The Impact of Working Capital Management on Firms' Performance: The Case of Selected Metal Manufacturing Companies in Addis Ababa, Ethiopia.

A Thesis Submitted to the Department of Accounting and Finance to Undertake a Research in Partial Fulfillment of the Requirements for the Master of Science (MSc) Degree in Accounting and Finance

By:

Wobshet Mengesha

Advisor:

Arega Seyoum (PhD)

Co-advisor

Million Gizaw

JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

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Jimma, Ethiopia

DECLARATION

First, I declare that this Thesis is my work and that all sources of materials used for this thesis have been fully acknowledged. This thesis has been submitted in partial fulfillment of the requirement for the Degree of Master of Science (MSc) in Accounting and Finance.

Name: Wobshet Mengesha

Signature_____

 Place: Jimma University

    Date of Submission: June 5, 2014

This master thesis, has been submitted for examination with my approval as thesis advisor

Name   1/ Main-advisor **Dr. Arega Seyoum**

        Signature_____

        Date_____

     2/ Co-advisor Million Gizaw (MSc)

        Signature_____

        Date_____

JIMMA UNIVERSITY, SCHOOL OF GRADUATE STUDIES

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

<u>MSc Thesis Approval Sheet</u>

The Thesis   entitled,   the impact of working capital management on firms' performance: the case of

selected Metal manufacturing companies in Addis Ababa, Ethiopia. were carried out by Wobshet Mengesha Belay under the supervision of Dr. Arega Seyoum and Mr. million Gizaw and this title has been approved by the concerned bodies of Jimma university for the partial fulfillment of the requirements for the degree of Masters of Science in Accounting and Finance(MSc).

Name of candidate	**Signature**	**Date**
Wobshet Mengesha Belay	_____	_____

Names of advisors	**Signature**	**Date**
Dr. Arega Seyoum	_____	_____
Mr. Million Gizaw	_____	_____

Head of department   **Signature**   **Date**

ABSTRACT

The purpose of this study was to establish the relationship between working capital management and firm performance in metal manufacturing firms in Addis Ababa Ethiopia. To help in the study, the study objectives were formulated together with a conceptual framework that linked working capital management and its components to firms' performance. Firm performance was measured using attributes like profitability and future viability.

Thus, this study examined the impact of working capital management on firms' performance by using audited financial statements of a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The study used return on assets, and return on investment capital as dependent financial performance (profitability) variables. Cash conversion period, Accounts receivable period, inventory conversion period and accounts payable period are used as independent working capital variables. Moreover, the traditional measures, current ratio are used as liquidity indicators, firm size as measured by logarithm of sales, firm growth rate as measured by change in annual sales and financial leverage as control variables. Data was collected using formal letters from head of business administration of Jimma University to the metal manufacturing firms under study.

The data was analyzed using SPSS (version 20.0), Pearson's correlation coefficient and the regression to determine the relationship between the independent variables impact on the dependent variables.

The results show that longer accounts receivable and inventory holding periods are associated with lower profitability. 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 cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on investment capital has been observed. On the other hand, findings show that a highly significant negative relationship between account receivable period, inventory conversion period and account payable period with return on asset. Finally, cash conversion cycle has significant negative relationship with return on asset.

Managers, therefore, can increase firms' profitability by improving the performance of management of working capital components.

ACKNOWLEDGEMENTS

all! St. Virgin Mary, Mother of God, pray for us sinners now and at the hour of our death. Bless, protect and intercede for us. AMEN!

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ACRONYMS

APP= Accounts Payable Period

ARP= Accounts Receivable Period

CA= Current Assets

CCC= Cash Conversion Cycle

CR= Current Ratio

DAR= Financial Leverage

ICP = Inventory conversion Period

Ln Sales = Firm Size of

NWCM = Net Working Capital Management

ROA = Return on Assets

ROI = Return on investment capital

SPSS = Statistical Package for Social Science

VIF = Variance Inflation Factor

WC = Working capital

PREFACE

The study focuses on examining the impacts of working capital management on Firms performance of metal manufacturing companies found in Addis Ababa Ethiopia.

The rest of this study is organized by chapters as follows.

Chapter 1 Provide the back ground of the study, problem of the study, research objectives, hypothesis, significance, scope and limitations of the study.

Chapter 2 introduces the main issues of concern that are connected with working capital management and reviews preceding works that tackled them theoretically and empirically.

Chapter 3 Provide the research design and methodological frameworks employed to accomplish the stated objective of the study.

Chapter 4 discussed about results and data analysis of the study.

Chapter 5 presents interpretation and discussion of the study results.

Chapter 6 presents conclusion and recommendation about the main finding of for the study.

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

Management has a dual interest in the analysis of financial performance such that, to assess the efficiency and profitability of operations and to judge how effectively the resources of the business are being used (Erich A. Helfert, D.B.A, 2001).

In modem financial management, administration of working capital is an important and challenging task due to high proportion of working capital in a business and some of its peculiar characteristics. The management of current assets (normally converted into cash within an accounting year) and current liabilities (generally discharged within a year) and the interrelationship that exists between them may be termed as working capital management.

Excessive levels of current assets may have a negative effect on the firm's profitability whereas a low level of current assets may lead to lower level of liquidity and stock outs resulting in difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2004). Traditional concept of working capital is the different between assets and current liabilities. Thus working capital management is an attempt to manage and control the current assets and the current liabilities in order to maximise profitability and proper level of liquidity in business.

Liquidity and profitability are two important and major aspects of corporate business life (Dr. K.S. Vataliya, 2009). The company can achieve maximum profitability and can maintain adequate liquidity with the help of efficient and effective management of working capital.

Inefficient financial management including working capital management may damage business enterprise's profitability (Gebrehiwot & Wolday, 2006). The efficient management of working capital is a fundamental part of the overall corporate strategy to create shareholders value (Nazir and Afza, 2008). In addition, efficient working capital management leads to improve the operating performance of the business concern and it helps to meet the short term liquidity (C. Paramasivan T. Subramanian, 2009). Therefore firms try to keep an optimal level of working capital that maximizes their value (Deloof, 2003). In addition to that, the effective working capital management is very important because it affects the performance and liquidity of the firms (Taleb et al., 2010). The main objective of working capital management is to reach optimal

balance between working capital management components (Gill, 2011). And the main cause of the failure of a business enterprise has been found to be the shortage of working capital, their mishandling, and mismanagement of working capital and under utilisation of capacity (Dr. K.S. Vataliya, 2009). Also, several research works have identified the impact of working capital management on the performance of organizations, but no significant work appears to have been done on the impact of working capital management on the performance of metal manufacturing company in emerging economics like Ethiopia. This particular study will conveys the knowledge of how significant it is to have a proper management system for working capital management in Metal manufacturing companies in the capital city of Ethiopia. It also discusses the impact of poor management control of Working capital on firms' performance and current practices employed by the metal manufacturing companies in Ethiopia particularly in Addis Ababa.

1.2.   STATEMENT OF THE PROBLEM

An ideal business needs sufficient resources to keep it going and ensures that such resources are maximally utilized to enhance its profitability and overall performance. Working Capital Management and its Impact on Firms' Performance has been studied significantly by different researchers (Padachi, K. (2006); F. Finau,(2011); Anand and Gupta (2002); Mohamad & Noriza (2010); Deloof (2003) ;Luo et al. (2009) ;Vishmani at el., (2007) Koperunthevi (2010) ;Fathi and Tavakkoli (2009) ; *V. Ganesan,* (2007)).

Most of these and other researchers identify significant association between working capital management and firms' performance. It has however been discovered that some methods that managers use in practice to make working capital decisions do not rely on the principles of finance, rather they use vague rules of thumb or poorly constructed models (Emery, Finnerty and Stowe 2004). This, however, makes the managers not to effectively manage the various mix of working capital component which is available to them, and as such, the organization may either be overcapitalized or undercapitalized or worst still, liquidate.

 Egbide (2009) find that large number of business failures in the past has been blamed on the inability of the financial manager to plan and control the working capital of their respective firms. These reported inadequacies among financial managers are still practiced today in many organizations in the form of high bad debts, high inventory costs etc., which adversely affect their operating performance (Egbide 2009:45).

Also, the fact that an organization makes profits is not necessarily an indication of effective management of its working capital because a company can be endowed with assets and profitability but short of liquidity if its assets cannot readily be converted into cash.

(www.wikipedia.org). As such, there will be shortage of cash available for the firm's utilization as at when due. Such an organization may run into debts that could affect its performance in the long run because the smooth running of operations of the organization comes to a sudden halt and it will not be able to finance its obligations as at when due.

Again, some managers do neglect the organization's operating cycle thereby having longer debtors' collection period and shorter creditors' payment period. All these constitute the problem of the investigation, hence, the need to study the impact of working capital management on the performance of metal manufacturing industries in Ethiopia particularly Addis Ababa city.

Research Questions

The following questions are designed to answer the research questions:

❖ What financing policy, practices and techniques are employed by the metal manufacturing companies to manage Working Capital in Addis Ababa?

❖ What possible factors impact on the metal manufacturing companies Working Capital Management performance in Addis Ababa?

❖ How efficient is the working capital management for the metal manufacturing companies in Addis Ababa?

1.3. OBJECTIVES OF THE STUDY

1.3.1. GENERAL OBJECTIVE

The objective of this study is to examine the impact of working capital management on firms' performance of selected metal manufacturing company in Addis Ababa, Ethiopia.

1.3.2. SPECIFIC OBJECTIVES

This study on the impact of working capital management on firms' performance on selected metal manufacturing companies in Addis Ababa assumes the following specific objectives:

- To examine the impact of cash management on firms performance.
- To evaluate the effect of inventory management on firms performance
- To analyze the effect of receivable management on firms performance
- To determine the relationship between working capital management and corporate performance of selected metal manufacturing companies in Addis Ababa, Ethiopia.

1.4. RESEARCH HYPOTHESIS

A few numbers of research hypothesis can be made in view of the impact of working capital management on firms' performance. In light of the research objective the following discussion will covers the hypotheses that this study will attempt to test.

H1: cash conversion cycle is significant related to financial performance of the firm.

H2: Inventory management (holding periods) have significant impact on firms' financial performance.

H3: The way how receivables are managed has significant effect on the financial performance of firms

H4: Accounts payable periods has significant impact on the financial performance of firms.

1.5. IMPLICATIONS AND SIGNIFICANCE OF THE STUDY

The findings of this study may have implications for other companies who are trying to make decisions regarding working capital management reform model.

This finding would help to develop an understanding of the advantages and disadvantages of financial practices and techniques of managing Working Capital Components in different company's paradigms. The study would reveal how essential Working Capital Management Strategies such as policies, practice and techniques is for the metal manufacturing companies in Addis Ababa Ethiopia in terms of performance.

A general conceptual framework model will provide basic guidelines for researchers, accountants and professionals, financial managers, and policy makers in the metal manufacturing company's environment of Ethiopia.

The study would suggest various financial management techniques metal manufacturing companies can use to measure their performance in terms of profitability. For example, Current Ratio to assess the firms liquidity status, Activity Ratios, Leverage ratios, Cash Conversion Cycle (CCC), Return on Investment (ROI), and Return on Equity (ROE) (Birt, Chalmers, Brooks, Byrne, & Oliver, 2011; Gitman, 2009).

The findings may also help assess the effectiveness of working capital management on firms' performance in the studied companies for program evaluation.

1.6. SCOPE AND LIMITATIONS OF THE STUDY

1.6.1. DELIMITATION OF THE STUDY

The research proposal is delimited to study the impact of working capital management on firms' performance of metal manufacturing companies located in Addis Ababa city only due to the fact that. It will better and exhaustive for the study has a chance of incorporating other

manufacturing enterprises found in Addis Ababa. Also, variables used are delimited to one type of variables: profitability and control variables, which are specific to firms and/or general to the economy as a whole and clearly pinpointed in the methodology part. further the sampling units of this study is delimited to 29 manufacturing private limited companies located and operating in Addis Ababa and the sample size is delimited to 19 companies. At last the methodology is only limited to quantitative method with descriptive statistics, correlation and econometrics analysis tools.

Due to time and cost considerations, this study will delimit to involve only metal manufacturing firms operating in Addis Ababa.

1.6.2. LIMITATIONS OF THE STUDY

The findings of the study will be limited because of lack of willingness and reliability of the data, adequate accounting disclosure and treatment, shortage of latest reference books and literature on the area in Ethiopia. As a result, the sampled selected metal manufacturing companies were not interested to give primary information about the issue under consideration.

CHAPTER TWO

2. REVIEW OF LITERATURE

This chapter focuses on extant literatures relating to the working capital management components of the enterprises, and how its components impact on business performance. The researcher critiques the relevant literatures for this study in terms of accounting and financial concepts. The literature review section has been arranged into two sections. The first section presents the theoretical review of working capital management while the second section reviews the empirical evidence pertaining to working capital management.

2.1   THEORETICAL REVIEW

2.1.1   OVERVIEW OF FINANCIAL MANAGEMENT

The traditional definition of Finance is the study of funds management and the directing of these funds in order to achieve its particular objectives. The unique objective of a good financial management is to maximise returns that associate with minimising of financial risks simultaneously. In Financial management it is critical to understand the business objectives and financial functions before recognising the major component that is the short-term financial management or the Working Capital Management relative to the day-to-day operations (Brigham & Ehrhardt, 2010; Chandra, 2008; Keown, Martin, Petty, & Scott, 2002; D. Sharma, 2009).

Financial management is also concerned with the creation of economic wealth, maximising the share price for shareholders' equity, planning and controlling of the business's financial resources, increasing its profitability and maximising the rate of returns on Equity. It is in the corporate environment that most of the finance literatures have been literately focused on the study of the long-term financial decisions making process (Chandra, 2008; Zietlow, Hankin, & Seidner, 2007).

Financial management in firms operate according to problems and opportunities. The owner/manager of a firm is primary relying on its trade credit policy, bank financing, personal financial contributions, operating financing and lease financing. The firms financing options are limited, but also have the same financial problems as those faced by large companies (Arnold, 2008; Gitman, 2009; Sagner, 2010; D. Sharma, 2009). One of the major financial issues facing firms is the deployment of current assets and current liabilities that are the critical elements of Net Working Capital Management (NWCM). The primary cause of an enterprise's failure is the poor control management of Working

Capital internally amongst its components. Thus, the finance manager of an enterprise must be alert to the level of working capital changes. The conceptual model shown in Figure 2.1-2 illustrates the critical portion of the financial management components for this study. The focus is on the operating cycle and the four main components of Working capital that are cash, debtors (accounts receivable), inventory, and accounts payable.

