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**committed to excellence**

**Working Capital Management and Firms' profitability:  
Evidence from Manufacturing S.C. in Addis Ababa,  
Ethiopia**

A Thesis Submitted to St. Mary's University, School of Graduate Studies in Partial  
Fulfillment of the Requirements for the Degree of Master of Accounting and  
Finance

By: Tesfaye Ayele Belaineh (MBAAF3/0423/2006)

Advisor: Zenegnaw Abiy (PHD)

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

JUNE 2016

ADDIS ABABA

ETHIOPIA

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MSC Thesis Approval Sheet

This is to certify that the thesis entitled, the impact of working capital management on firms' profitability: evidence from manufacturing S.C in Addis Ababa Ethiopia was carried out by Tesfaye Ayele Belaineh under the supervision of Zenegnaw Abiy (PhD), submitted in partial fulfillment of the requirements for the degree of Master of Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

**Approved by:**

Internal examiner: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

External examiner: Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Advisor: Zenegnaw Abiy (PhD) Signature \_\_\_\_\_ Date \_\_\_\_\_

## **Declaration**

I, the undersigned, declare that this thesis is my original work and it has never been presented in any university. All sources and materials used for this thesis have been acknowledged.

Name: Tesfaye Ayele Belaineh Signature\_\_\_\_\_

Place: Saint Mary University

Date of Submission: June 20, 2016

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

Advisor Name: Zenegnaw Abiy (Phd)

Signature\_\_\_\_\_ Date\_\_\_\_\_

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## **Acronyms and Abbreviations**

**APP** = Accounts Payable Period

**ARP** = Accounts Receivable Period

**CA** = Current Assets

**CCC** = Cash Conversion Cycle

**ICP** = Inventory Conversion Period

**NI**= Net Income

**INF**= inflation

**OLS**= Ordinary List Square

**ROA** = Return on Assets

**WC** = Working Capital

**WCM** = Working Capital Management

## **Abstract**

Management of working capital refers to management of current assets and current liabilities. Firms may have an optimal level of working capital that maximizes their value. Past studies have shown the relationship between working capital and performance. To investigate this relationship between these two. The researcher collected secondary data from 19 manufacturing share companies which are located in Addis Ababa, Ethiopia for the year 2010 G.C- 2014 G.C. Working capital measurement parameters like, Accounts receivable period, inventory holding period and accounts payable period are used as independent working capital management variables. Moreover, cash conversion cycle is used as comprehensive measures of working capital management variable. In addition firm size as measured by logarithm of asset, GDP and inflation as control variables.. in general paying suppliers longer and collecting payments from customers earlier and keeping product in stock less time are all associated with an increase in the firms performance. The performance was measured in terms of profitability by return on total assets, The data was analyzed using e-view software estimation equation by both correlation analysis and pooled panel data regression models of cross-sectional data was used for analysis. The regression results show inverse relationship between accounts receivable and inventory holding periods with profitability. However there is statistically insignificant relationship between accounts payable period and profitability. The results also show that there exists significant negative relationship between cash Conversion cycle and profitability of the sampled firms. Manager, therefore, can increase firm's profitability by improving the performance of management of working capital components like account receivable days, inventory conversion period, and account payable days and cash conversion cycle respectively.

***Key words: working capital management, profitability, Return on asset.***

# CHAPTER ONE

## Introduction

### 1.1 Background of the study

The working capital refers to the capital that companies use in their daily operations and it consists of companies' current assets and current liabilities.

Working capital management is the ability to control the current assets and current liabilities in a manner that provides the firm with maximum return on its assets and minimizes payments for its liabilities. Working capital management efficiency is vital especially for manufacturing firms, where a major part of assets is composed of current assets that directly affect the profitability and liquidity of firms (Raheman & Nasr, 2007). Investments in current assets are inevitable to ensure delivery of goods or services to the ultimate customers and a proper management should give the desired impact on profitability. If resources are blocked at different stage of supply chain, this will prolong cash operating cycle. Although this might increase profitability (due to increase sales), it may also adversely affect the profitability if the costs tied up in working capital exceed the benefits of holding more inventory and/or granting more trade credit to customers, (Arshad, 2013). Ineffective management of working capital is one of the significant factors causing industrial sickness. Modern Financial management aims at reducing the level of current assets without ignoring the risk of stock outs. Efficient management of working capital is thus an important indicator of sound health of an organization which requires reduction of unnecessary blocking of capital in order to bring down the cost of financing. (Arshad,2013). Working capital management is vital because of its effects on the firm's profitability and risk, and consequently its value. On the one hand, maintaining high inventory levels reduces the cost of possible interruptions in the production process or loss of business due to the scarcity of products, reduces supply costs, and protects against price fluctuations, among other advantages (Ephrem 2011)

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 managing

working capital can have a significant impact on both the liquidity and profitability of the company ( Shin; L., Soenen, 1998). Most of the finance managers spend a great deal of their time on working capital management decisions (Brigham, E. F., Houston, J. F, 2003). Proper working capital management improves firms' profitability and liquidity position, and thus increasing the market value of the firm (Ali, 2011) However, liquidity and profitability are two sides of the same coin because they work in opposite directions. Increasing liquidity of the firm will reduce profitability of the firm and vice versa. Therefore finance managers need to maintain a level of working capital that will ensure liquidity of the firm but not reduce its profitability.

