of policies which would address asset liability management goals and risk limits and by information that relates directly to its asset-liability position.

III. Similar the relationship of cash conversion cycle (CCC) and profitability (ROA) of private commercial banks is positive. And their relationship is significant. The finding indicates As the CCC is lengthened through shortened CPP and lengthened DCP to increase profitability. Therefore the researcher recommends banks' should lengthened CCC so that they may earn more interest income and manage interest rate risk.

IV. NPL (Credit risk) and profitability (ROA) have significant positive relationship; On the other hand based on model 2 result of this study NPL (Credit risk) and profitability (ROA) have a positive but not significant relationship. It indicates private commercial banks in Ethiopia have collecting interest income and other commission income that could cover their credit risk. However NPL (Credit risk) and profitability (ROA) have positive relationship, the researcher recommends that private commercial bank souled adopting a strong bank's loan portfolio management; develop prudent limits, effective credit review and loan classification procedures.

V. Based on the finding of this study Liquidity (L) is negatively related with profitability (ROA) but their relationship is not significantly. However the relationship is not significant, another notable feature of short-term assets is the question of profitability verses liquidity and the related aspect of risk. If the size of such assets is large, the liquidity position would improve, but profitability would be adversely affected as funds will remain idle. Conversely, if the holding of such assets are relatively small, the overall profitability will no doubt increase, but it will have an adverse effect on liquidity position and make the firm more risk holder. Therefore the researcher recommends policy makers to follow Aggressive Working Capital Policy because the relationship is not significant.

Finally, there is a need for further studies to bring out on the impact of working capital management on profitability & liquidity of banks' by incorporating more working capital variable like Duration Gap which is determined by using a ratio such as DGAP & Economic profits for banks which is determined by using a ratio such as RAROC. The duration gap compares the effects of changes in interest rates on the duration of a bank's assets and liabilities to determine the economic value of stockholders' equity. Whereas RAROC considers expected loss, which is a risk measure of the degree of riskiness of the loan portfolio so it has the benefit of taking into account risk factors and costs.

REFERENCES

Abbasali, P. and Milad, E. (2012), *Impact of Working Capital Management on Profitability and Market Evaluation: Evidence from Tehran Stock Exchange*, International Journal of Business and Social Science, Vol. 3 No. 10, pp. 311-318.

Abuzar, M. A. (2004), *Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market*. International Journal of Commerce and Management, Vol.14 (2), pp. 48- 61, 2004.

Asnake, F., (2018), *Determinants of Commercial Banks' Liquidity in Ethiopia*. MBA in Accounting and Finance, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Belay, M., (2017), *Determinants of Banks Liquidity: A Study on Selected Commercial Banks in Ethiopia*. For The Degree of MBA in Accounting and Finance, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Benjamin, Y. & Michael, Y. (2014), *The Effect of Working Capital Management of Ghana Banks on Profitability: Panel Approach*, International Journal of Business and Social Science, Vol. 5, No. 10, pp. 294-306.

Benton, E. (2011), *Banking and Financial Institutions: a guide for directors*, investors, and counterparties. John Wiley & Sons Inc, Canada.

Bhalla, V.K. (2014), *Working Capital Managemen*t, S. Chand and Company PVT. LTD., New Delhi.

Brian, C. (2018), *HOW TO USE SPS: A Step-By-Step Guide to Analysis and Interpretation*. (10th Ed.) Routledge (Taylor & Francis), New York & Oxon.

Brooks, C. 2008, *Introductory Econometrics for Finance*. (2nd ed.) Cambridge University Press, New York.

C. Paramasivan & T. Subramanian, (2009), *Financial Management*. New Aga International (P) Limited, New Delhi.

David, M (2010), *The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenya Listed Firms*, Research journal of business management, 4 (1) pp4-11.

Dawit, B. (2016), *The Effect of Liquidity Management on Profitability: In the Case of Commercial Banks' in Ethiopia*. For the Degree of Masters of Business Administration, St. Mary's University School of Graduate Studies , Addis Ababa, Ethiopia.