2.1.2 OBJECTIVE OF WORKING CAPITAL MANAGEMENT (WCM)

According to Gitman (2009) the objective of Working Capital Management (WCM) is to minimise the Cash Conversion Cycle (CCC) the amount of capital tied up in the firm's current assets. It focuses on controlling account receivables and their collection process, and managing the investment in inventory. Working capital management is vital for all business survival, sustainability and its direct impact on performance.
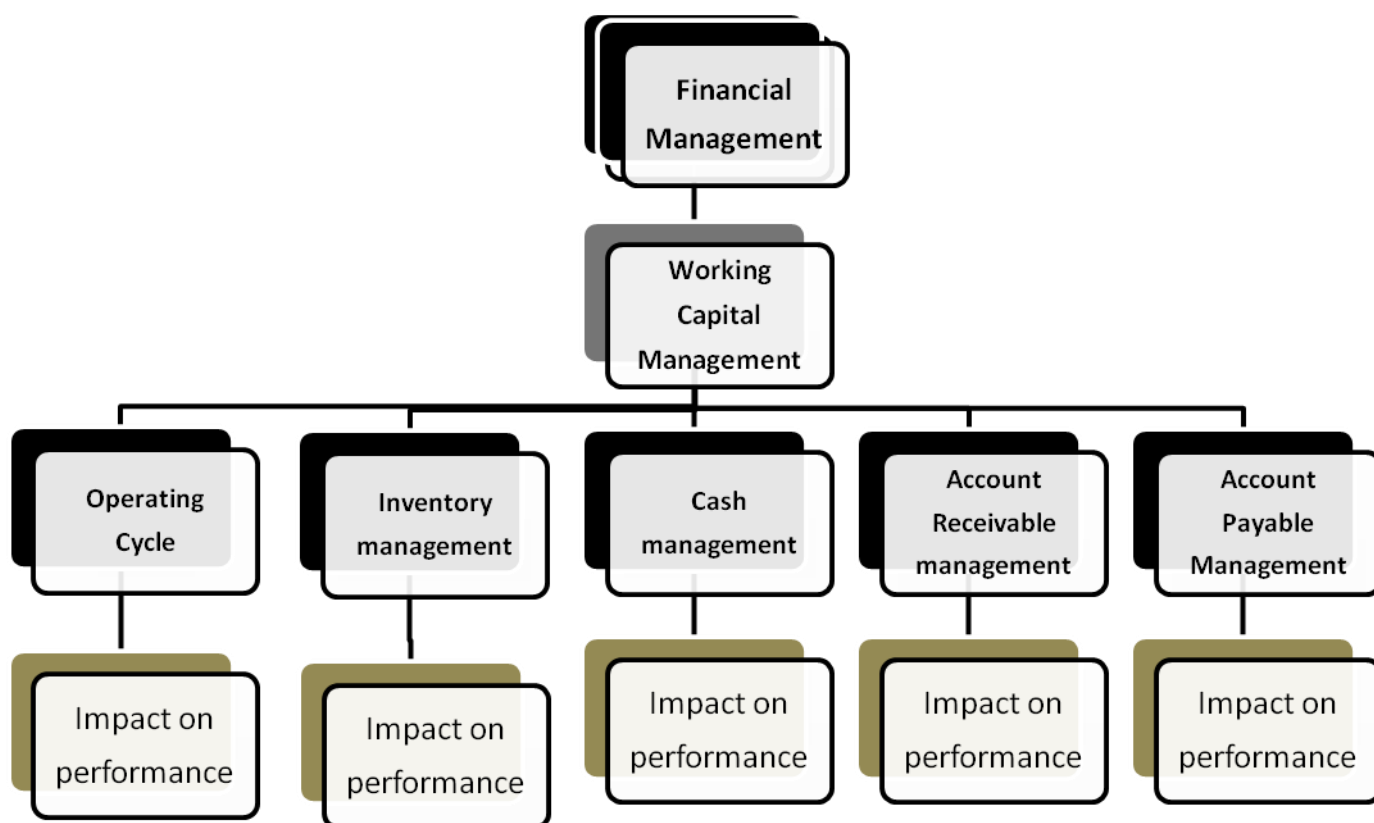
Figure 2.1-2 Conceptual Model of short-term Liquidity of Working Capital Management

Working capital management is an important area of financial management in every business function. WCM deals with the administration of the liquidity components of firms' short-term current assets and current liabilities (Baker & Powell, 2005; Brigham & Ehrhardt, 2005; Gitman, 2009). The most

important current assets are cash, debtors or account receivables, stock or inventory and current liabilities consisting of creditors or account payables, accrued expenses, taxation liabilities, short-term debt such as commercial bills, and provisions for current liabilities such as dividends declared but not yet paid (Birt et al., 2011; Gitman, 2009; D. Sharma, 2009).

2.1.3 SIGNIFICANCE OF WORKING CAPITAL COMPONENTS MANAGEMENT

Working capital is so important for business day-to-day operations. A decision made on one of the Working Capital components has an impact on the other components. In order to maximise the performance of a business, the Working Capital Management should be integrated into the short term financial decision making process (Crum, Klingman, &Tavis, 1983).

Working Capital or Net Working Capital is "the difference between current assets less current liabilities" (Arnold, 2008). In financial annual reports, working capital is defined in an algebraic expression as follows:

Net Working Capital (NWC) = Current Assets (CA) – Current Liabilities (CL).

The investment in NWC is so vital and helps the capital budgeting analysis of a given firm. Working Capital (WC) can be invested in short-term sources of finance, such as cash, inventories, account receivables, and notes receivables. WC is minimised in terms of payments made to account payables (creditors), account notes payable and other accrued liabilities. In order to balance out the optimal levels of costs and benefits, then the liquidity components of working capital must be managed with appropriate techniques through raising or lowering the stocks, cash, account receivables and account payables (Arnold, 2008; Gitman, 2009).

The model of the working capital cycle is given in Figure 2.1-3, articulates the basic components of WCM interrelationship and their dynamics with the liquidity phase of a given enterprise. The working capital policy must be taken into consideration in order to manage the liquidity elements for a smooth flow of the day-to-day operations in the business (Arnold, 2008).

The working capital cycle starts at the purchasing of raw materials from potential suppliers for the production process, through work in progress and ending with finished products. The finished goods are kept as inventories, ready to be sold for customers for cash or credit transactions if the accrual accounting system is implemented. If the finished goods (i.e. inventory) are sold on credit to customers then the cash would be tightening in the form of account receivables. These amounts would be collected in accordance with the trade credit policy being given to customers (Arnold, 2008; Maness, 1994).
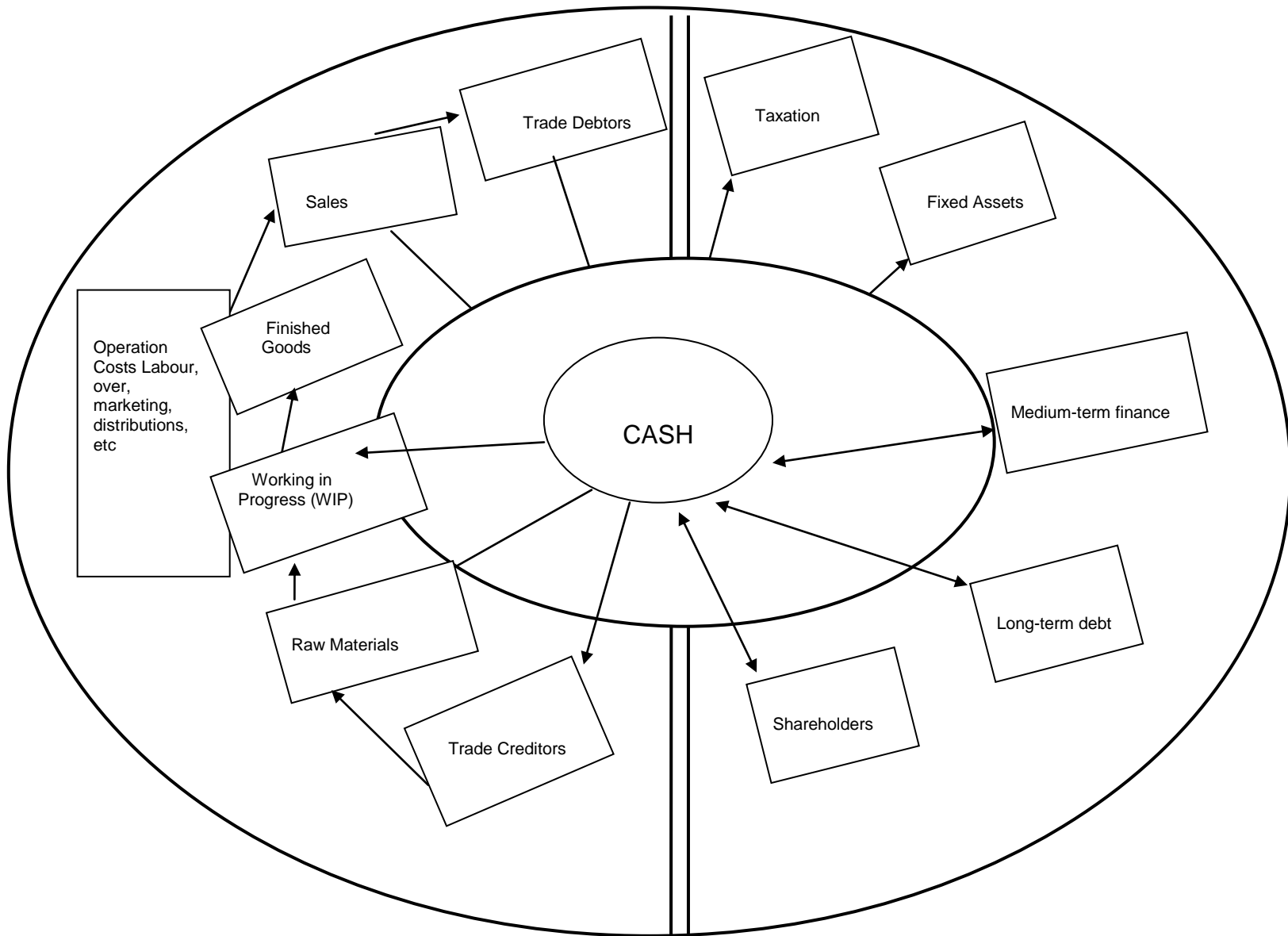
Figure 2.1-3 A typical working capital cycle and other cash flows

Other Cash Flows ⟷

Working Capital Cycle ⟶
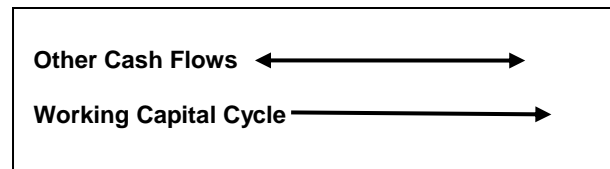
There are related costs influencing every flow of the cycle in terms of opportunity cost for working capital. The two main concepts of Working Capital are known as gross working capital and net working capital. **The term Gross Working Capital,** is also referred to as working capital that is defined as the funds invested in current assets that are expected to convert into cash in the normal course of business within an accounting period (i.e. 12 months). The total current assets and total

current liabilities of a given business are critical for the short-term financial decision making process in terms of working capital management dynamics, leading to the day-to-day operation and performance of the business (Sagner, 2010; D. Sharma, 2009; Vataliya, 2008).

Time and Money embedded in Working Capital Cycle

Every component of working capital namely inventory, account receivables and account payables has two dimensions that are Time and Money when it comes to managing working capital. In fact, the term money (cash) can be moving faster around the operating cycle, or tied up in the operating cycle that can reduce the amount of cash (money) in the business, and depends on the operational policy and dynamics of these components (Arnold, 2008).

Table 2.1:

TIME	MONEY (Cash)
Collecting of account receivables faster	Cash releases from the operating cycle
Collecting of account receivables slower	Cash soaks up in the operating cycle
Better credit trade policy from suppliers	Cash resources increase
Selling of inventory (stocks) faster	Free up cash
Slow moving of inventory (stocks)	Consuming more cash

2.1.3.1 INVENTORY MANAGEMENT

The composition of an inventory differs depending on what kind of production or business companies are involved in. The five different assets an inventory can consist of are; raw materials, work in progress materials, finished goods, extra material and consumption materials. Most companies have an inventory that they more or less depend on in their operation. The manufacturing companies can hold

an inventory that consist of all five different materials and for them keeping an inventory is essential for their production. For most companies the inventory can be seen as an unavoidable cost (Lantz, 2008, p. 306).

But Arnold, 2008; Cinnamon, Helweg-Larsen, & Cinnamon, 2010; Gitman, 2009 stated that Inventory is generally made up of three elements such as raw materials, work-in progress (WIP) and finished goods

❖ **Raw Materials**

Raw materials are concerned with the goods that have been delivered by the supplier to purchaser's warehouse but have not yet been taken into the production area for conversion process (Cinnamon et al., 2010). The minimising of the raw materials is ideal in this particular part of working capital. However, this must be offset by the economic order quantities available from suppliers.

❖ **Work In Progress (WIP)**

Work in progress concerns are when the product has left the raw material storage area, until it is declared for sale and delivery to customers. In this process the working capital must be considered in terms of reducing the buffer stocks, eliminating the production process, reducing the overall production cycle time. The raw materials and finished goods must be minimised in the production area. WIP must be carefully examined to justify how long it takes for products to be cleared for sale. This stage is normally done by the quality control (QC) procedures (Birt et al., 2011; Cinnamon et al., 2010).

❖ **Finished Goods**

Finished goods refer to the stock sitting in the warehouse waiting for sale and delivery to customers. They could be sitting in the warehouse or on the shelf for quite some time. The owner/manager of the business should find what options are available to dispose of the slow moving items. Should the stock be repacked or reprocessed, and sold at lower discount prices. Sales and operations planning can reduce or eliminate the need for finished goods. The best example of stock management is car manufacturing. The manufacturers normally used the Just in time system to deliver finished products. In this way they minimise or eliminate both raw material stock and work in progress, as the stock is now in finished goods (Brealey, Myers, & Allen, 2006; Cinnamon et al., 2010; Van Horne &Wachowicz, 2008).

The management of inventory is one of the more challenging tasks for working capital managers who, if they could decide, would like to minimize the inventory as much as possible in order to shorten the cash conversion cycle and reduce costs. The risk of minimizing an inventory down to a level close to

zero is that it increases the possibility of running out of materials needed in the production or running short of finished goods during a high demand. Such situation would be costly for any company due to the revenues they would lose (Maness & Zietlow, 2005, p. 99).

As mentioned earlier, one of the challenges for a working capital manger is to have all the companies' managers to agree about how to manage the inventory. Each manager has their own interests they first and foremost would like to satisfy which complicate the task to reach a joint decision. Each company should find the balance that they will benefit most from (Pass & Pike, 2007).

The just-in-time approach is a strategy for effective inventory management and help keeping inventory levels on a lower level. The strategy aims to make the orders of material, produce and deliver just in time when it is required and not before (Brealey, Myers & Allen, p. 820).

2.1.3.2. ACCOUNT RECEIVABLES MANAGEMENT

Account receivables are assets representing amounts owed to the firm as a result of the sale of goods or services in the ordinary course of business.

Kelly & McGowen (2010) suggest that credit customers who pay late or don't pay at all only aggravate the problem. Thus, it is important for the financial manager or account receivables manager to establish a good policy that controls the advantages of offering credit with the associated costs.

 The firm should establish its receivables policies after carefully considering both the benefits and costs of different policies. (Hampton 2004). Three factors should be analyzed:

- **Profits.** The firm should investigate different possibilities and forecasts the effect of each on its future profits. The cost of funds tied up in receivables, collection costs, bad debt losses, and money lost discounts for early payment should be compared with additional sales or losses of sales as a result of each proposed policy
- **Growth in sales.** Sometimes firms are willing to accept short term setbacks with respect to profits if a new policy enables the firm to increase its sales significantly. A firm may adopt a certain policy to gain a foothold in previously closed market. Because growth is so important aside from profits, it should be viewed as a separate factor in determining receivables policies.
- **Possible problems.** In spite of increase sales and profits, some policies may be accompanied by obvious and annoying problems.

2.1.3.3. CASH MANAGEMENT

In a financial sense, the term cash refers to all money items and sources that are immediately available to help pay firms bills (Hampton, 2004).Managing cash is becoming ever more sophisticated in the

global and electronic age of the 1990s as financial managers try to squeeze the last dollar of profit out of their cash management strategies (Block & Hirt, 1992).

The management with account payables and receivables that has been described above and below goes under the term of cash management. Following paragraphs summarizes what cash management engage in order to shorten the cash conversion cycle (Lantz, 2008, p. 119);

- Extend the credit time for account payables
- Shorten the credit time for account receivables
- Incorporate more efficient methods for the management of account payables and receivables, internet banking for example

- Improve the procurement of capital surplus and deficits (Lantz, 2008, p. 119)

Despite the ambition to minimize the cash conversion time and therefore the costs in the conversion cycle, the companies cannot escape all costs since they have their own obligations to consider. Taking into the account these responsibilities companies must keep some cash for expected as well as unexpected expenditures that occur in their everyday business. Lantz have mentioned about these three motives why companies should hold cash (Lantz, 2008, p. 119);

- The transaction motive: the company must be able to manage their own obligations like payments to suppliers. They should not be dependable on customers paying in time since they can be late and pay after due date which will involve extra costs.
- The speculative motive: the market is unpredictable and opportunities could turn up at any time and when they do, companies should see to that they have money available if they would like to invest.

- The precautionary motive: as well as the market is unpredictable so are the activities in the business. Unexpected events like; machines breaking down, a suddenly increase or decrease of the demand and more, can occur and could have a very negative influence for the whole company if not taken care of (Lantz, 2008, p. 120).

2.1.3.4. ACCOUNT PAYABLE MANAGEMENT

The general guidelines for optimizing the managing of account payables involve the timing of payments. Companies should try prolonging the time of payment as long as possible as they can use the advantage of their suppliers financing their investments until payment has been made. Another argument for prolonging the time for payment is that the producing companies, for example, need some

time to convert their purchased raw material into products they can get sold and get cash in return (Maness & Zietlow, 2005, . 235-238).

Some suppliers offer their customers discount rates as an attempt to get them to pay their receivables before maturity date which may sound tempting but this is not always the most profitable option. To avoid being misled by theses discounts offers, companies should carefully consider every discount offer they get to see that it is beneficial in terms of their conditions. For a discount to be beneficial for the buyer the discount rate should be higher than the interest rate the company would have to pay for a loan over the same period as the discount period (Maness & Zietlow, 2005, p. 235-238). If there is no discount offer given companies should use the whole credit period and pay their payables on due date. Paying after due date should always be avoided unless the company has fallen in financial difficulties and there is no other choice. The reason for this is that delayed payments can result in unnecessary costs as late fees (Dolfe & Koritz, 2000, p. 49).

2.1.4. MEASUREMENT OF WORKING CAPITAL MANAGEMENT

In this study, the researcher has chosen a profitability measure; the return on asset and return on investment capital, as a measure of working capital management. Return on assets means how much a firm generates profits and effectiveness with given resources. It is also called return on investment (ROI). Moreover, the return on asset and return on investment capital measures a company's profitability from the financial performance perspective. Therefore, the researcher found it to be appropriate and relevant for this study.

Average number of day's inventory

The average number of day's inventories represents the period that inventories are held by the companies before they are sold. In order to help shorten the cash conversion cycle, a lower number of days are better. The average amount of inventory is received by taking the sum of the beginning and ending balance of inventory for a year, and divide with two, to get the average. The average amount of inventory is then divided with the cost of goods sold to see how big part of cost goods sold that comes from the inventory. In order to get the outcome of the cash conversion cycle in days the amount given is multiplied with the average amount of days a year, 365 (Lantz, 2008, p. 115).

Average number of days inventory = <u>Average Inventory</u>   x 365
Cost of goods sold

Deloof (2003) found a significant negative relation between gross operating income and number of day's inventories. This explains that an increase of the inventories is an affect from a decrease in sales which leads to lower profit for the companies. Another research by Boisjoly (2009) found an increase of inventory turnover over a period of fifteen years that indicates that companies have improved their inventory management. To manage inventory, there are several manufacturing operating managements to apply, such as; just-in-time procedures, make-to-order procedures, lean manufacturing initiatives to improve their operating processes, quality programs to reduce number of parts and supplier rationalization to reduce number of suppliers (Boisjoly, 2009).

Average number of days accounts receivable

The average number of day's accounts receivable is used as a measure of accounts receivable policy. It represents the average number of days that the company uses to collect payments from its customer. This metric is received by dividing the sum of the opening and ending balance of account receivables with two and divide this with the net sales and then multiply the outcome with the average number of days in a year. Similar to the inventory, a low number of days is desirable to keep the cash conversion cycle short (Lantz, 2008, p. 115).

Average number of days accounts receivable = <u>Average accounts receivable </u>x 365
Net Sales

Deloof (2003) find the significant negative relation between the average number of days accounts receivable and gross operating income as a measure of profitability. Boisjoly (2009) provide the evidence that companies have focused on improving the management of accounts receivable as their

accounts receivable turnover increase over the 15 year time period for 1990-2004. Several techniques can be applied such as strengthen their collection procedures, offer cash discount and trade credit, and use receivables factoring (Boisjoly, 2009).

AVERAGE NUMBER OF DAYS ACCOUNTS PAYABLE

The average number of days account payable is used as a measure of account payable policy. It represents the average number of days the company takes to pay its suppliers.

While the two previous metrics is preferred to keep short, more number of day's accounts payable is considered better for shorter cash conversion period (Lantz, 2008, p. 116).

Average number of days accounts payable = <u>Average accounts payable</u> x 365

Cost of goods sold

The study of Deloof (2003) shows a negative relation between average number of day's accounts payable and profitability which indicates that profitability has an effect on accounts payable policy as a company with less profit takes longer payment period. In the case for Belgian companies, suppliers offer their customers substantial discount for the cash payment customer which lead to increasing profit of the company (Deloof, 2003). In the study of Boisjoly (2009), the result shows an increase in account payable turnover over the 15 year time period which is contrary to expectation as large companies have extended their payment period to suppliers from 45 to 60 days or 60 to 90 days. The explanations are that only few companies succeeded in increasing their payment terms, increasing in amount of accounts payable or decreasing in fund for working capital (Boisjoly, 2009).

CASH CONVERSION CYCLE

Gitman (2009) explains that a cash budget is a forecast of the future cash inflows and outflows of the business and how cash has been used for business operational activities. But the "cash conversion cycle" is the duration of time that cash is tied up in accounts receivables and inventory.

In fact, the Cash Conversion Cycle (CCC) is concerned with the amount of time a firm's resources are tied up. It is mathematically represented by the equation below (Dong & Su, 2010; Gill, Biger, & Mathur, 2010; Gitman, 2009).

CCC = Average Account receivables + Average Inventories - Average Account Payable

CCC = OC – APP   CCC = AAI + ACP – APP

Source: Adapted from Gitman, (2009, p.602)

When the inventory is purchasing and granting credit to customers ties up cash within the business. Despite cash is transformed into stock and services by purchasing, but the impact is delayed by supplier credit (i.e. purchase on credit). However, the inventory (stock) is transformed into debtors (i.e. Account Receivables) by selling on credit and then cash is collected at a later stage. Gitman (2009) echoes the significance of the average collection period (ACP) that represents the length of time to collect the receipt of cash from customers. Likewise, cash remaining tied up in inventory between purchase and sale represents the average age of inventory (AAI) in the cash conversion cycle.

When the cash conversion cycle (CCC) increases, it will lead to the declining of profitability of a typical business. Thus the owner-managers can create a positive value for the business owners by handling the adequate cash conversion cycle (CCC) and keeping each different component to an optimal level (Gitman, 2009; Oliver & English, 2007; Uyar, 2009). Prior empirical studies summarise a mixed outcome, claiming that there is a strong negative relationship between profitability, measured through gross operating profit, and the cash conversion cycle (T. Afza & Nazir, 2007; Deloof, 2003; Dong & Su, 2010; A. Sharma & Kumar, 2011).

2.1.5. WORKING CAPITAL POLICY

Working capital policy can be best described as a strategy which provides the guideline to manage the current assets and current liabilities in such a way that it reduces the risk of default (Afza & Nazir, 2007). Working capital policy is mainly focusing on the liquidity of current assets to meet current liabilities. Liquidity is very important because, if the level of liquidity is too high then a company has lot of idle resources and it has to bear the cost of these idle resources. However, if liquidity is too low then it will face lack of resources to meet its current financial liabilities (Arnold, 2008). Current assets are key component of working capital and the WCP also depends on the level of current assets against the level of current liabilities (Afza & Nazir, 2007). On this base the literature of finance classifies working capital policy into three categories as defensive or hedging, aggressive and conservative working capital policy (Arnold, 2008 pp.535-36) and discussed as follows:

Defensive policy: Company follows defensive policy by using long term debt and equity to finance its fixed assets and major portion of current assets. Under this approach, the business concern can adopt a

financial plan which matches the expected life of assets with the expected life of the sources of funds raised to finance assets (Paramasivan and Subramanian, 2009). Inventory expected to be sold in 30 days could be financed with a 30- day bank loan; a machine expected to last for 5 years could be financed with a 5-year loan; a 20-year building could be financed with a 20 year mortgage bond; and so forth (Weston and Brigham, 1977, P. 716).

Defensive policy reduces the risk by reducing the current liabilities but it also affects profitability because long term debt offers high interest rate which will increase the cost of financing (Arnold, 2008 p.530). This means a company is not willing to take risk and feel it appropriate to keep cash or near cash balances, higher inventories and generous credit terms. Mostly companies that are operating in an uncertain environment prefer to adopt such a policy because they are not sure about the future prices, demand and short term interest rate. In such situation it is better to have a high level of current assets. Which means, keeping higher level of inventory in the stock, to meet sudden rise in demand and to avoid the risk of stoppage in production.

This approach gives a longer cash conversion cycle for the company. It also provides the shield against the financial distress created by the lack of funds to meet the short term liability but as the researcher discussed earlier long term debt have high interest rate which will increase the cost of financing. Similarly, funds tied up in a business because of generous credit policy of company and it also have opportunity costs. Hence, this policy might reduce the profitability and the cost of following this policy might exceed the benefits of the policy (Arnold, 2008 p.530).

Aggressive policy: Companies can follow aggressive policy by financing its current assets with short term debt because it gives low interest rate. However, the risk associated with short term debt is higher than the long term debt. Paramasivan and Subramanian (2009) pinpointed that in aggressive policy the entire estimated requirement of current assets should be financed from short-term sources and even a part of fixed assets financing be financed from short- term sources. This approach makes the finance mix more risky, less costly and more profitable. Furthermore, few finance managers take even more risk by financing long term asset with short term debts and this approach push the working capital on the negative side.

Managers try to enhance the profitability by paying lesser interest rate but this approach can be proved very risky if the short term interest rate fluctuates or the cash inflow is not enough to fulfill the current liabilities (Weston and Brigham, 1977, P. 716). Therefore, such a policy is adopted by the company which is operating in a stable economy and is quite certain about future cash flows. A company with aggressive working capital policy offers short credit period to customers, holds minimal inventory and

has a small amount of cash in hand. This policy increases the risk of default because a company might face a lack of resources to meet the short term liabilities but it also gives a high return as the high return is associated with high risk (Arnold, 2008, p.536).

Conservative policy: Some companies want neither to be aggressive by reducing the level of current assets as compared to current liabilities nor to be defensive by increasing the level of current assets as compared to current liabilities. So, in order to balance the risk and return these firms are following the conservative approach. It is also a mixture of defensive WCP and aggressive WCP. In these approach temporary current assets, assets which appear on the balance sheet for short period will be financed by the short term borrowings and long term debts are used to finance fixed assets and permanent current assets (Weston and Brigham, 1977, p. 718). Thus, the follower of this approach finds the moderate level of working capital with moderate risk and return. It is called as "low profit low risk" concept (Paramasivan and Subramanian, 2009). Moreover, this policy not only reduces the risk of default but it also reduces the opportunity cost of additional investment in the current assets.

On the other hand apart from the above points the level of working capital also depends on the level of sale, because, sales are the source of revenue for every companies. Sales can influence working capital in three possible ways (Arnold, 2008 p.534-35).

- As sales increase working capital will also increase with the same proportion so, the length of cash conversion cycle remains the same.
- As the sales increase working capital increase in a slower rate.
- As the sales increase the level of working capital rises in misappropriate manner i.e. the working capital might raise in a rate more than the rate of increased in the sale.

Company with stable sale or growing sale can adopt the aggressive policy because it has a confidence on its future cash inflows and is confident to pay its short term liabilities at maturity. On the other hand a company with unstable sale or with fluctuation in the sale can't think of adopting the aggressive policy because it is not sure about its future cash inflows. In such a situation adoption of aggressive policy is similar to committing a suicide. Hence, searching other method might be the best choice.

2.1.5.1. INVESTING IN WORKING CAPITAL

Van Horne and Wachowicz (2008) state that excessive investment in current assets (cash and marketable securities, accounts receivable and inventory), may lower the value of an enterprise and also diminish profitability. Consequently a sufficient level of current assets needs to satisfy the payments and obligations of current liabilities. If the short-term assets are poorly managed then the opportunity costs could be high, e.g., the holding of a large amount of inventory that provides a small amount of return. This means that return on investment on current assets must be greater than the required rate of return in order to cover all the business obligations (Gitman, 2009).

The stock-outs of inventory levels can cause a loss in sales leading to diminishing profits. Hence, the determination of investment optimal level in working capital is to the trade-off between liquidity and profitability. However, the financial manager should manage the associated costs with working capital at the minimal level without jeopardising the liquidity required for its ongoing business operations (Arnold, 2008; Baker & Powell, 2005).

2.1.5.2. SHORT-TERM FINANCING

Every business has several options when it decides to aggregate short-term financing. According to Gitman (2009) the financing of WC enhances the composition and the structure of the business financing in terms of short-term and long-term aspects. Afzar&Nazir (2008) investigated the traditional relationship between working capital management policies and a firm's profitability in their quantitative study for a sample of 204 non-financial firms listed on Karachi Stock Exchange (KSE) for the period 1998-2005.The study found significant difference among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could increase value if they adopt a conservative approach towards working capital investment and working capital financing policies (Shah and Sana, 2006).

Efficient management of working capital plays an important role of overall corporate strategy in order to create shareholder value. Working capital is regarded as the result of the time lag between the expenditure for the purchase of raw material and the collection for the sale of the finished goods. The way of working capital management can have a significant impact on both the liquidity and profitability of the company (Shin and Soenen, 1998). The main purpose of any firm is maximizing profit. But, maintaining liquidity of the firm is also an important objective. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Thus, strategy of the

firm must be balance between these two objectives. Because the importance of profit and liquidity are the same so, objective should not be at cost of the other. If profit is ignored, we cannot survive for a longer period. Conversely, if we do not care about liquidity, we may face the problem of insolvency. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm.

2.1.6. PROFITABILITY AND LIQUIDITY MEASURES

Profitability ratio is a measure of profit generated from the business and is measured in percentage terms e.g. percentage of sales, percentage of investments, percentage of assets.

High percentage of profitability plays a vital role to bring external finance in the business because creditors, investors and suppliers do not hesitate to invest their money in such a company (Fabozzi and Peterson (2003, p. 733). There are several measures of profitability which a company can use. Few measures of profitability are discussed here:

Net profit margin (NPM): It calculates the percentage of each sale dollar remains after deducting interest, dividend, taxes, expenses and costs. In other words, it calculates the percentage of profit a company is earning against its per dollars sale. Higher value of return on sale shows the better performance (Gitman, 1999).

NPM = (Earnings available for common stakeholder / Net sales)*100

Return on asset (ROA): Investors and managers often are more interested in the profits earned on capital invested than in the level of profits as a percentage of sales. Companies operating in capital-intensive industries often have attractive profit margins but are often less inspiring when the amount of capital absorbed is considered.

Therefore it is useful to examine both the level of and the trend in the company's operating profits as a percentage of total assets. In order to improve the comparisons with other companies, and over time, it is useful to use earnings before interest after tax (EBIAT). This allows one to focus on the profitability of operations without any of the effects of the way in which the assets are financed. (Bertoneche and Knight, (2001, p.77)

This ratio explains that how efficient a company is to utilize its available assets to generate profit. It calculates the percentage of profit a company is earning against per dollar of assets (weston and brigham (1977, p. 101). The higher value of roa shows the better performance and it can be computed as follows:

ROA = (Earnings Available For Common Stockholders / Total Asset)*100

Gross Operating Profit (GOP): this ratio explains that how efficient a company is to utilize its operating assets. This ratio calculates the percentage of profit earned against the operating assets of the company (Weston and Brigham, 1977, p. 101).

Gross Operating Profit = (Sales – COGS) / (Total asset –financial asset)

Return on investment (ROI)

It is common practice to use net income as the profitability measure against total assets. This is a perfectly legitimate ratio; however, since it is not independent of the way in which the assets are financed a caution is needed when comparing ROIs across firms with very different financial structures. (Bertoneche and Knight, (2001, p.79)

$$\text{Return on investment (ROI)} = \frac{\text{Net income}}{\text{Total assets}}$$

On the other hand, liquidity ratio measures the short term solvency of financial position of a firm. These ratios are calculated to comment upon the short term paying capacity of a concern or the firm's ability to meet its current obligations (Fabozzi and Peterson, 2003, p.729) and they are discussed as follows:

Current ratio: is defined as the relationship between current assets and current liabilities.
It is a measure of general liquidity and it is the most widely used to make the analysis for short term financial position or liquidity of a firm (Fabozzi and Peterson (2003 p. 733).

Current ratio can be calculated by dividing the total current assets by total current liability.
Current ratio = current asset / current liability

Acid test ratio or **quick ratio:** it is the true liquidity refers to the ability of a firm to pay its short term obligations as and when they become due. It is the ratio of liquid assets to current liabilities.

Quick ratio = Current asset – inventory / Current Liabilities

It is very useful in measuring the liquidity position of a firm. It measures the firm's capacity to pay off current obligations immediately and is more rigorous test of liquidity than the current ratio.
On the other hand, **debt ratio** is one part of financial ratio which is used for debt management used by different company. Hence, it is ratio that indicates what proportion of debt a company has relative to its assets. The measure gives an idea to the leverage of the company along with the potential risks the

company faces in terms of its debt-load (Fabozzi and Peterson, 2003 p. 586). It can be calculated as dividing total debt by total asset.

2.2 REVIEW OF EMPIRICAL STUDIES

Many researchers have studied working capital from different views and in different environments. The following ones were very interesting and useful for the research:

Anand and Gupta (2002) analysed working capital management performance of Corporate India by using three financial parameters - Cash Conversion Efficiency Days Operating Cycle and Days Working Capital and by assigning them different weights in the overall score, to rank and analyse working capital management performance. This study provides the estimates by using data of 427 companies over the period 1998-99 to 2000- 01 for each company and for each industry. The presence of these three in the overall working capital performance criterion not only helps in performance evaluation but also will capture the dynamics of risk-return trade off.