Deloof, M. (2003), *Does Working Capital Management Affects Profitability of Belgian Firms?* Journal of Business Finance & Accounting, Vol 30 No 3 & 4 pp. 573 – 587.

Deloof, M. and Jegers, M. (1996), *Trade credit, Product Quality, and Intragroup Trade: Some European Evidence*. Financial Management, Vol 25 No 3 pp. 33-43.

Eugene, F. and Michael, C. (2001), *Financial Management: Theory and Practice*. (10th ed.) Mike Roche, United States of America.

Eugene, F. and Michael, C. (2008), *Financial Management: Theory and Practice*. 12th Ed. Thomson Higher Education, USA.

Field, A. (2005), *Discovering Statistics Using SPSS*. (2nd ed.) Sage Publication Ltd., London.

Gitman, J., (1997), *Principles of Managerial Finance*. (7th ed.), Harper Collins College Publishers, New York.

Gockov, G. & Hristovski, G. (2019), *Determinants of Liquidity and its Relationship with Profitability – The Case of Macedonian Banking Sector*. Asian Journal of Economics and Empirical Research, Vol. 6, No. 1, P 85-92.

Godwill, O., Ikpefan, A., Romanus, O. & Emoarehi E., (2017), *Working Capital Management and Profitability of Selected Deposit Money Banks in Nigeria*. Journal of Association of Professional Bankers in Education (JAPBE), Vol. No. I, No. 1, pp. 211-231.

Gullilat E. (2020), *The Effect of Working Capital Management on the Performance of Private Commercial Banks in Ethiopia*, For The Degree of Master of Science In Accounting and Finance, Addis Ababa University, Addis Ababa, Ethiopia.

H.R. Machiraju, (2008). *Modern Commercial Banking*. New Age International (P) Ltd., New Delhi.

Henok, Y. (2015), *Working Capital Management and Firms' Profitability: Evidence from Manufacturing S.C. in Addis Ababa, for the Master of Science (MSc) Degree in Accounting and Finance* , Addis Ababa University, Addis Ababa, Ethiopia.

James, C. (1998), *Financial Management and Policy*. (10th ed.), Prentice-Hall of private Limited, New Delhi.

James, G., Benson, O., Robert, M., and Kibet K. (2014), *What Are the Implications of Working Capital Management on Liquidity Risk? A Case of Listed Commercial Banks in Kenya*. Research Journal of Finance and Accounting, Vol.5, No.10, pp. 34-49.

James, S. (2011), *Essentials of Working Capital Management*, John Wiley & Sons Ink, Canada.

James, S. (2014), *Working Capital Management Applications and Cases*. John Wiley & Sons, Inc., New Jersey.

Lemlem, G/M., (2017), *Determinants of Commercial Banks' Financial Performance in Ethiopia* . for the Degree of Master of General Business Administration, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Lorenzo, A. & Virginia, S.l. (2010), *Working Capital Management*. Oxford University Press, Inc., 198 Madison Avenue, New York.

M. Y. Khan & P. K. Jain (2008), *Financial Management*. (5th ed.), Tata McGraw Hill Education Private Limited, New Delhi.

Mark, S., Philip, L. & Adrian, T. (2009), *Research methods for business students*. (5th ed.), FT Prentice Hall.

Mekbib, Sh. (2016), *Determinants of Liquidity in Commercial Banks of Ethiopia: The Case of Selected Private Banks*. for the Degree of Master of Science in Accounting and Finance, Addis Ababa University, Addis Ababa, Ethiopia.

Mekonnen, F. (2018), *Determinants of Liquidity of Commercial Banks' in Ethiopia*, for MBA in General, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Melis, Z. (2018), *Determinants of Commercial Banks' Performance: an Empirical Study on Ethiopian Private Commercial Banks*, for Degree of Master of Business Administration in Project Management, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Meron, G. (2018), *Determinants of Bank Liquidity: Empirical Study on Selected Private Ethiopian Commercial Bank*, for the Degree of Master of Science in Accounting and Finance, Addis Ababa University, Addis Ababa, Ethiopia.