Moyer et al. (2003) found that Working Capital consists of a large portion of a firm's total investment in assets, 40% in manufacturing and 50-60% in retailing and wholesale industries respectively. The firms could reduce its financing cost and increase the funds available for expansion if they minimise the funds tied up in current assets. They found that cash helps to keep the firm liquid. It enables the firm to pay its obligations and also protects the firm from becoming bankrupt.

Scherr (1989) analysed that by implementing best practices in Working capital, companies can strengthen strong cash flow levels, improve profitability, budgeting and forecasting process, predictability and manageability of results, heighten risk visibility and reduce reaction time.
Shin and Soenen (1998) highlighted that efficient Working capital management is very important for creating value for the shareholders.

Alipour (2011) researched about working capital management and corporate profitability while taking sample of 1063 companies from Tehran stock exchange. To test the hypothesis, multiple regressions and Pearson's correlation was used. He analyzed that sale and profit of a company is greatly influenced by the working capital management. Due to inefficient working capital management, a company may be incapable to pay its debts on time. The results show a significant relationship between working capital management and profitability of a company. There is a negative relationship between cash conversion cycle, average collection period, inventory turnover in days and profitability.

Cote and Latham (1999) argued the management of receivables, inventory and accounts payable have tremendous impact on cash flows, which in turn affect the profitability of firms. Each of the Working capital items (i.e., cash, receivables and inventories) helps in the management of firms in its own particular way.

In Malaysia, Mohamad & Noriza (2010) did their study by taking secondary data from Bloomberg's 72 listed companies for 5 years from 2003-2007 to derive the relationship empirically between Working capital management and profitability. Study was done to check effects of working capital components (such as CCC, CATA (Current Asset over Total Assets Ratio) ratio, debt to asset ratio, CR and current liabilities over total asset ratio) on firm's performance and profitability measured by Tobin's Q ratio, return on invested capital and ROA (Return on Assets). Correlation and Multiple Regression results showed a significant negative relation between working capital components and company's performance.

The first investigation in the European market was conducted by Marc Deloof (2003).109 He analyzed a sample of 1,637 Belgian firms using almost the same variables. With regard to firm profitability, he slightly modified the ROA and ROS ratios used hitherto, instead using. Similarly, he investigated a negative correlation with the CCC. Like previous papers, he investigated not only the correlation between the aggregate CCC and firm performance, and also each component in isolation. According to his calculations, the number of accounts receivable, inventory and accounts payable days correlate negatively to firm performance too. It is interesting that accounts payable correlate negatively despite the fact that payables are presumed to reduce the cash gap. Deloof (2003) argues that this finding, which appears contradictory at first glance, is the result of a shortcoming in Pearson correlations, which do not allow causes to be distinguished from consequences. A negative correlation is thus consistent with the view that highly profitable firms usually afford their suppliers shorter payment periods, as they have the financial resources to do so. According to Deloof (2003), profitability affects accounts payable days, not vice ver.

Nuru Mohammed (2011) studies the effect of working capital investment and financing policies on firms' profitability a sample of 11 manufacturing private limited companies in Tigray region, Ethiopia for the period of 2005 to 2009. The study used return on assets, return on equity and operating profit margin as dependent profitability variables. Accounts receivable period, inventory holding period and accounts payable period are used as independent working capital investment policy variables. Moreover, cash conversion cycle and current assets to total assets ratio are used as comprehensive measures of working capital investment policy. On the other hand, current liabilities to total assets ratio is used as measure of working capital financing policy. The two traditional measures, current ratio and

quick ratio, are used as liquidity indicators. In addition, the study used firm size as measured by logarithm of sales, firm growth rate as measured by change in annual sales, financial leverage and annual GDP growth rate as control variables. Both correlation analysis and pooled panel data regression models of cross-sectional and time series data were used for analysis. 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 analysis of WCM of Nigerian firms shows that a well designed and implemented working capital management is expected to contribute positively to the creation of firm's value E. Organdie, (2012). The study conducted by Olufisayo (2011) show that sales growth, cash conversion cycle, account receivables and inventory period affect firm positively, while leverage and account payable affect firm profitability negatively. In another study of selected firms in Nigerian shows that firm's profitability is reduced by lengthening the number of day's accounts receivable, number of days of inventory and number of days accounts payable. The result shows that shortening the CCC improves the profitability of the firms Akinlo (2012).

The study on Kenyan firms suggest that more profitable firms takes the shortest time to collect cash from their customers and high inventory levels reduce costs of possible interruptions in the production process and loss of business due to scarcity of products. The study also reveals that the longer a firm takes to pay its creditors, the more profitable it is M. Mathuva, (2010).

Berger & Bonaccorsi di Patti (2003) supported that leverage has a direct impact on agency cost which influences firm performance. They proposed that high leverage or a low equity capital ratio causes to reduce the agency cost related to outside equity and raises firm value. They used annual information of U.S. commercial banks from 1990 to 1995. Their result showed that a 1% increase in leverage decrease equity capital ratio surrenders a predicted 6% increase in profit efficiency.

Deloof (2003) analyzed a sample of Belgian firms and found that firms can raise their performance by shortening the periods for receivables collection and inventory conversion. He also reported an unanticipated negative impact associated with the number of days for accounts payable; poorer firms prolong the time to pay their debts.

Usama (2012) extended the work of Rehman and Nasar regarding working capital management while taking the sample of 18 companies from other food sector listed on Karachi Stock Exchange for the period of 2006-2010. The researcher used different variables to measure working capital management such as average collection period, inventory turnover in days, cash conversion cycle, average payment period, debt ratio, firm size, current ratio, and financial asset to total asset. Using common effect model and pooled least square regression, the results indicated that working capital management has significant positive association with firm's profitability and liquidity. He also concluded that firm size and minimum inventory turnover in days has positive influence on firm's profitability.

Deloof and Lazaridis et al. (2006) both observed a negative correlation between accounts payable and firm profitability, arguing in the same direction. In conclusion, Lazaridis et al. (2006) advocate greater attention to working capital management and the optimized handling of the various components of the CCC.

Padachi et al. (2006) published a positive correlation between CCC and ROA using a fixed asset model.111 several specifics of this case must nevertheless be considered when analyzing this result. First, a very small 109 (Deloof (2003), p. 573-587), 110 (Lazaridis/Tryfonidis (2006), p. 26-35),111 (Padachi (2006), p. 45-58). Sample of only 58 companies serves as basis for the statistics used. Second, a market with unique conditions was chosen: Mauritius. Accordingly, Padachi et al. (2006) explain the contradictory results mainly due to the small firm sizes. They assume that smaller firms maintain a lower fixed asset base and rely mostly on current assets to increase profits. Also, when a pooled OLS regression was used, the correlation turned negative. Notwithstanding, the authors emphasize that there is a pressing need for further investigation, especially among SMEs.

Raheman and Nasr (2007) investigated the relationship between working capital management and profitability of 94 Pakistani listed companies for the six-year period from 1999 to 2004. Net operating profitability is used to measure profitability. Average collection period, inventory turnover in days, average payment period, cash conversion cycle and current ratio on the net operating profitability include in the study. Results from descriptive analysis show that average cash conversion cycle is 73 days in Pakistani companies. Results from regression analysis show that there is a positive relation between company size and profitability. Further, the results report that profitability has significant negative relations with accounts receivable as a measure of liquidity, debt ratio, inventory turnover in days, average payment period and cash conversion cycle.

Kieschnick et al. (2008) in their empirical study they examine the relationship between corporate working capital management and company value, as well as examination of how agency costs influence this relationship. They find that on average an additional dollar invested in net operating working capital at the mean level of such investment reduces company value and also the exclusion of agency costs in prior models of the effect of working capital management on company value is of

importance. After them, Luo et al. (2009) study whether and how working capital efficiency (measured by cash conversion cycle) affects company future performance and company value, this is another objective they added. They find that the efficiency of a company's working capital management has lasting impact on company performance.

There are many measures which indicate firm's profitability; return on assets (ROA) is the most important of them. Boute et al. (2007), Punnose (2008), Lucius, Giorgis & Lee (2008), Negy (2009), Raza, Farooq & Khan (2011) and Sahari, Tinggi & Kadri (2012) used ROA to measure profitability of the firm. Gitman (2002, p.65) explained that return on assets (ROA) measures the overall efficiency of management in producing profit by utilizing its available resources. Negy (2009) believed that it is obligatory for the individuals to clearly understand those measures which drive profitability of a firm to make good investment decisions. Profitability analysis is a key sign to know firm's performance and return on assets (ROA) is one of the measures to asses firm's profitability. Hansen & Wernerfelt (1989), Roquebert, Philips & Westfall (1996) and Spanos, Zaralis & Lioukas (2004) all took return on assets (ROA) to measure firm's profitability while making an analysis about those factors which influence firm's profitability.

Mohamad and Saad (2010) explored the effects of working capital to the company's profitability and the value of the company. The result shows that there are significant negative associations between working capital and company's performance. Another approach introduced by Salawu (2007) investigates the relationship between aggressive and conservative working capital practices. Results strongly show that companies in differing industries have significantly different current asset management policies. It is evident that there is a significant negative correlation between industry asset and liability policies.

Afza and Nazir (2007) investigate the relative relationship between the aggressive/conservative working capital policies and profitability as well as the risk of companies. The empirical results found the negative relationship between working capital policies and profitability. Additionally, Weinraub and Sue (1998) in their study looked at ten diverse industry groups over an extended time period to examine the relative relationship between aggressive and conservative working capital practices. On the other hand, Nazir (2009) used Tobin's Q as a dependent variable and the ratio (current assets/total assets) as an independent variable, and also utilized control variables in order to achieve an opposite analysis of working capital management on the profitability of companies.

Additionally, Vishmani at el., (2007) explained that the company's inventory management policy, debtors' management policy and creditors' management policy play an important role in its profitability performance.

Bhunia, Khan & Mukhuti (2011) provided the evidence with respect to the relationship between liquidity and profitability of a firm. They took steel companies of private sector in India to assess the management of liquidity as a factor of performance. They studied important liquidity indicators and analyzed that optimal working capital management can be achieved by controlling the trade-off between profitability and liquidity of a firm. Firm value is positively affected by optimal working capital management so the investment in working capital must be satisfactory. They concluded that liquidity and profitability are significantly positively associated.

In the study of Uyar (2009) he examined industry benchmarks for cash conversion cycle (CCC) of merchandising and manufacturing companies and found that merchandising industry has shorter CCC than manufacturing industries. He further examined the relationship between the length of the CCC and the size of the firms and the findings indicated a significant negative correlation between the length of CCC and the firm size, in terms of both net sales and total assets. The study further showed significant negative correlation between the length of CCC and the profitability.

Koperunthevi (2010) studied Working Capital Management and Firms' Performance: An Analysis of Sri Lankan Manufacturing Companies by panel data analysis. Her study concluded that the working capital management very much influences on profitability of manufacturing companies and increase of the cash conversion cycle leads to less profitability. Current ratio and Quick ratio are positively related to the profitability.

Another study by Fathi and Tavakkoli (2009) studied about the relationship between the working capital management and financial performance of the economic entities. They interpreted that deferring the average collection period, inventory turnover and average payment period are significantly related. They also concluded that shorter cash conversion cycle and firm's profitability are associated. Assar Zadeh (2011) examined the elements of working capital management and their relationship with the three measures of performance including economic value added, return on assets and Tobin's Q ratio. He documented that the working capital management and economic value added are significantly linked to each other; however, there was no significant relationship observed between return on assets and Tobin's Q and working capital management.

 Anand and Pracash Guptha (2002) considered the performance of the firms over the years from 1991 to 2001 in terms of their performance in working capital management. The results showed that the selected measures for performance evaluation of working capital management are useful in evaluating the performance of the working capital and they contribute to analyzing the risk and return of the firms.

The study conduct on manufacturing small firms, Analyzed the relation of working capital management with its profitability by mature manufacturing firm used as a sample. Period of related study was 6 years i-e 1998 to 2003. Variables are used payable in days, receivable in days, inventory turnover and Cash Conversion Cycle (CCC) as independent variables and ROA used as dependent variables. They find out the finally results with the help of regression analysis. They conduct the industry of the printing and industry profitability; if heavily invest in inventory and receivable accounts (Padachi, 2006).

Howorth and Westhead (2003) studied the position of working capital management of small firms. They indicated that those firms using less working capital have lower growth rates, less external financial resources, less credit purchases, shorter manufacturing cycles and less cash sales.

Negarbo (2006) selected 250 firms as the sample to test the working capital management in them. The conclusions showed that predicting cash flows and growth rate of the firms are the major indicators of working capital management. They also found that changing the size and compound of the assets are not significantly affected by the cash flows prediction and sales growth. They are highly influenced by some factors such as the business nature of the firms, sales, firm size and profitability.

The impact of working capital management on the value of 150 firms during 1990 to 2004 was examined by Laplent (2005). It was found that the trends of the firms, size and future sales growth affect the efficiency of the working capital management. The positive relationship between working capital management and firms' performance was confirmed by the authors.

Samiloglue and Demirnes (2008) tried to find whether the profitability and working capital management of a sample of Turkish listed firms are related. Their study involved 1998 to 2007 and they documented that average collection period, inventory turnover, leverage and profitability are in significant inverse relationships. However, it was found that growth and profitability are directly associated. Gill et al (2010) showed that the cash conversion cycle and profitability are related and this is identified through gross operational earnings. Their study concerned the working capital management and the profitability of the American firms. Raheman et al (2010) selected some firms in Pakistan during 1998 to 2007 in order to seek the impact of working capital management on the organizational performance. They argued that cash conversion cycle and inventory turnover significantly affect the operations of the firms.

Enqvist et al (2011) documented that there is a negative relationship between cash conversion cycle and profitability. Nobanee and AlHajjar (2011) found that the managers might increase the profitability and operating cash flows through shortening the cash conversion cycle and average collection period. In another study, V. Ganesan, (2007) analyzed impact of working capital management upon the performance of firms in Telecom industry. The variables used were, days sales outstanding, number of days for payment to vendors, average days inventory held, cash conversion efficiency, revenue to total assets, revenue to total sales, etc. Findings revealed negative & insignificant relationship between profitability and daily working capital requirement in the said (Telecom industry) industry. The term profitability is measured in different ways by the researchers. It was measured as Gross Operating Profit (GOP), Net Operating Profit (NOP), Return on Investment, (ROI), and Return on Asset (ROA) while Working Capital Management was measured as cash conversion cycle (CCC).

Alipour (2011) researched about working capital management and corporate profitability while taking sample of 1063 companies from Tehran stock exchange. To test the hypothesis, multiple regressions and Pearson's correlation was used. He analyzed that sale and profit of a company is greatly influenced by the working capital management. Due to inefficient working capital management, a company may be incapable to pay its debts on time. The results show a significant relationship between working capital management and profitability of a company. There is a negative relationship between cash conversion cycle, average collection period, inventory turnover in days and profitability.

Finaly, Padachi (2006) examined the trends in working capital management and its impact on firms performance for a sample of 58 Mauritian Small Manufacturing Firms operating in five major industry groups (food and beverages, leather garments, paper products, prefabricated metal products and wood furniture) which are both registered and organized as proprietary/private companies. The relationship between working capital management and corporate profitability was investigated by using panel data analysis for the period 1998 – 2003. The trend in working capital needs and profitability of firms are examined to identify the causes for any significant differences between the industries. The dependent variable, return on total assets defined as profit before interest and tax divided by total assets, was used as a measure of profitability. The efficiency ratios, namely accounts receivable period, inventory period and accounts payable period were used as measures of working capital. The Cash Conversion Cycle (CCC) was used as a comprehensive measure of working capital. The regressions were also include the ratio of current liabilities to total assets to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive. Sales a proxy for size (the natural logarithm of sales), the gearing ratio (financial debt/total assets), the gross working capital turnover ratio (sales/current assets) and the ratio of current assets to total assets were included

as control variables in the regressions. The regression results showed that high investment in inventories and receivables is associated with lower profitability. An analysis of the liquidity, profitability and operational efficiency of the five industries showed significant changes and how best practices in the paper industry have contributed to performance. The findings also reveal an increasing trend in the short-term component of working capital financing.