Meseret, M. (2018), *The Effect of Credit Risk Management on Profitability of Selected Commercial Banks in Ethiopia*. for the Degree of Masters of Business Administration, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Moorad, C. (2011), *An Introduction to Banking Liquidity Risk and Asset–Liability Management*. John Wiley & Sons Ltd, United Kingdom.

Moorad, C. (2012), *The Principles of Banking*. John Wiley & Sons Singapore Pte. Ltd., Singapore.

National Bank of Ethiopia (2020), *Quarterly Bulletin Volume 36*, No. 4 Fourth Quarter 2019/20 Fiscal Year Series.

Ntui P., Kiemi C., Gwatako, T. and Halim M. (2014), *The Effect of Working Capital Management on Profitability*. International Journal of Economics, Finance and Management Sciences. Vol. 2, No. 6, 2014, pp. 347-355.

Oluitan, R. (2017), *The Effect of Working Capital Management on Profitability of Deposit Money Banks in Nigeria: A Case Study of First Bank PLC*, Research Journal of Finance and Accounting ,Vol.8 No.24 pp. 54-59.

Peter, S. and Sylvia, C. (2008), *Bank Management & Financial Service*. (7th ed.), McGraw-Hill, New York.

Samuel, K. & Benjamin, Y., (2011). *Working Capital Management and Profitability of Banks in Ghana*. British Journal of Economics, Finance and Management Science, Vol. 2 (2), pp. 1-12.

Selamawit, A. (2018), *Determinants of the Profitability of Private Commercial Banks in Ethiopia: Camel Approach*. for Degree of Master of Business Administration in Accounting and Finance, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Serge, P. (2016), *How Working Capital Affects the Profitability of Commercial Banks: Case of Afriland Cameroon*. Arabian journal of business and management review, Volume 6, Issue 6, pp. 2 – 9.

Simachew, S. (2018), *Factors affecting the Profitability of Private Commercial Banks in Ethiopia*, for Degree of MBA in General Management, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Stanley, B. and Geoffrey, A. (2002), *Foundations of Financial Management*. (10th ed.) McGraw-Hill, New York.

Stephen, A., Randolph, W. and Bradford, D. (2001), *Fundamentals of Corporate Finance*. (5th ed.) McGraw-Hill Companies, (http://www.mhhe.com).

Sujan, C., Probir, K. and Mehbuba, N. (2020), *Impact of Liquidity on Profitability: A Study on the Commercial Banks in Bangladesh*. Advances in Management & Applied Economics, Vol. 11, No. 1, pp. 73-90.

Tewodros, A. (2010), *The Effects of Management of Working Capital Policies on Firms' Profitability Evidence from Manufacturing Private Limited Companies in Tigray Region*. for the Degree of Master of Science in Finance & Investment, Mekelle University, Mekelle, Ethiopia.

The Hong Kong Institute of Bankers /Wiley, (2018), *Bank Asset and Liability Management*, John Wiley & Sons Singapore Pte. Ltd., Singapore.

Thomas, C. (2015), *Value and Capital Management: A Handbook for the Finance and Risk Function of financial Institutions*. John Wiley & Sons LTD., United Kingdom.

Tsige, T. (2017), *The Effect of Liquidity on Banks Profitability for Commercial Banks in Ethiopia*. for Degree of MBA In Accounting & Finance, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Umoren and Udo (2015), '*Working Capital Management and the Performance of Selected Deposit Money Banks in Nigeria*. British Journal of Economics, Management and Trade, 7(1): 23-31, 2015, Article no.BJEMT.2015.068.

V.K. Bhalla, (2004), *Working Capital Management: Text and Case*. (6th ed.), J.L. Kumar for Anmol Publications Pvt. Ltd, New Delhi.

V.S. Somanath, (2011), *International Financial Management*, I.K International Publishing House Pvt. Ltd., New Delhi.

Wubishet, G. (2016), *Determinants of Profitability of Commercial Banks in Ethiopia.* for the Degree Masters of Business Administration, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Yebelay, G. (2017), *The Effect of Working Capital Management on the Profitability of Private Commercial Banks in Ethiopia*. For the Degree of MBA in General Management, St. Mary's University School of Graduate Studies, Addis Ababa, Ethiopia.