2.3. CONCLUSIONS AND KNOWLEDGE GAPS EMERGED FROM SURVEY OF RELATED LITERATURE

Above all, the literature review indicates that working capital management has impacts on profitability, liquidity and performance of a firm. The efficiency of a company's working capital management has lasting impact on company performance. Cash Conversion Efficiency Days Operating Cycle and Days Working Capital in the overall working capital performance criterion not only helps in performance evaluation but also will capture the dynamics of risk-return trade off. Hence, economic value added, Tobin's Q ratio, return on invested capital (ROI); return on equity (ROE), and ROA (Return on Assets) are the most important measure of firm's performance and profitability. Indeed, the company's inventory management policy, debtors' management policy and creditors' management policy play an important role in its profitability performance.

Even if, the literature review indicated that working capital management has impact on the profitability, liquidity and performance of a firm but there still is vagueness regarding the appropriate variables, hypotheses and effect size measures that might serve as proxies for working capital management as a whole. Hence, literature review consisting some of previous studies though limited in scope, methodology and overall output. Likewise, lack of not incorporating all relevant and most important variables (independent and control) used to measure both working capital and firms performance, it creates difficulty for comparability of studies conduct in similar areas. Moreover, it is evident from the literature that not much of the studies have been able enough to develop a model that will assist managers to establish an optimum working capital under different operating environments or even industries. Instead the literature and studies suggest the existence of an optimum level without necessarily suggesting the same level or how to be established. As a result, first the researcher tried to identify major relevant variables which are missed or not included in previous studies. So as to reveal the contents or new variables, all variables would enhance the finding and fill the problem of missing important variables which was observed in previous studies and in their dimensions in depth.

2.4 FIRMS' FINANCIAL PERFORMANCE AND DEVELOPMENT OF HYPOTHESES

Referring to theoretical and literature review on working capital management, this study find that there are several factors which have an impact on the management of working capital such as Firms' financial performance and others.

The following part presents Firms' financial performance, their impact on working capital management and development of hypotheses which would be tested in the researcher empirical study in order to determine the impact of working capital management on firms' performance of these Firms financial performance on the profitability measurements (i.e. return on asset and return on investment capital) as a measure of working capital management.

2.4.1. RETURN ON ASSETS

Return on assets means how much a firm generates profits and effectiveness with given resources. It is also called return on investment (ROI).

Negy (2009) believed that it is obligatory for the individuals to clearly understand those measures which drive profitability of a firm to make good investment decisions. Profitability analysis is a key sign to know firm's performance and return on assets (ROA) is one of the measures to asses firm's profitability.

According to Ahsen, Faisal Mehmood and Muhammad (2011) they have advised to the selected sector company's managers that, the managers can obtain good margin of profits through proper and excellent managing their company's cash conversion period, accounts or debtors' conversion period, accounts payables days and number of day's inventory conversion to a required industry's optimum level.

2.4.2 CASH CONVERSION CYCLE

Both liquidity and profitability are the core concern of the company's management. Also, profitability is expected to have significant impact on company's cash conversion cycle. Cash conversion cycle might have both positive and negative effect on the company profitability, for instance, while a company with long cash conversion cycle might have higher sales because of long credit term given to trade credit customers, high cost of investment in working capital might decrease profitability as well (Deloof, 2003).

Lazaridis and Tryfonidis (2006) find the negative relationship between cash conversion cycle and profitability measured by gross operating profit. The researchers explain this negative result as shorter cash conversion cycle will generate more profit for a company.

Nimalathasan (2010) found that, cash conversion cycle and return on assets are negatively correlated also he stated that when cash conversion cycle increases that cause for decrease return on assets. He pointed in his study that an increase in number of days in cash conversion cycle even by one day that is associated with a decrease by 5.03% in return on assets of selected listed manufacturing companies in Sri Lanka. Also he has suggested that to managers of selected companies to his study, they can increase their company's profitability by reducing the number of days on inventories conversion cycle and accounts receivable, through his results.

Izadi Niya and Taaki (2010) selected a sample composed of the big and small Iranian firms to find empirical evidences about the impact of working capital management on the profitability. The regression results indicated that the cash conversion cycle and return on asset are significantly and inversely related. Additionally, they showed that investment of huge amounts in inventories and accounts receivables decreases the profits. Eljelly (2004) also reports significant negative relationship between the liquidity level and profitability in companies with long cash conversion.

Base on the prior empirical studies, the researcher expect profitable company to have effective working capital management which results in the shorter cash conversion cycle.

Hypothesis is formulated as follows:

H1: cash conversion cycle is significant related to financial performance of the firm.

In contrary, Jeng-Ren, et al. (2006) find the significant positive relation between the net liquid balance as a measure of working capital management and firm performance measured by return on assets. They find that high profit companies tend to have more working capital balance as a result from using conservative policy. In addition, the result with another measurement, working capital requirement, point out the positive relation which suggest that companies have inefficient working capital management which leads to high account receivable and inventory balance.

2.4.2. AVERAGE NUMBERS OF DAYS INVENTORY

An economic evaluation of a firm's performance to provides financiers an inspiration of how lengthy it gets a business to revolve its stock into sales. Usually, the lesser the number of day's the good for firm. However, it is essential to keep in mind that the average inventory is change according to firm to firm and industry to industry.

Lazaridis and Tryfonidis (2006) find the negative relationship between number of day's inventories and gross operating profit but it is not in significant level.

Samiloglu and Demirgunes (2008) conduct the study to examine the effect of working capital management on company profitability of listed manufacturing companies in Istanbul Stock Exchange for the period from 1998 to 2007. Cash conversion cycle, accounts receivable period and inventory period are used to measure the effects of working capital management; return on assets is used as a profitability measure. Results from regression analysis show that profitability has a significant negative relation inventory period.

Deloof (2003) found a significant negative relation between gross operating income and number of day's inventories. This explains that an increase of the inventories is an affect from a decrease in sales which leads to lower profit for the companies. Another research by Boisjoly (2009) found an increase of inventory turnover over a period of fifteen years that indicates that companies have improved their inventory management. To manage inventory, there are several manufacturing operating managements to apply, such as; just-in-time procedures, make-to-order procedures, lean manufacturing initiatives to improve their operating processes, quality programs to reduce number of parts and supplier rationalization to reduce number of suppliers (Boisjoly, 2009). Şamiloğlu and Demirgüneş (2008) findings of the study show that inventory period affect firm profitability negatively.

García-Teruel and Martínez-Solano (2007) the return on assets (ROA) is used as a measure of profitability, and the number of days accounts receivable, number of days inventories, number of days accounts payable and cash conversion cycle are used to measure working capital management. The correlation matrixes demonstrate that the return on assets has the significant negative relationship with number of day's inventory.

With the advantage from inventories, companies tend to perform better in managing their working capital and have the shorter inventory conversion period. Hypothesis 2 is formulated as follows:

H2: Inventory management (holding periods) have significant impact on firms' financial performance.

2.4.4. AVERAGE NUMBERS OF DAY'S RECEIVABLE

Sales are made on credit and recovery of the payments of these sales in the period is called number of day's receivable. The accomplishments of business greatly depend lying on the capability of financial managers to control cash conversion cycle (Filbeck and krueger, 2005). Organization can minimize firm's debt cost and raise the capital for obtainable ventures through reducing the amount of short term resources. If the firm have more current assets so that it directly affect the profitability. Lazaridis and

Tryfonidis (2006) find the negative relationship between number of day's accounts receivables and profitability measured by gross operating profit. This negative result demonstrated that companies can increase their profitability by decreasing credit term giving to their customers.

Deloof (2003) find the significant negative relation between the average number of days accounts receivable and gross operating income as a measure of profitability. Boisjoly (2009) provide the evidence that companies have focused on improving the management of accounts receivable as their accounts receivable turnover increase over the 15 year time period for 1990-2004. Several techniques can be applied such as strengthen their collection procedures, offer cash discount and trade credit, and use receivables factoring (Boisjoly, 2009).

Samiloglu and Demirgunes (2008) conduct the study to examine the effect of working capital management on company profitability of listed manufacturing companies in Istanbul Stock Exchange for the period from 1998 to 2007. Cash conversion cycle, accounts receivable period and inventory period are used to measure the effects of working capital management; return on assets is used as a profitability measure. Results from regression analysis show that profitability has a significant negative relation with accounts receivable period.

García-Teruel and Martínez-Solano (2007) examine effects of working capital management on profitability of 8,872 small and medium enterprises (SMEs) in Spain for the period from 1996 to 2002. The return on assets (ROA) is used as a measure of profitability, and the number of days accounts receivable, number of days inventories, number of days accounts payable and cash conversion cycle are used to measure working capital management. The correlation matrixes demonstrate that the return on assets has the significant negative relationship with number of day's accounts receivable.

Raheman and Nasr (2007) the results report that profitability has significant negative relation with accounts receivable as a measure of liquidity. Furthermore, there is a negative relationship between average collection period and profitability found by Alipour (2011). Also Şamiloğlu and Demirgüneş (2008) findings of the study show that accounts receivables period affect firm profitability negatively.

Base on the prior studies and discussion, hypothesis 3 is proposed as follows:

H3: The way how receivables are managed has significant effect on the financial performance of firms

2.4.5 AVERAGE ACCOUNT PAYABLE

Arnold (2008 pp.479-482) described that account payable is the cheapest and simplest way of financing an organization. Accounts payable are generated when a company purchases some products for which payment has to be made no later than a specified date in the future. Accounts payable are a

part of all the businesses and have some advantages associated with it e.g. it is available to all the companies regardless of the size of the company and earlier payment can bring cash discount with it. Companies not only need to manage their account payables in a good way but they should also have the ability to generate enough cash to pay the mature account payables.

García-Teruel and Martínez-Solano (2007) examine effects of working capital management on profitability of 8,872 small and medium enterprises (SMEs) in Spain for the period from 1996 to 2002. The return on assets (ROA) is used as a measure of profitability, and the number of days accounts receivable, number of days inventories, number of days accounts payable and cash conversion cycle are used to measure working capital management. The correlation matrixes demonstrate that the return on assets has the significant negative relationship with number of day's accounts payable.

The study of Deloof (2003) shows a negative relation between average number of day's accounts payable and profitability which indicates that profitability has an effect on accounts payable policy as a company with less profit takes longer payment period. In the case for Belgian companies, suppliers offer their customers substantial discount for the cash payment customer which lead to increasing profit of the company (Deloof, 2003). In the study of Boisjoly (2009), the result shows an increase in account payable turnover over the 15 year time period which is contrary to expectation as large companies have extended their payment period to suppliers from 45 to 60 days or 60 to 90 days. The explanations are that only few companies succeeded in increasing their payment terms, increasing in amount of accounts payable or decreasing in fund for working capital (Boisjoly, 2009).

Nuru Mohammed (2011) there is a negative relationship between accounts payable period and profitability measures; however, except for operating profit margin this relationship is not statistically significant.

Therefore, more number of day's accounts payable is considered better for shorter cash conversion period (Lantz, 2008, p. 116) , hypothesis 4 can be stated as follows:.

H4: Accounts payable periods has significant impact on the financial performance of firms.

In contrary, Lazaridis and Tryfonidis (2006) explain significant positive relationship between gross operating profit as a measure of profitability and number of day's accounts payable. The researcher explain this positive significant result as a company delays its payment which affects the higher level of working capital and use to increase its profitability which less-profit companies would make use of this to delay their payment.

CHAPTER 3:

RESEARCH METHODOLOGY

3.1. INTRODUCTION

The previous chapter opened a way to identify the theoretical and literary works of people in relation to working capital management. This chapter however moves a step further by showing the ways in which the relevant data and its collection methods have helped prove that indeed working capital management is necessary for metal manufacturing companies. Here the researcher will perceive working capital management practices and its impact on firms performance of 11 Ethiopian metal manufacturing firms listed on Addis Ababa for a period of Five years from 2008 – 2012. This discussion covers the types of data to be collected, the mode of data collection and data analysis, the possible limitations and dissemination of the research. These are essential to the research because it gives a breakdown of the various research methods and strategies that will be implemented in conducting the research.

3.2 RESEARCH DESIGN

The explanatory type of study with a quantitative approach is employed to analyses the collected data. The research design, used in this study is a pooled panel data analysis of cross-sectional and time series data. Pooled panel data analysis, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects (Gujarati, 2003). In addition Statistical Package for Social Science (SPSS) (version 20.00) is applying to get results.

3.3 RESEARCH SAMPLE SELECTION

The data used in this study are collected from all metal manufacturing companies (population) found in Addis Ababa Ethiopia.

To select sample firms, the researcher employed Non probabilistic sampling specifically purposive sampling (Homogeneous sampling) rather than taking the whole thing so as to meet the requirements.

Homogeneous sampling

Purposive sampling represents a group of different non-probability sampling techniques. Homogeneous sampling is a type of purposive sampling technique that aims to achieve a homogeneous sample; that is, a sample whose units (i.e., people, cases/organizations, events, pieces of data) share the same (or very similar) characteristics or traits (e.g., a group of people that are similar in terms of age, gender, background, occupation, etc.). A homogeneous sample is often chosen when the research question that is being address is specific to the characteristics of the particular group of interest, which is subsequently examined in detail. (Patton 1990, 2002; Kuzel, 1999).

It is because of the following requirements:
The first criterion that was used to select sample units to be included in the study is the researcher conducted restriction criterion to arrive at defining the study population. The study considers manufacturing industry sector from the manufacturing categorization, i.e. textile, fiber, plastic, glass, metal, electronics, beverage, food processing e.t.c. In doing so, the sample considers companies that are engaged in the metal manufacturing sector of the economy only. This restriction has made in an attempt to avoid bias that may result from, manufacturing organization i.e. since firms operating in different manufacturing group of economy have different decision criteria in selecting sources of funds needed for executing investment opportunities and different working capital requirements. In order to alleviate this problem the researcher limits the study population only to those companies engaged in metal manufacturing industry.

Secondly, the data for the study period of Five years from 2008 – 2012 have has been collected from secondary sources i.e. audited Annual reports of the companies. The reason for restricting to this period was that the latest data for investigation was available for these periods. As a result continuity and homogeneity in the available data is a prerequisite for studying the trend of working capital formation in the metal manufacturing sector, hence those companies whose data was not available for the entire study period or whose financial years were not in uniform exclude from sample selection. Editing, classification and tabulation of the financial data collected from the above mentioned sources have been done as per requirements of the study. In certain cases necessary adjustments were made to make uniform financial years for all the sample companies, particularly where the reported period was not a financial year. The details of the companies under this study are given in the **Appendices 1** of this study**.**

The researcher tried to make the sample representative of the population (all metal manufacturing companies) operating in Addis Ababa. The researcher, therefore, selected and collected nineteen companies' financial statements.

3.4 RATIONALE BEHIND THE SELECTION OF LOCATION

Firstly, the choice of Addis Ababa was made because, Addis Ababa being the commercial capital city of Ethiopia and the most business concentrated part of Ethiopia with a good mix of trading and manufacturing companies as well. Secondly, the rationale behind the choice of location was influenced by the researcher nearness to the selected sample as compared to conducting the research outside Addis Ababa Region and also due to financial constraints.

3.5 RESEARCH INSTRUMENTS OR DATA COLLECTION TOOLS/ INSTRUMENTS

Indore to gather the necessary data copies of audited financial statements in the form of income statements, statement of financial position and cash flow statements over a period of five years were obtained from the sampled firms. This was necessary to obtain an accurate measure of the impact of the practices in terms of liquidity and profitability as four years may not be enough to measure this. The period of five years was chosen because the majority of the metal manufacturing companies hardly kept or prepared Audited financial statements and the few that did began averagely five years ago.

3.6. DATA ANALYSIS

This research provided two types of data analysis; descriptive and quantitative.

3.6.1. DESCRIPTIVE ANALYSIS

Descriptive analysis is the first step in this analysis; it was used to describe relevant aspects of phenomena about the variables and provide detailed information about each relevant variable. The results have been got by applying the statistical tools namely Statistical Package for Social Science (SPSS version 20.00) software has been used for analysis of the different variables.

3.6.2. QUANTITATIVE ANALYSIS

In quantitative analysis, correlation models are used to measure the degree of association between different variables.

Correlation analysis

Correlation is used to measure the direction of the linear relationship between two variables as well as to measure the strength of association between variables (Tabachnick & Fidell, 2007, p. 56-57). In this study, the Pearson's Correlation Coefficient is calculated to see the relationship between all variables. As for the direction of the relationship, the positive correlation indicates that when one variable increase another also increases while the negative correlation show inverse relationship (Pallant, 2007, p. 101).

And also Regression analysis was used to estimate the causal relationships between profitability variable, liquidity and other chosen variables under consideration. A pooled regression was conducted since the data has both time series and cross-sectional dimensions. As a result Pooled Ordinary Least Squares and Generalized Least Squares (cross section weights) methods used for analysis.

Pooled regression, time series and cross-section data

Pooled regression, involve estimating a single equation on all the data together, so that the data set for *y* is stacked up into a single column containing all the cross-sectional and time-series observations, and similarly all of the observations on each explanatory variable would be stacked up into single columns in the *x* matrix and then the equation is estimated using OLS (Brooks, 2008 p.488)

Time series data, as the name suggests, are data that have been collected over a period of time on one or more variables. Time series data have associated with them a particular frequency of observation or collection of data points. The frequency is simply a measure of the interval over, or the regularity with which, the data are collected or recorded (Brooks, 2008 pp.3 - 4).

Gujarati (2004, p 27) mentioned that **cross-section data** are data on one or more variables collected at the same point in time.

3.7. DESCRIPTION OF VARIABLES AND RESEARCH HYPOTHESES

This study undertakes the issue of identifying key variables that influence working capital management of Addis Ababa metal manufacturing companies and to explore and examines the impact of working capital management on firms' performance. As a result the study employed a number of variables stated below have been used to test the hypotheses of the study. They include dependent, independent and some control variables.

3.7.1. DEPENDENT VARIABLES

Dependent Variables are variables that are used to measure the performance of firms. Financial ratios are uses to compare different companies in the same industry, to compare different industries and over a period of years, a firm or an industry develops certain norms that may indicate future success or failure. If relationships change in a firm's data over different time periods, the ratios may provide clues on trends and future problem. That means the financial ratio also use to compare performance in different time periods. Profitability ratios measure a firms overall efficiency and effectiveness in generating profit. They are calculated by establishing relationships between profit figures on the one hand, and sales or assets on the other hand. The term profitability is measured in different ways by the researcher. It was measured as Return on Investment, (ROI), and Return on Asset (ROA) while Working Capital Management was measured. To set up a factual association between the operating "success" or "failure" of firms and working capital performance and to avoid the effect of tax incentives (if available), Earning Before Interest and Tax (EBIT) is used as a base to calculate ROA as dependent variable.

$$\text{Return on Assets (ROA)} = \frac{\text{Erning before Interest and tax(EBIT)}}{\text{Total Asset(TA)}}$$

$$\text{Return on investment (ROI)} = \frac{\text{Net Income}}{\text{Total Capital}}$$

3.7.2. INDEPENDENT VARIABLES AND RESPECTIVE RESEARCH HYPOTHESES

The working capital methods include Average Collection Period, Inventory Conversion Period (ICP), Average Payment Period, and Cash Conversion Cycle (CCC).

As a result Cash Conversion Cycle is measured the source of three parts Number of Days Receivable, Inventory Conversion Period and Number of Days Payable. All these parts of CCC help to examine the gathering, inventory conversion and policy of the payment on sectored basis.

3.7.2.1 CASH CONVERSION CYCLE (CCC):

Firms purchase inventories from suppliers on credit and then sell inventory on credit as well. In both cases cash flows are delayed. CCC refers to time in days between a firms pays its payables and receives receivables. CCC is the difference between sum of inventory period and receivable period (operating cycle) and payment period.

To calculate **CCC** the researcher uses the following formula:

$$\text{Cash Conversion Cycle (CCC)} = ARP + ICP - APP$$

3.7.2.2 INVENTORY CONVERSION PERIOD (ICP):

It is average number of days to convert raw materials into finished products and then selling them to customers. Inventory period is calculated by dividing average inventory by average sales per day.

To calculate **ICP**

$$\text{Inventory Conversion Period (ICP)} = \frac{\text{Average Inventory}}{\text{Net Sales}} * 365$$

3.7.2.3 AVERAGE COLLECTION PERIOD

This variable is defined as the number of the days which is needed to collect the receivables. In other words, it is the average period for which receivables are outstanding. The information about the net annual sales of the firm and the average beginning and ending receivables are used (Mohammadi, 2007):

To calculate

$$\text{Average Collection Period} = \frac{\text{Average Accounts Receivable} \times 365}{\text{Net Sales}}$$

3.7.2.4. AVERAGE PAYMENT PERIOD

This is the number of days a company takes to pay off the accounts payable. The average beginning and ending accounts payable are used to measure the average payment period (Deloof, 2003):

To calculate **APP**

$$\text{Average Payment Period (APP)} = \frac{\text{Average Accounts Payable} \times 365}{\text{Net Sales}}$$

As indicated in chapter two on Theoretical and literature review part the Respective research hypotheses are proposed detail as:

H1: cash conversion cycle is significant related to financial performance of the firm.

H2: Inventory management (holding periods) have significant impact on firms' financial performance.

H3: The way how receivables are managed has significant effect on the financial performance of firms

H4: Accounts payable periods has significant impact on the financial performance of firms.

3.7.3. CONTROL VARIABLES

In order to have a reliable analysis of the impact of working capital management performance on profitability, it is common in working capital literature to use some control variables to account for various factors that may influence profitability of firms (Deelof, 2003; Eljelly, 2004; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Afza and Nazir, 2007; Tewodros 2010;). Accordingly, together with the above working capital variables, some control variables that are specific to firms and general to the economy as a whole were taken into account in this study.

Short Term Liquidity:

Liquidity affects profitability of firms so to keep its effect neutral the researcher have used current ratio as control variable. It is calculated by dividing current assets by current liabilities.

Current Ratio = Current Assets/Current Liabilities

Size of firm:

It is obvious that firms' size affects profitability; to keep size as constant factor the researcher have used natural logarithm of sales as control variable.

Size of firm = Natural Logarithm of Net Sales

Short Term financial assets:

Financial assets are used to obtain short term profits, these assets vary company to company, so to keep its effect neutral researcher have taken it financial assets to company's total asset ratio as control variable and is calculated by dividing short term financial assets by total assets.

Short Term Financial Assets Ratio = Short term Loans and Advances / Total Assets

Leverage:

To keep the debt utilization effect constant debt to asset ratio is taken as control variable, it is calculated by dividing total debt by total assets.

Leverage = Total Debt/Total Assets

Table: 3.1.

Variables

Dependent	Return on Asset (ROA)
	Return on Investment, (ROI)
Independent/Explanatory	Accounts Receivable Period (ARP)
	Inventory Conversion Period (ICP)
	Accounts Payable Period (APP)
	Cash Conversion Cycle (CCC)
Control	Liquidity = Current Ratio (CR)
	Size of the Company = Natural Log of Sales (LnSales)
	Financial Assets to Total Assets (FTA)
	Leverage = Total Debt to Total Asset Ratio (DAR)

3.8. MODEL SPECIFICATIONS

As mentioned above, the impact of working capital management on firms' performance was estimated by using similar quantitative models of Raheman and Nasr, (2007), Panigrahi, Anita Sharma (2013). The general formula used for the model is:

$$\text{ROA it} = \beta_0 + \sum_{t=1}^{n} \beta_i \, X_{it} + \epsilon$$

$$\text{ROI it} = \beta_0 + \sum_{t=1}^{n} \beta_i \, X_{it} + \epsilon$$

Source: Panigrahi, Anita Sharma (2013)

ROA $_{it}$ and ROI $_{it}$ = Return on Asset, and Return on Investment of a firm i at time t; i = 1, 2, 3…, 11 firms respectively.

β_0 = the intercept of equation

β_i = Coefficient of X it variables

X_{it} = the different independent variables for working capital management of firm i at time t.

t = Time from 1, 2…, 5 years

ϵ = error term

Model 1

This model is used to test the first hypothesis; dependence of Return on Asset and Return on Investment on cash conversion cycle (CCC).

$ROA_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

$ROI_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

Model 2

This model is used to test the second hypothesis; dependence of Return on Asset and Return on Investment on inventory conversion period (ICP).

$ROA_{it} = \beta_0 + \beta_1 (ICP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

$ROI_{it} = \beta_0 + \beta_1 (ICP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

Model 3

This model is used to test the third hypothesis; dependence of Return on Asset and Return on Investment on Accounts receivable period (ARP).

$ROA_{it} = \beta_0 + \beta_1 (ARP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

$ROI_{it} = \beta_0 + \beta_1 (ARP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

Model 4

This model is used to test the forth hypothesis; dependence of Return on Asset and Return on Investment on accounts payable period (APP).

$ROA_{it} = \beta_0 + \beta_1 (APP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

$ROI_{it} = \beta_0 + \beta_1 (APP_{it}) + \beta_2 (CR_{it}) + \beta_3 (FTA_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DAR_{it})$

Where,

ROA_{it} = return on assets of firm i for time period t

ROI_{it} = return on invested capital of firm i for time period t

CCC_{it} = cash conversion cycle of firm i for time period t

CR_{it} = Current Ratio of firm i for time period t

FTA_{it} = Financial Assets to Total Assets of firm i for time period t

$Ln_{Sales\ it}$ = Natural Log of Sales of firm i for time period t

DAR_{it} = Debt to Asset Ratio of firm i for time period t

β_0 = intercept

Table: 3.2.

Proxy Variables, Definition and Predicted Relationship

Proxy	Definition Predicted	Sign
ROA	Return on Asset	
ROI	Return on Investment	
ARP	Accounts Receivable Period	Significant/Insignificant
ICP	Inventory Conversion Period	Significant/Insignificant
APP	Accounts Payable Period	Significant/Insignificant
CCC	Cash Conversion Cycle	Significant/Insignificant
CR	Current Ratio	
FTA	Financial to Total Asset Ratio	
Ln $_{Sales}$	Natural Log of Sales	
DAR	Debt to Asset Ratio	

3.9. LIMITATIONS OF THE STUDY

 Accessibility of sensitive data: Access to data in the form of financial statements was the greatest limitation to this study. Apart from the fact that some of the metal manufacturing companies genuinely did not prepare Audited financial statements, those who had such information were unwilling to give it out in order not to disclose certain confidential information. This made analysis of the level of impact very difficult and thus had to find alternative ways to measure and analyze the impact.

 Bureaucracy: The second biggest limitation was bureaucracy. Certain metal manufacturing companies required letters from the academic institution of the researcher before information was given. After the letter is delivered, the person could decide whether or not to give the information. Also, for certain metal manufacturing companies, information required came from different persons in different departments thus delaying the entire process of data collection for days depending on the availability of the persons.

Non-availability of resourceful persons to give information: For certain firms, certain information such as working capital and information from financial statements was exclusive to only the Managing Director or owners who mostly were not available. This also, delayed the process of data gathering.

Another very pertinent limitation was time constraint. This was a very pressing issue as some respondents delayed the data gathering process. Following a well developed and comprehensive time schedule for the study was crucial to reduce the effect of this constraint on the study.

Certain metal manufacturing companies required my presence before they answered any questions or give any information. This was in order that they gain a deeper insight into the question they were answering.

3.10. DISSEMINATION OF THE RESULT

The findings of the study will be submitted to Jimma University. Following the submission, the result will then be publicly defended at Jimma University. Copies will be provided to relevant stakeholders and an effort will be made to present the result at Finance and Economics conference and to publish in journal.

CHAPTER FOUR

EMPIRICAL RESULTS

4.1. INTRODUCTION

This chapter presents the results of the various indicators of performance of Metal manufacturing firms and their respective working capital variables. The study selected Return on investment capital (ROI) and Return on assets (ROA) as the measure of the firm's financial performance. On the other hand cash conversion cycle (CCC),inventory conversion period(ICP), account receivable period(ARP) and account payable(APP) was used as the measure of working capital (or working capital variables) for the study. Empirical results from quantitative data analysis using Statistical Package for Social Science (SPSS) as well as presenting results from descriptive statistics, correlation matrix and regression results was used as the study main statistical tool.

4.2. DESCRIPTIVE ANALYSIS

The descriptive statistics was compute, so that it gives detail understanding to the trend of working capital management, profitability among the sample firms and it is used as stand to give recommendations after identifying the association between the variables from correlation and regression analyses.

Descriptive analysis shows the average, and standard deviation of the different variables of interest in the study. It also presents the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable can achieve.

Table: 4.1. Presents descriptive statistics for 11 metal manufacturing firms in Addis Ababa for a period of five years from 2008 to 2012.The research has employed 10 variables for the analysis purpose. Further, these 10 variables are broadly classified in to eight independent variables and two dependent variables. Out of the eight independent variables, four are proxies for profitability of the sample firms. The remaining four variables are control variables, which are short term Liquidity as measured current ratio, to keep its effect neutral firm size as measured by the natural logarithm of sales, Short Term financial assets used to obtain short term profits and measured by Short Term financial assets ratio and To keep the debt utilization effect constant leverage is taken as control variable of the firms.

As it is displayed in table 4.1., the mean value of firms return on asset is 32.09 percent of total assets, and it deviates 17.83 percent. It means that value of profitability can deviate from mean to both sides by 32.09 percent. Its minimum value is -5 percent while the maximum is 55 percent. The return on

investment of the sample companies is averaged to 19.55 percent. It deviates from the mean value to both sides by 16.59 percent. The minimum and maximum values are -17 percent and 39 percent respectively.

Table: 4.1. Descriptive Statistics

Descriptive Statistics (N = 11)

VARIABLES		Minimum	Maximum	Mean	S.D.
Dependent	Return on Assets(ROA)	-.05	.55	.320	.1783
	Return on investment capital (ROI)	-.17	.39	.195	.1659
Explanatory / Independent	Accounts Receivable Period (ARP)	.36	177.00	134.283	46.554
	Inventory Conversion Period (ICP)	.00	192.00	133.105	48.659
	Accounts Payable Period (APP)	2.36	694.00	544.379	185.820
	Cash Conversion Cycle (CCC)	-525.24	136.00	-276.990	163.853
Control	Size of the Company = Natural Log of Sales (LnSales)	-50.39	83.38	28.293	47.720
	Liquidity = Current Ratio (CR)	1.63	3.76	2.413	.738
	Leverage = Total Debt to Total Asset Ratio (DAR)	0.41	2.77	1.477	.685
	Financial Assets to Total Assets (FTA)	.00	.29	.132	.0849

Likewise, the descriptive statistics for the four measures of efficiency of working capital management, namely, Cash conversion cycle, average accounts receivable period, average inventory conversion period and average accounts payable period are also presented in the same table. Accounts receivable period, a measurement for collection policy, is averaged to 134.28 days for the sampled firms. The interpretation for the average of the account receivable period is that, firms in the sample wait 134.28 days on average to collect cash from credit sales. The Account receivable period can vary by 46.55 days to both sides of the mean value. The minimum and the maximum Account receivable period for the sampled firms are 0.36 and 177 days respectively.

The average value of Inventory conversion period as a proxy for inventory policy is 133.11 days. This means, firms in the sample needs on average 133.11 days to sell inventory. As it is shown in the above table, the standard deviation of inventory holding period is 48.66 days. To the sample

firms the inventory holding period ranges between zero and 192days as minimum and maximum values respectively. The average value of Accounts payable period as a proxy for payment policy is 544.38 days. The standard deviation of account payable period for the sample firms is 185.82 days. The period ranges between 236 days and 694 days.

Moreover, Cash conversion cycle, is -276.99 days on average and the standard deviation is 163.85days. The minimum value of -525.24 days shows that a firm records a large inventory turn-over and/or cash collections from credit sales before making a single payment for credit purchases. It means that the accounts receivable period and/or the inventory holding period are very short and/or the accounts payable period of the firm is very long. On the other hand, the maximum time for cash conversion period is 136 days which is a very long period.

In addition, the above table also includes the descriptive statistics of control variables that are used in the study. To check the size of the firm and its relationship with profitability, natural logarithm of sales is used as a control variable. The mean value of log of sales is 28.29 while the standard deviation is 47.73. The maximum value of log of sales for a company in a year is 83.38 and the minimum is -50.39.

In the same way to check the liquidity of the companies, a traditional measure of liquidity (current ratio) is used. The average current ratio for the metal firms is 2.41 with a standard deviation of 0.74. The highest current ratio for a company in a particular year is 3.76 times and in the same way the minimum ratio for a company in a year is 1.63.

To check the debt financing and its relationship with the profitability the debt ratio (obtained by dividing the total debt of the company by the total assets) is used as a control variable. The results of descriptive statistics show that the average debt ratio for the metal companies is 148 % with a standard deviation of 69 %. The maximum debt financing used by a company is 277 % which is unusual but may be possible if the equity of the company is in negative. The minimum level of the debt ratio is 41%.

To check the ratio of fixed financial assets to the total assets of metal manufacturing firms, the financial assets to total assets ratio is used as a control variable. The mean value for this ratio is 13% with a standard deviation of 8.5 %. The maximum portion of assets in the form of financial assets for a particular company is 29 % and the minimum is 0.00.