Zebiba, A. (2019), *Factors Affecting Liquidity of Ethiopian Commercial Banks.* for the Degree of Master of Science in Accounting and Finance, St. Mary's University School of Graduate Studies , Addis Ababa, Ethiopia.

Zikmund, Babin, Carr & Griffin (2010), *Business Research Methods.* (8th ed.), South-Western Cengage Lerning.

APPENDIX

Study Data

Year	Bank Name	ROA	ROE	EM	E	L	SOB	DCP	CPP	CCC	NPL
2011	AIB	3.99	32.08	8.03	250.15	51.48	0.16	0.07	0.11	-0.05	3.64
2012	AIB	3.58	27.03	7.56	149.74	59.80	0.15	0.05	0.10	-0.05	2.70
2013	AIB	3.13	24.22	7.74	111.70	61.46	0.16	0.05	0.11	-0.06	2.30
2014	AIB	3.42	27.25	7.96	134.85	61.01	0.17	0.05	0.10	-0.05	2.27
2015	AIB	2.94	22.98	7.82	104.82	67.40	0.16	0.04	0.09	-0.05	1.74
2016	AIB	2.78	21.54	7.74	85.34	67.67	0.16	0.04	0.09	-0.05	1.53
2017	AIB	2.80	23.67	8.44	78.46	73.80	0.17	0.04	0.11	-0.07	1.46
2018	AIB	3.07	31.31	10.20	61.24	72.04	0.17	0.03	0.09	-0.06	0.82
2019	AIB	3.76	41.09	10.94	79.85	79.28	0.17	0.03	0.08	-0.05	0.86
2020	AIB	3.17	32.42	10.23	59.09	81.15	0.17	0.03	0.08	-0.05	1.74
2011	DB	3.34	35.77	10.72	207.47	52.51	0.23	0.07	0.11	-0.05	1.99
2012	DB	4.05	40.44	9.98	196.18	57.76	0.22	0.05	0.10	-0.05	2.15
2013	DB	3.26	31.33	9.62	154.88	55.91	0.20	0.05	0.10	-0.05	2.25
2014	DB	3.42	30.69	8.98	163.48	54.34	0.19	0.05	0.09	-0.04	1.85
2015	DB	3.12	26.41	8.46	124.53	58.18	0.17	0.05	0.09	-0.04	1.68
2016	DB	2.73	23.15	8.49	116.30	55.78	0.16	0.05	0.09	-0.04	1.71
2017	DB	2.39	20.57	8.60	88.81	65.09	0.14	0.04	0.09	-0.05	2.02
2018	DB	2.32	18.84	8.12	63.99	64.71	0.14	0.04	0.08	-0.04	0.98
2019	DB	2.00	16.00	8.00	49.04	72.84	0.13	0.03	0.07	-0.04	0.65
2020	DB	2.47	20.28	8.21	46.73	78.81	0.13	0.03	0.07	-0.04	0.22
2011	CBO	2.21	21.74	9.82	120.20	40.49	0.04	0.07	0.14	-0.07	2.00
2012	CBO	3.31	30.77	9.31	125.69	49.45	0.05	0.06	0.15	-0.09	1.44
2013	CBO	3.70	33.94	9.17	146.31	47.39	0.07	0.07	0.23	-0.16	1.72
2014	CBO	4.94	38.42	7.77	150.21	68.12	0.06	0.05	0.17	-0.12	1.84
2015	CBO	3.32	24.98	7.52	86.30	91.46	0.08	0.04	0.20	-0.16	2.56
2016	CBO	0.35	2.97	8.42	31.34	72.77	0.06	0.03	0.11	-0.08	5.27
2017	CBO	1.46	15.18	10.38	43.05	70.05	0.07	0.04	0.13	-0.09	3.22
2018	CBO	1.84	22.57	12.23	50.54	58.38	0.09	0.04	0.12	-0.08	2.35
2019	CBO	1.84	23.22	12.65	47.09	61.27	0.10	0.04	0.10	-0.06	3.41
2020	CBO	2.51	28.16	11.22	57.02	66.31	0.10	0.03	0.08	-0.05	2.80
2011	BOA	2.67	29.04	10.88	125.53	54.58	0.11	0.05	0.11	-0.06	3.33
2012	BOA	2.79	27.60	9.90	99.80	57.56	0.11	0.04	0.10	-0.05	2.57
2013	BOA	2.88	26.29	9.13	110.28	55.34	0.10	0.05	0.10	-0.05	1.99
2014	BOA	2.53	20.53	8.13	80.71	56.65	0.10	0.04	0.08	-0.04	1.79
2015	BOA	2.34	17.47	7.47	76.49	53.93	0.09	0.04	0.09	-0.04	1.51

2016	BOA	2.36	18.33	7.75	75.10	59.56	0.09	0.04	0.09	-0.05	1.35
2017	BOA	2.71	22.68	8.38	74.89	68.14	0.10	0.04	0.10	-0.06	1.26
2018	BOA	1.96	15.74	8.01	38.06	69.75	0.10	0.03	0.07	-0.04	1.17
2019	BOA	2.18	16.90	7.75	44.64	73.83	0.09	0.03	0.06	-0.03	1.32
2020	BOA	1.78	16.06	9.05	29.86	78.21	0.11	0.03	0.08	-0.05	1.21
2011	UB	3.40	30.13	8.85	178.75	54.02	0.12	0.06	0.13	-0.07	2.77
2012	UB	3.61	29.74	8.24	138.20	60.46	0.11	0.05	0.11	-0.06	2.33
2013	UB	3.00	24.49	8.15	106.98	58.42	0.10	0.04	0.10	-0.05	1.86
2014	UB	2.54	20.04	7.87	80.89	53.92	0.10	0.04	0.10	-0.06	1.44
2015	UB	2.14	17.25	8.04	65.42	58.11	0.10	0.04	0.09	-0.05	1.22
2016	UB	2.14	18.04	8.42	62.24	65.46	0.09	0.04	0.08	-0.04	1.30
2017	UB	1.95	16.64	8.54	52.04	72.68	0.09	0.04	0.08	-0.05	1.24
2018	UB	2.30	20.98	9.13	53.09	65.28	0.08	0.03	0.07	-0.03	1.30
2019	UB	2.36	22.08	9.36	39.03	74.70	0.08	0.03	0.06	-0.03	0.51
2020	UB	2.27	19.40	8.55	28.19	79.01	0.08	0.03	0.06	-0.03	0.68
2011	WB	4.68	27.06	5.78	194.88	48.85	0.12	0.07	0.18	-0.11	4.54
2012	WB	4.10	22.86	5.58	162.08	61.92	0.11	0.05	0.13	-0.08	2.43
2013	WB	3.66	19.99	5.46	112.23	62.12	0.11	0.05	0.14	-0.09	2.24
2014	WB	2.91	16.02	5.52	96.29	54.91	0.10	0.05	0.11	-0.07	1.67
2015	WB	2.79	15.46	5.54	81.14	62.50	0.09	0.04	0.11	-0.06	1.58
2016	WB	2.51	14.39	5.73	71.47	68.87	0.09	0.04	0.11	-0.07	1.63
2017	WB	2.87	17.27	6.03	82.42	74.03	0.08	0.04	0.10	-0.06	1.37
2018	WB	3.28	22.10	6.73	75.61	73.38	0.08	0.03	0.09	-0.05	1.75
2019	WB	2.17	15.29	7.04	47.70	69.87	0.07	0.03	0.07	-0.04	2.16
2020	WB	2.45	17.69	7.23	55.65	78.80	0.07	0.03	0.07	-0.04	1.96
2011	NID	3.77	23.61	6.27	167.63	53.64	0.11	0.06	0.14	-0.08	4.12
2012	NID	3.72	21.21	5.70	149.41	63.53	0.11	0.05	0.12	-0.07	2.71
2013	NID	3.44	18.75	5.45	102.22	68.26	0.09	0.04	0.11	-0.07	2.50
2014	NID	2.99	16.38	5.48	101.85	69.71	0.09	0.05	0.13	-0.08	2.10
2015	NID	2.81	16.28	5.80	68.60	71.61	0.09	0.04	0.10	-0.06	1.50
2016	NID	2.68	16.60	6.19	53.03	61.56	0.09	0.04	0.09	-0.06	1.77
2017	NID	2.41	16.21	6.73	60.92	66.33	0.08	0.04	0.09	-0.06	1.63
2018	NID	2.16	16.26	7.53	42.75	63.39	0.08	0.03	0.07	-0.04	1.50
2019	NID	2.39	18.50	7.75	40.02	70.27	0.08	0.03	0.07	-0.04	0.98
2020	NID	2.74	20.47	7.47	42.03	76.64	0.08	0.03	0.06	-0.03	0.84
2011	OIB	2.89	17.50	6.06	142.55	43.36	0.03	0.08	0.14	-0.06	1.06
2012	OIB	2.09	13.50	6.47	98.28	48.16	0.04	0.06	0.12	-0.06	1.29
2013	OIB	2.00	13.59	6.80	77.25	53.15	0.04	0.05	0.14	-0.09	1.46
2014	OIB	3.06	23.74	7.76	91.73	51.26	0.05	0.05	0.15	-0.10	1.31
2015	OIB	2.83	25.47	9.01	83.22	59.55	0.06	0.05	0.15	-0.10	1.27
2016	OIB	1.49	13.43	9.01	47.30	56.25	0.06	0.04	0.12	-0.08	1.76