4.2. CORRELATION MATRIX

Prior to regression result, it is important to check the correlation between different variables on which the analysis is built. Pearson's Correlation matrix is used for data to see the relationship between variables such as those between working capital management and firm financial performance (profitability measure).

Table: 4.2., Shows that Pearson's Correlation Coefficient Matrix and ROA indicate negative relationship with CCC, Ln_{Sales}, ARP, ICP and APP at 1% and 5%. Furthermore, it has positively insignificant with FTA DAR and negatively insignificant with CR. ROI has no significant relationship with all the dependent variables.

Table: 4.2.
Pearson's Correlation Coefficient Matrix

Correlations

		CCC	ICP	ARP	APP	CR	Ln$_{sales}$	FTA	DAR	ROA	ROI
CCC	Pearson Correlation	1									
	Sig. (2-tailed)										
ICP	Pearson Correlation	.494	1								
	Sig. (2-tailed)	.122									
ACP	Pearson Correlation	-.711*	.040	1							
	Sig. (2-tailed)	.014	.907								
APP	Pearson Correlation	-.930**	-.164	.888**	1						
	Sig. (2-tailed)	.000	.631	.000							
CR	Pearson Correlation	.125	.352	-.118	-.047	1					
	Sig. (2-tailed)	.714	.288	.730	.890						
Ln$_{sales}$	Pearson Correlation	.570	.400	-.383	-.494	-.507	1				
	Sig. (2-tailed)	.067	.222	.245	.123	.112					
FTA	Pearson Correlation	-.209	-.282	-.079	.091	-.596	.413	1			
	Sig. (2-tailed)	.536	.401	.817	.790	.053	.206				
DAR	Pearson Correlation	.433	-.078	-.646*	-.564	-.211	.401	.325	1		
	Sig. (2-tailed)	.183	.820	.032	.070	.533	.222	.330			
ROA	Pearson Correlation	-.466*	-.503**	-.227**	-.336**	-.060	.636*	.294	.539	1	
	Sig. (2-tailed)	.049	.0045	.00351	.00312	.861	.036	.381	.087		
ROI	Pearson Correlation	.461	.490	-.197	-.314	-.039	.613*	.276	.516	.617**	1
	Sig. (2-tailed)	.0154	.086	.562	.0347	.910	.045	.411	.104	.000	

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Table: 4.2., presents the result of the correlation analysis of Profitability Measures with cash conversion period, inventory holding period, account receivable conversion period and accounts payable period.

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The analysis of correlation matrix started between the cash conversion cycle which is a comprehensive measure of working capital and return on asset. In the methodology part of this study, it was hypostasized that, cash conversion cycle (CCC) has significant impact on firms' financial performance. In agreement with the research hypothesis, Table: 4.2. shows negative correlation coefficient between cash conversion cycle and return on assets. From the table, one can notices that correlation coefficients of cash conversion cycle with return on assets are - 0.466 and the p value is (0.049). It is significant at ά. = 5%. It means that if the firm is able to increase this time period known as cash conversion cycle, it can increase its profitability. As a result cash conversion cycle and Return on asset have significant association.

As stated above Correlation results between inventory holding period, account receivable conversion period and accounts payable period with return on asset have negative result. It shows that any increase in any of these factors will reduce the profitability measure (ROA) of firms.

As it has been stated in the methodology part of this study, it was hypothesized that Inventory management (holding periods) have significant impact between Return on asset. In agreement with this hypothesis, the correlation table indicates that inventory holding period have negative significant impact with return on assets. The correlation coefficients are 0.503 and p value is (0.0045) showing that it is highly significant at ά. = 1%.

Likewise, in the methodology part of this study, it was hypothesized that Accounts payable periods has significant impact on profitability as measured by return on assets. Similar to the research hypothesis, the correlation matrix in the above table prevail negative significant impact between accounts payable period and profitability measures. Which means if firms delay their payments they will earn less profits; the reason behind this is that firms can take the advantage of discounts by paying soon. As it is shown in the above, Account payable period has a negative relationship correlation coefficients of - 0.336 and the p value is (0.0031) with return on assets. Showing that it is significant at ά. = 1%.

The other hypothesis was that, The way how receivables are managed has effect on profitability of firms measured by return on asset. In view of that, the result of the correlation matrix in Table: 4.2. indicates that the account receivable period negatively correlated with return on assets. This relationship is also proofed from the correlation coefficients of- 0.227 with return on asset, and the p value is (0.0351) significant at ά = 1%.

Current ratio is a traditional measure of checking liquidity of the firm. In this analysis the current ratio has no significant and negative relationship with profitability of firms measured. The coefficient is – 0.060 and 0.039 p-value of (0.861) and (0.910) with return on assets and return on investment respectively.

One should not overlook the positive significant association that exists between Return on asset and return on investment and LnSales (the measures of size). This in turn indicates a positive relationship between size and profitability. The coefficient is positive 0.636 and 0.613; with *p*-value of (.036) and (0.046). The result is highly significant at ά = 5%. It shows that as size of the firm increases, it will increase its profitability.

The results of correlation analysis indicate that as far as metal manufacturing firms are concerned, the working capital management has significant impact on their performance.

Hence, null hypothesis Return on investment capital (ROI) is rejected. The overall correlations results imply that the null hypotheses for return on Asset (ROA) are confirmed as there is existence of significant correlations between Working Capital components (i.e. cash conversion cycle, inventory conversion period, Account receivable period and Account payable period) and firm's profitability.

4.3. REGRESSION RESULTS

A major weakness of Pearson Correlations is that they do not allow identifying causes from consequences. To overcome this shortcoming, the researcher use regression analysis to investigate the impact of working capital components on dependent variables: Return on Asset (ROA) and Return on Invested capital (ROI). The results are as presented in **Appendix.**

To avoid the possibility of multicollinearity, it is important that the results from collinearity diagnostics should have tolerance value above 0.10 and variance inflation factor (VIF), which is the inverse of the tolerance value, less than 10 as the small value of tolerance indicate the high multiple correlation with other variables (Pallant, 2007, p.156).

The value of F test explains the overall significance of a model. It explains the significance of the relationship between dependent variables and all the other independent variables. (Anderson et al., 2007)

In the case of a small sample, the adjusted R^2 value should be considered as it provides more accurate estimation of the true population value (Pallant, 2007, p.158). There is a rule of thumb which can be used to determine the adjust R^2 value as follows: < 0.1: poor fit, 0.11 to 0.30: modest fit, 0.31 to 0.50: moderate fit, >0.50: strong fit (Muijs, 2004, p. 166).

To evaluate the study models, the value of R^2 has been considered to determine the amount of variance in the dependent variables which is explained by all variables in the formula (Pallant, 2007, p.158).

As the B coefficients have different scales, the absolute value of Beta parameter under Standardized Coefficients is used in order to compare and determine the influence of independent variables on the dependent variable (Muijs, 2004, p. 167). The Significant value is used to measure the statistic significant unique contribution of each independent variable to the formula (Pallant, 2007, p.159). According to (Kohler, 1994), the values of Durbin Watson have upper limit of four and lower limit of zero. If the value of Durbin-Watson is equal to two then there exists no autocorrelation but if the value is less than two then there exists positive correlation and if the value is higher than 2 than there exist negative correlation.

From the analysis **Appendix** 2, CCC has a negative association with ROA at 5% significant level but insignificant with ROI. This results that reject null hypothesis ROI and confirm null hypothesis ROA are found to be significantly related with CCC.

The Tolerance statistics were 0.273 and the Variance Inflation Factor (VIF) 3.67 for CCC. It is indicating that there were no multi-collinearity problems among the independent variables in the data. The adjusted R^2, otherwise known as the coefficient of multiple determinations is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The Adjusted R^2 is 26.2% and 19.5% ROA and ROI respectively. It indicates that the formula is modest fit at predicting the cash conversion cycle. The F-statistics is used to test significant of R, from the results, one can see that the model is fit with F statistics 1.710 at p-value of 0.046 ROA. It shows highly significance level at 5% while the F statistics for ROI of 1.486 at p-value of 0.716 is insignificant. So it can also be concluded that at least one of the independent variables related to ROA. It can be stressed further that the significance of relationship are as the independent variable coefficient explained.

In order to find out the autocorrelation in the residuals and in the regression, Durbin-Watson (DW) value of model 1 was computed. The result shows the value of 2.103 and 1.981 for ROA and ROI respectively. concluded that there exist no autocorrelation in the regression ROA and ROI since their respective DW value 2.103 and 1.981 is closed to 2, Therefore, the independence of residuals assumption are not violated.

In the regression model 1, the beta coefficient is -0.230 and -0.209 for cash conversion cycle which show that cash conversion cycle makes the last strongest contribution to predict the dependent variable, the ROA and ROI respectively. The statistically significant are found in cash conversion cycle at the 0.05. It suggest that these variable make significant contributions to predict the dependent variable ROA, and insignificant to ROI in model1.

The results from regression model 1 are used to determined hypotheses stated in chapter 2 as show in 2.4.2. The beta coefficient for H_0 reports significant impact value of -0.230 where significant result was expected. The *p*-value less than or equal to 0.05 significant level are reported. Where null hypotheses are confirmed and can be conclude that hypotheses1 are true.

From the analysis **Appendix 3**, ICP has a negative association with ROA at 1% significant level but insignificant with ROI. This results that reject null hypothesis ROI and confirm null hypothesis ROA are found to be significantly related with ICP.

The Adjusted R^2 is 37.4% and 38.4% ROA and ROI respectively. It indicates that the formula is moderate fit, well at predicting the Inventory conversion period and. Model 2 is fit with F statistics 2.16 at p-value of 0.003 ROA. It shows significance level at 1% while the F statistics for ROI of 2.246 at p-value of 0.026 is insignificant.

The Tolerance statistics were 0.339 and the Variance Inflation Factor (VIF) 2.95 for ICP. It is indicating that there were no multi-collinearity problems among the independent variables in the data. The Durbin-Watson (DW) result shows that 2.064 and 2.051 for ROA and ROI respectively. It can be concluded that there exist no autocorrelation. Therefore, the independences of residuals assumption are not violated.

In model 2, Beta coefficient is-0.436 and -0.560 for inventory conversion period which show that inventory conversion period makes the seconed strongest contribution to predict the dependent variable, the ROA and ROI respectively. The statistically significant are found in inventory conversion period at the 0.01. It suggest that these variable make significant contributions to predict the dependent variable ROA, and insignificant to ROI.

The results are used to determined hypotheses stated in 2.4.3.The beta coefficient for model 2 H_2 reports significant impact value where significant result was expected. The *p*-value less than or equal to the 0.01 significant level are reported. Where null hypotheses are confirmed and can be conclude that hypotheses2 are true.

From the analysis **Appendix 4**, likewise inventory conversion period account receivable period has a negative association with ROA at 1% significant level but insignificant with ROI. This results that reject null hypothesis ROI and confirm null hypothesis ROA are found to be significantly related with account receivable period.

The Tolerance statistics were 0.429 and the Variance Inflation Factor (VIF) 2.33 for ARP. It is indicating that there were no multi-collinearity problems among the independent variables in the data.

The Adjusted R^2 is 63.7% and 62.5% ROA and ROI respectively. It indicates that the formula is strong fit, at predicting the account receivable period and Model 3 is fit with F statistics 4.34 at p-value of 0.046 ROA. It shows significance level at 1% while the F statistics for ROI of 4.50 at p-value of 0.057 is insignificant.

The Durbin-Watson (DW) result shows that 2.24 and 2.065for ROA and ROI respectively and have no autocorrelation.

In model 3, Beta coefficient is -0.685 and -0.727 for account receivable period which show that it makes the first strongest contribution to predict the dependent variable of the ROA and ROI respectively. The statistically significant are found in account receivable period at 0.01. It suggest that these variable make significant contributions to predict the dependent variable ROA, and insignificant to ROI.

The results are used to determined hypotheses stated in 2.4.4.The beta coefficient for model 3 H_3 reports significant impact value where significant result was expected. The *p*-value less than or equal to 1% significant level are reported. Where null hypotheses are confirmed and can be conclude that hypotheses3 are true.

Finally, from the analysis **Appendix 5**, account payable period same as ICP and ARP has a negative association with ROA at 1% significant level but insignificant with ROI. This results that reject null hypothesis ROI and confirm null hypothesis ROA are found to be significantly related with APP.

The Tolerance statistics were 0.402 and the Variance Inflation Factor (VIF) 2.49 for account payable period. It is show that there were no multi-collinearity problems among the independent variables in the data.

The Adjusted R^2 is 37.6% and 32.9% ROA and ROI respectively. It indicates that the formula is moderate fit, good at predicting the Account payable period and. Model 4 is fit with F statistics 2.205 at p-value of 0.0023 ROA. It shows significance level at 1% while the F statistics for ROI of 1.983 at p-value of 0.0327 is insignificant.

The Durbin-Watson (DW) result shows that 2.224 and 2.095 for ROA and ROI respectively. It can be concluded that there exist no autocorrelation. Therefore, the independences of residuals assumption are not violated.

In model 4, Beta coefficient is -0.421 and -0.443 for Account Payable period which show that Account Payable period makes the third strongest contribution to predict the dependent variable of the ROA and

ROI respectively. The statistically significant are found in account payable period at the 0.01. It suggest that these variable make significant contributions to predict the dependent variable ROA, and insignificant to ROI.

The results are used to determined hypotheses stated in 2.4.5.The beta coefficient for model 4 H_4 reports significant impact value where significant result was expected. The *p*-value less than or equal to the 0.01 significant level are reported. Where null hypotheses are confirmed and can be conclude that hypotheses4 are true.

CHAPTER 5

5. ANALYSIS OF THE EMPIRICAL DATA

This chapter analyze the empirical data, interpret and discuss the empirical results presented in chapter four. Furthermore compare the empirical finding with the theory and evidence from previous empirical studies.

This study investigates the impact of working capital management which is measured by the return on asset and return on investment capital. The company performance, as independent variables, included in this study is as follows: cash conversion cycle, inventory conversion period, account receivable period and account payable period.

5.1. RETURN ON ASSET AND RETURN ON INVESTMENT CAPITAL

The average return on asset and return on investment capital for metal manufacturing company is 32.09% and 19.05%. Both have positive results which are opposed to results found in the prior studies (Mohamad & Saad (2010). The above results and findings were also found to be consistent with earlier research or studies conducted by (Boute et al. (2007), Punnose (2008), Lucius, Giorgis & Lee (2008), Negy (2009), Raza, Farooq & Khan (2011) and Sahari, Tinggi & Kadri (2012).

The higher the return on assets indicates that the firms effective enough in generating profit from its available and the reverse is true for decrease in return on assets. If the return on asset showing positive value as stated above indicates that the firms are efficient enough in generating profit with its available assets.

5.2. COMPANY PERFORMANCE

The following analysis part is presented based on the company performance shown in Chapter two Theoretical framework and literature review.

5.2.1. INVENTORY CONVERSION PERIOD

The study finds a significant relation between the ROA and ICP which is consistent with the study conducted by (Capkun, Hameri & Weiss 2009). Similarly, the result supports the evidence from the study of Jeng-Ren, et al., (2006) which points out that the companies with low ICP have more efficient working capital management. The regression results point out a significant negative relation between number of day's inventory and profitability which is similar to the previous studies (Deloof, 2003; Raheman & Nasr, 2007; Alipour 2011 Samiloglu & Demirgunes, 2008; Lazaridis & Tryfonidis, 2006.

Inventories are the core of metal manufacturing industry and the companies might have to maintain the sufficient inventory level to avoid either the stock-outs or the excess balance. They require raw material and work-in-process for their production and finished goods for sale to customers which affect them to have higher inventory balance and longer inventory period. On the other hand, the excess balance would also cost the company such as loss of benefit from short-term investment, having long outstanding stocks and obsolete inventories. In addition, metal manufacturing companies require the efficient inventory management, supply chain management, procurement and production. Without these systems, the companies may unable to manage their inventory effectively which result in high inventory balance and long inventory period.

5.2.2. ACCOUNT RECEIVABLE PERIOD

In the literature of working capital, research findings it is indicated that, accounts receivable period is related with profitability of firms both positively and negatively, (Falope and Ajilore, 2009; Lazaridis and Tryfonidis, 2006; Nobanee, 2009; Marc Deloof 2003; Raheman and Nasr, 2007).The empirical result shows a significant negatively relation between the ROA and ARP. The results are consistent with the findings from previous studies conducted by (Lazaridis and Tryfonidis, Deloof 2003, Raheman and Nasr, 2007) that provides the evidence of the negative relation between ROA and ARP. The implication of the result is that, the increase or decrease in accounts receivable will significantly and negatively affect profitability of the firms. It means that the shorter the firm's accounts receivable period, the higher will be the profitability and vice versa.