2017	OIB	2.09	19.33	9.24	74.16	53.49	0.07	0.05	0.12	-0.07	1.86
2018	OIB	3.63	34.19	9.42	83.71	58.62	0.07	0.04	0.11	-0.07	0.79
2019	OIB	2.68	23.66	8.82	59.71	65.77	0.07	0.04	0.09	-0.06	1.56
2020	OIB	2.62	20.71	7.89	44.74	62.73	0.06	0.03	0.06	-0.04	1.33
2011	LIB	2.76	14.71	5.33	125.30	52.13	0.03	0.06	0.15	-0.08	1.45
2012	LIB	3.53	18.98	5.37	138.95	55.89	0.03	0.06	0.14	-0.08	1.55
2013	LIB	4.12	22.65	5.50	141.46	62.59	0.03	0.05	0.12	-0.07	1.30
2014	LIB	2.95	16.51	5.60	94.34	58.13	0.03	0.05	0.11	-0.06	1.34
2015	LIB	3.18	20.77	6.53	101.67	64.57	0.04	0.05	0.13	-0.08	1.66
2016	LIB	2.81	20.74	7.39	83.37	69.31	0.04	0.04	0.11	-0.07	1.97
2017	LIB	2.81	21.32	7.58	61.87	63.80	0.04	0.04	0.11	-0.07	2.01
2018	LIB	3.09	23.99	7.76	55.46	64.96	0.04	0.03	0.08	-0.05	2.48
2019	LIB	3.11	24.68	7.95	59.78	72.29	0.05	0.03	0.08	-0.05	1.94
2020	LIB	2.47	21.29	8.64	32.37	74.84	0.06	0.03	0.08	-0.05	2.43
2011	BRIB	3.28	16.82	5.13	141.00	47.79	0.01	0.07	0.12	-0.05	1.12
2012	BRIB	3.06	17.41	5.70	148.99	53.62	0.02	0.06	0.10	-0.04	1.17
2013	BRIB	2.13	12.01	5.64	110.16	61.45	0.02	0.07	0.13	-0.06	1.52
2014	BRIB	1.80	9.62	5.35	74.35	58.89	0.02	0.05	0.10	-0.06	1.63
2015	BRIB	2.97	16.19	5.45	100.25	61.99	0.03	0.05	0.13	-0.08	1.39
2016	BRIB	4.68	29.75	6.36	109.01	70.94	0.04	0.04	0.12	-0.08	1.48
2017	BRIB	3.73	22.41	6.00	102.35	70.22	0.04	0.04	0.10	-0.06	1.44
2018	BRIB	2.67	16.04	6.01	60.46	66.21	0.04	0.03	0.08	-0.04	1.73
2019	BRIB	2.76	18.33	6.65	65.40	68.27	0.04	0.03	0.07	-0.04	1.79
2020	BRIB	2.73	17.78	6.51	59.27	76.57	0.04	0.03	0.06	-0.03	1.59
2011	BUIB	3.09	9.70	3.14	117.35	74.55	0.01	0.06	0.11	-0.05	1.13
2012	BUIB	2.59	10.72	4.13	98.61	72.17	0.02	0.06	0.13	-0.07	1.12
2013	BUIB	2.65	13.98	5.28	78.54	61.35	0.02	0.05	0.12	-0.07	1.16
2014	BUIB	3.11	17.95	5.77	86.82	63.19	0.03	0.04	0.12	-0.08	1.21
2015	BUIB	3.58	22.52	6.29	82.66	69.86	0.03	0.04	0.12	-0.08	1.15
2016	BUIB	3.31	22.88	6.91	78.70	68.62	0.04	0.04	0.09	-0.05	1.70
2017	BUIB	2.42	17.40	7.19	72.28	70.73	0.04	0.04	0.09	-0.05	1.67
2018	BUIB	2.76	18.90	6.85	62.50	69.79	0.04	0.03	0.08	-0.04	1.45
2019	BUIB	3.35	20.27	6.04	71.71	78.22	0.03	0.03	0.07	-0.04	1.59
2020	BUIB	2.64	15.63	5.91	47.94	84.74	0.04	0.03	0.08	-0.05	1.77
2011	ZB	6.35	42.43	6.68	283.08	55.50	0.02	0.07	0.09	-0.02	1.78
2012	ZB	4.31	33.14	7.69	212.20	56.48	0.03	0.06	0.09	-0.03	1.79
2013	ZB	3.34	24.33	7.29	141.07	54.67	0.03	0.06	0.08	-0.02	8.52
2014	ZB	5.13	31.98	6.24	207.65	47.18	0.03	0.05	0.08	-0.03	8.83
2015	ZB	3.48	21.57	6.19	145.31	59.71	0.03	0.05	0.08	-0.03	5.53
2016	ZB	3.31	22.96	6.93	148.43	62.04	0.04	0.05	0.08	-0.03	4.41
2017	ZB	2.93	21.53	7.36	159.55	56.81	0.04	0.05	0.08	-0.02	4.56