5.2.3. ACCOUNT PAYABLE PERIOD

Result from regression model suggests a significant negative relation between the ROA and APP. The result is consistent with the prior study of (Usama 2012 Raheman and Nasr, 2007) on the contrary, the finding is opposed to the prior research of (Lazaridis and Tryfonidis (2006)

A negative significant relationship between accounts payable period and profitability can be explained by the benefits of early payment discounts. On the other hand, positive significant relationship between accounts payable period and profitability can be explained by the increased availability of funds caused by the delayed payment of accounts payable. Such funds can thus be used for productive purposes that can increase profitability

5.2.4. CASH CONVERSION CYCLE

The empirical result suggests there is a significant negative relation between the Return on asset and cash conversion cycle which is similar to results found in the prior studies (Deloof 2003, Lazaridis/Tryfonidis 2006, Padachi 2006 Mohamad & Saad (2010). But it is oppose with the study of (Jeng-Ren, et al. 2006, Raheman et al. (2007) and Uyar (2009) found strong positive relationship between cash conversion cycle as a measure of working capital management profitability. It means that the longer firms cash conversion cycle the lower will be the profitability or the shorter the firm's cash conversion cycle, the higher will be the profitability. Considering the components of the cash conversion cycle (i.e., inventory period, accounts receivable period or accounts payable period) the negative result with cash conversion cycle points out that an increase in profitability is associated with a lower in the cash conversion cycle. It shows that the profitable companies tend to have the longer cash conversion cycle which indicates to inefficient working capital management. This might be affected by either inventory period, accounts receivable period or accounts payable period.

For instance, the companies offer long credit period to customers to raise their sales which lead to high profitability; on the contrary it have a negative effect to the companies' working capital as account receivable period is longer which result in the longer cash conversion period. With regard to inventory period, the researcher might assume that profitable companies with high sale volume tend to maintain high inventory balance to supply their customers promptly. Then, they need raw material and work in process for their production as well as finished goods for sales to customer. However, the high inventory leads to the long inventory period. As for accounts payable period, in their purchasing process, the companies may receive a deal such as lower unit cost from the suppliers who offer the shorter payment term. The companies may take the deal if it is considered as providing the higher benefit with the lower unit costs which reduces cost of sales and lead to higher profit; while the shorter payable period will also make the cash conversion cycle longer.

On the contrary, low profit companies tend to have more effective working capital management with the shorter cash conversion cycle. This might explain as their situations force them to be very careful with their liquidity. Then, inventories and accounts receivable are well-managed. As for long accounts payable period, it might be because they delay their payments to suppliers as Deloof (2003) points out.

CHAPTER SIXE

CONCLUSION, FURTHER CONSIDERATION AND RECOMMENDATION

This chapter presents conclusion drawn from the overall overviews of the research by adding the main findings of the analysis part and give future research directions.

6.1 CONCLUSION

Working capital plays a vital role in the company's operations and requires the efficient management. The management of working capital concerns the management of cash, inventories, accounts receivable and accounts payable. It is necessary for a company to monitor its working capital properly and maintain its balance at the appropriate level. Shortage of working capital may lead to lack of liquidity as well as loss of production and sales; on the contrary, excess balance of working capital could be seen as loss of investment opportunities.

One way to achieve the objective of having efficient working capital is to manage short term assets and liabilities such as implement policies on inventory, credit and collection as well as supplier's payment term. However, the study has found that there are also other factors affect the management of working capital. Previous studies on working capital management have pointed out that financial performance measure, such as ROA, ROI, ROE and ROS, profitability, the number of accounts receivable, inventory conversion period and accounts payable days, affect working capital management of a company.

The purpose of this study is to investigate the impact of working capital management on firms' performance. The study aims to examine the statistical implication between firms' working capital management and profitability on metal manufacturing listed companies in Addis Ababa Ethiopian. Using secondary data and based on a sample of 11 companies and a period of five years (2008-2012) the quantitative method has been used as this research approach to examine the relationship between financial performance and the cash conversion cycle, inventory conversion period, account receivable period and account payable period as a measure of working capital management in metal manufacturing companies in the capital of Ethiopia. Furthermore, company size, sale growth, current ratio and debt ratio included into this study as control variables.

Data was then analyzed on quantitative basis using Pearson's correlation and OLS regression analysis.

The mean value of firms return on asset is 32.09 percent of total assets, and it deviates 17.83 percent. It means that value of profitability can deviate from mean to both sides by 32.09 percent. Its minimum value is -5 percent while the maximum is 55 percent. The return on investment of the sample companies is averaged to 19.55 percent. It deviates from the mean value to both sides by 16.59 percent. The minimum and maximum values are -17 percent and 39 percent respectively.

The average cash conversion period for metal manufacturing companies is -276.99 days. The average inventory period, from inventory purchased to inventory sold, is 133.11 days. The companies receive cash collection from their customer on average at 134.28 days and the companies have accounts payable period on average at 544.38 days.

From the correlation analysis also, ROA indicates negative significant with CCC, ICP, Ln_{Sales} , ARP and APP at 1% and 5% significant level. Furthermore, it has positively insignificant with FTA DAR and negatively insignificant with CR. ROI has no significant relationship with all the dependent variables.

From this study the researcher find that, most of metal manufacturing companies in Addis have large amounts of cash invested in working capital. Therefore, it can be expected that the way in which working capital managed will have a significant impact on profitability of those firms.

Results from regression analysis reports cash conversion cycle, inventory conversion period, account receivable period and account payable period affect the working capital management in metal manufacturing companies. This study found a significant negative relation between inventory conversion period, account receivable period and account payable period with profitability measure (ROA). The negative relationship demonstrates that the decrease in inventory conversion period, and account receivable period, measured by return on assets, have an impact on a lower in the length of the cash conversion cycle which indicate higher effective working capital management.

Further, the study has found that negative significant relation between cash conversion period and financial performance of metal manufacturing listed companies. The negative relationship between accounts receivables and firms' performance suggests that high profitable firms will pursue an increase of their accounts receivables in an attempt to increase their cash gap in the cash conversion cycle. Likewise, the negative relationship between number of days in inventory and firms performance suggests that if firms delay their payments they will earn less profits; the reason behind this is that firms can take the advantage of discounts by paying soon. The negative relationship between accounts payable and financial performance is consistent with the view that low profitable firms wait longer period to pay their bills. Moreover, cash conversion cycle that is used as measuring efficiency of working capital management shows that, as cash conversion cycle is less, profitability is increase.

Hence, the researcher agree and recommends that company managers can build firms value by keeping the cash conversion cycle as it is or managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

6.2. FURTHER CONSIDERATION

Further studies could be a study to examine an impact to other measures of working capital management and to explore a relation with other factors such as economy effect. Also, the scope of future investigation can be extended to focus on the detail of relationship between each component of working capital management and firm value or other performance.

6.3. RECOMMENDATIONS

The study has shown a clear understanding of working capital components and they influence firm performance. This promotes the efforts of managers to improve their firms' performance which can be done through appropriate management of working capital components. Thus, management should intensify initiatives to encourage greater understanding and acceptance of working capital components that boosts financial performance in the Addis Ababa metal manufacturing sector.

In order to boost the wealth of metal manufacturing firms, management should endeavour to find and employ a viable working capital composition that increases firm financial performance. Therefore, the recommendations of the research were premised on the study findings as follows:

❖ The negative significant relationship between firms' financial performance and average collection period will increase firms' profitability, if there is high collection of account receivables. Therefore, it shows that companies have a good credit standards, terms and collection effort. The researcher recommended that some customers delay payments while others may default on them. A firm must develop an explicit procedure for collecting its receivables. In following its collection procedures the circumstance of customer's should be kept in mind. Good customers in temporary difficulties should be treated differently from habitual defaulters. Otherwise firms may lose their loyal customers. In addition to that it would be better marketing personnel also involve in the collection efforts.

❖ The study found negative significant relationship between inventory conversion period and firms performance. Holding inventories the firm is able to separate the processes of purchasing, producing, and sailing. If firms were not willing to hold adequate row materials and finished goods, purchasing

would take place only when immediate production and sales were anticipated. When a customer signed a purchase agreement, the firm would not be able to offer rapid delivery. When the firm scheduled production runs, it would achieve none of the economies that longer runs provide. Inventories are used to provide cushions so that the purchasing, production, and sales functions can proceeds at their own optimum paces. Further, the researcher recommended that companies marketing, purchasing and manufacturing departments should have create strong linkage and communications so as to feed each other in firms' operations and minimize costs.

❖ Similar to the above findings average payment period has negative related to firms' profitability. It indicates that when firms pay their account payables or bills there will be decrease profitability. However, the researcher recommended that even if let payment have its own advantage to increase the profitability of the firm. Firms' have to pay their debts on time that not losing their venders in the long run.

❖ Likewise, CCC has a negative relationship with firms' performance. Therefore, regarding the CCC, the researcher recommended that lowering working capital cycle as a measure of efficient working capital management is the one to be appraised.

❖In general the above discussions demonstrates that paying suppliers longer (not absolutely) and collecting payments from customers earlier, and keeping products in stock less time, are all associated with an increase in the firm's performance.

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APPENDIX

APPENDIX 1 Sample companies detail

1. Akaki Spare Perts & Hand Tools S.C. paid-up capital 151,298,000.00 Akaki Kefele Ketema TEL. 114340422 "industry"

2. Amio engineering private limited company 3,000,000.00 Nifasilk lafto kifle ketema tel. 0114 16 8266 /0114671833

3. Pasqua gisseppe private limited company 3,000,000.00 Nifasilk lafto kifle ketema tel. 011 4 42 07 61

4. Ethiopian steel private limited company 12,056,435.00 Akaki kality kifle ketema tel. 011 4 34 27 18/19/20

5. Ethiopian iron and steel factory 42,248,290.30 Akaki kality kifle ketema tel. 0114344122

6. Kality metal products factory 13,876,340.00 Akaki kality kifle ketema tel. 0011 4 34 01 62

7. AARTI steel private limited company 700,065,591.46 Bole kifle ketema tel. 0116673563

8. Akaki metal products factory 233,037,706.68 Akaki kality kifle ketema tel. 0114343061/340611

9. Radel fundry private limited company 7,462,431.30 Nifasilk lafto kifle ketema tel. 0114 39 18 34/0911 20 11 19

10. N.A metal industry and engineering 1,000,000.00Nifasilk lafto kifle ketema tel. 0118 60 58 06 09 11 51 50 93/94 09 11 21 57 24

11. The Automotive manufacturing company Bole kifle ketema 12,000,000.00 tel. 011 6 46 33 11

12. Kotebe Metal Tools Factory (KMTF) 12,044,260.58 Bole kifle ketema tel. **011 6 46 30 40**

13. MAME Steel Mill private limited company 8,123,450.00 Akaki kality kifle ketema tel. **01114 39 3433**

14. Steely RMI PLC is a private company 1,232,012.58 Akaki kality kifle ketema tel. 011 4394344

15. Walia steel industry PLC 7,000,000.00 Alem gena tel.011 3 87 08 47

16. Abissiniya entegreted private limited company tel. 011 6 63 97 55

17. Gatepro metal engineering private limited company0114 40 10 70/71 0911207142

18. United steel and metal private limited company 0115540302

19. Betell engineering private limited company 0114420557

APPENDIX 2 Regression results (for the cash conversion cycle)

<div align="center">

Model Summary^b

</div>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	Durbin-Watson
					F Change	
1	.794^a	.631	.262	.15316	1.710	2.103

a. Predictors: (Constant), DAR, CR, Ln$_{sales}$, FTA, CCC

b. Dependent Variable: ROA

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	Durbin-Watson
					F Change	
1	.773^a	.598	.195	.14877	1.486	1.981

a. Predictors: (Constant), DAR, CR, Ln$_{sales}$, FTA, CCC

b. Dependent Variable: ROI

<div align="center">

Coefficients^a

</div>

Model 1	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constant)	1.13	-.761	.0048		
CCC	-.230	-.442	.046	.273	3.669
CR	.530	1.321	.024	.457	2.186
Ln$_{sales}$	.845	1.593	.107	.262	3.817
FTA	.088	.209	.843	.416	2.404
DAR	.383	1.098	.322	.605	1.653

a. Dependent Variable: ROA

Coefficients[a]

Model		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		Beta			Tolerance	VIF
	(Constan)	1.10	-.954	.384		
	CCC	-.209	-.385	.716	.273	3.669
	CR	.536	1.278	.257	.457	2.186
	Ln_{sales}	.819	1.479	.199	.262	3.817
	FTA	.096	.219	.835	.416	2.404
	DAR	.360	.988	.369	.605	1.653

a. Dependent Variable: ROI

APPENDIX 3 Regression results (for the inventory conversion period)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
2	.829[a]	.687	.374	.14107	2.195	.204	2.064

a. Predictors: (Constant), DAR, CR, Ln_{sales}, FTA, ICP

Coefficients[a]

Model2	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constan)	-.152	-.938	.391		
ICP	-.436	-1.060	.0033	.339	2.954
CR	-.162	-.372	.725	.331	3.019
Ln_{sales}	.253	.508	.633	.253	3.949
FTA	-.279	-.835	.442	.562	1.778
DAR	-.417	-1.399	.221	.704	1.420

a. Dependent Variable: ROA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
2	.832[a]	.692	.384	.13020	2.245	.198	2.051

a. Predictors: (Constant), DAR, CR, Ln_{sales}, FTA , ICP
b. Dependent Variable: ROI

Coefficients[a]

Model 2	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constan)	-.171	-1.409	.218		
ICP	-.560	1.312	.026	.339	2.954
CR	-.107	-.248	.814	.331	3.019
Ln$_{sales}$	.149	.302	.774	.253	3.949
FTA	-.298	-.900	.409	.562	1.778
DAR	-.426	-1.440	.210	.704	1.420

a. Dependent Variable: ROI

APPENDIX 4 Regression results (for the account payable period)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
3	.901[a]	.813	.625	.10151	4.339	.067	2.065

a. Predictors: (Constant), DAR, CR, Ln_{sales}, FTA , ACP
b. Dependent Variable: ROI

Coefficients[a]

Model 3	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constan)	-0.43	-2.837	.036		
ACP	-.727	-2.461	.057	.429	2.330
CR	.772	2.688	.043	.454	2.203
Ln_{sales}	.918	3.491	.017	.541	1.848
FTA	.180	.720	.504	.599	1.669
DAR	-.722	-2.595	.049	.483	2.070

a. Dependent Variable: ROI

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
3	.905[a]	.818	.637	.10749	4.503	.062	2.240

a. Predictors: (Constant), DAR, CR, Ln_{sales}, FTA, ACP
b. Dependent Variable: ROA

Coefficients[a]

Model 4	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constan)	-0.39	-2.456	.058		
ACP	-.685	-2.355	.046	.429	2.330
CR	.742	2.624	.047	.454	2.203
Ln$_{sales}$	.913	3.523	.017	.541	1.848
FTA	-.181	-.736	.495	.599	1.669
DAR	-.714	-2.603	.048	.483	2.070

a. Dependent Variable: ROA

APPENDIX 5 Regression results (for the account receivable period)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
4	.829[a]	.688	.376	.14084	2.205	.203	2.235

a. Predictors: (Constant), DAR, CR, Ln$_{sales}$, FTA, APP
b. Dependent Variable: ROA

Coefficients[a]

Model 4	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta			Tolerance	VIF
(Constan)	-2.14	-1.265	.262		
APP	-.421	-1.070	.0023	.402	2.489
CR	.550	1.589	.173	.521	1.920
Ln$_{sales}$	.896	2.369	.064	.436	2.291
FTA	.044	-.126	.905	.508	1.970
DAR	.520	1.517	.190	.531	1.882

a. Dependent Variable: ROA

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		Durbin-Watson
					F Change	Sig. F Change	
4	.815[a]	.665	.329	.13582	1.983	.235	2.095

a. Predictors: (Constant), DAR, CR, Ln$_{sales}$, FTA, APP
b. Dependent Variable: ROI

Coefficients[a]

Model	Standardized Coefficients	t	Sig.	Collinearity Statistics

	Beta			Tolerance	VIF
(Constan)	-2.31	-1.517	.190		
APP	-.443	1.085	.0327	.402	2.489
CR	.567	1.581	.175	.521	1.920
Ln$_{sales}$	.898	2.291	.071	.436	2.291
FTA	.036	.099	.925	.508	1.970
DAR	.515	1.448	.207	.531	1.882

a. Dependent Variable: ROI