2018	ZB	2.45	17.70	7.24	120.37	50.95	0.04	0.05	0.07	-0.02	3.23
2019	ZB	3.56	23.71	6.66	136.56	66.90	0.03	0.04	0.06	-0.03	2.16
2020	ZB	4.45	27.10	6.08	123.42	68.81	0.03	0.03	0.07	-0.04	1.75
2011	AB	-1.16	-3.37	2.90	49.50	59.99	0.01	0.25	0.74	-0.49	0.00
2012	AB	2.85	11.45	4.02	108.72	58.05	0.02	0.08	0.17	-0.09	0.00
2013	AB	2.41	12.77	5.30	90.71	57.85	0.02	0.06	0.15	-0.10	1.26
2014	AB	2.24	14.58	6.52	84.41	59.29	0.03	0.05	0.12	-0.07	1.22
2015	AB	3.23	21.48	6.66	95.86	64.59	0.03	0.04	0.10	-0.06	1.25
2016	AB	2.73	17.54	6.42	73.53	64.53	0.03	0.04	0.10	-0.06	1.44
2017	AB	2.34	15.36	6.56	78.57	63.06	0.03	0.04	0.09	-0.05	1.13
2018	AB	3.02	20.38	6.76	81.84	63.41	0.04	0.04	0.08	-0.04	1.74
2019	AB	3.66	23.54	6.44	107.13	66.49	0.04	0.04	0.07	-0.04	1.48
2020	AB	2.84	18.07	6.37	63.56	73.01	0.04	0.04	0.08	-0.05	1.19

Source: National Bank of Ethiopia, from financial statements of Commercial Banks in Ethiopia, and own computation, 2021.

ENDORSEMENT

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

Name: Mohamed Seid (Assistant Professor)

Signature: _____

Date: _____