Although several studies have examined the nature of the relationship between working capital management and profitability of firms for, example tirngo, (2013); Deresse Mersha Lakew and Prof. Prabhakara Rao,(2009); Zawaira & Mutenheri, (2014); Tufail, (2008); Paul Muoki Nzioki et al, (2013); B Bagchi, (2012); Charitou, (2010); hina, (2014); Akoto, Awunyo-Vitor, & Angmor, (2013); kargili, (2012); deloof, (2003) GarcíaTeruel & MartínezSolano, (2004); Quayyum, (2011) there is no consensus on the nature of this relationship.

## **1.2 Statement of the Problem**

Every firm is required to maintain a balance between profitability and liquidity while conducting its day to day operations. As inadequate amount of working capital impairs a firm's liquidity, holding of excess working capital results in the reduction of the profitability (Seidman 2004).

Working capital management concerned with two decision areas: Determination of appropriate level of investment in current assets and decisions as to what method of financing to use and to obtain funds for this investment. They are part of investment and financing decisions respectively. (Padachi 2006).

Pass and Pike (1987) emphasized that short term finance area particularly working capital management has given very less attention in contrast to long term investment even if it played a very vital and important role in the growth of firm and in enhancement of profitability. Deficiency in the planning and control of working capital management is one of the main causes of business failure and it is a neglected subject which has been too little investigated or written about.

These industries are the main contributors towards economy, According to World Bank report (2009), the share of the manufacturing sector to the GDP is 14% and share of manufacturing companies to the employment is 7% and also it contributes more than 3.8% for trade balance.

In comparison to other developed countries working capital management practices in Ethiopia are still immature. So that, if, manufacturing sector in Ethiopia adopts comprehensive working capital management, this would be directly affecting profit and value maximization of the organization. (Ephrem, 2011).

Samuel & Tarekegn (2011) In Ethiopia many private and public manufacturing sectors do not carrying out working capital management practices due to obsolete business process and structure of the company. As a result there is a problem in manufacturing sector. Therefore; firms related to this sector are the target respondents for measuring the perception and the application of these practices.

To the best of researcher's knowledge, as the researcher tried to trace back other studies which had prepared on the related topics have found some. However, as anyone can understand from my paper the content and the variables used are different in variable composition i.e., the other ones is mainly based on current asset to total asset ratio, current liability to total asset ratio, firms leverage, sales growth, and current asset to current liability ratio have taken as variables , where as in my case variable composition I used for comparison are average collection period, inventory conversion period, average payment period and cash conversion cycle. Hoping that, the researcher conducted this study with the aim of providing the following basic research objective:

### **1.3 Objectives of the Study and Research Hypotheses**

#### **1.3.1 General Objective**

The main objective of the study is to examine the relationship between working capital Management and profitability of manufacturing share companies.

### 1.3.2 Specific Objectives

To achieve the general objective, the following specific objectives were used:

- To determine whether there is a significant relationship between Average Collection Period (ACP) and Profitability of the firm.
- To examine whether there is a significant relationship between Inventory Conversion Period (ICP) and Profitability of the firm.
- To ascertain if there is a significant relationship between Average Payment Period (APP) and Profitability of the firm.
- To examine if there is a significant relationship between Cash Conversion Cycle (CCC) and Profitability of the firm.
- To give information for policy makers of the firm to incorporate as newly in their policy or to revise their existing policy.

### 1.4 Research Hypotheses

**Ho1:** There is no significant relationship between Average Collection Period (ACP) and Profitability of the firm.

**Ho2:** There is no significant relationship between Inventory Conversion Period (ICP) and Profitability of the firm.

**Ho3:** There is no significant relationship between Average Payment Period (APP) and Profitability of the firm.

**Ho4:** There is no significant relationship between Cash Conversion Cycle (CCC) and Profitability of the firm.

## **1.5 Significance of the Study**

The findings and conclusions of the study will have great value for manufacturing firm to understand the effect of working capital management on the profitability of the firm. Moreover, the study will have crucial use for managers to consider the identified factor and to take corrective measure that promote manufacturing sector.

The main focus of this research is on an industry in a distinct nature of operation which process is the most important driver for work in progress inventory and finished goods because of the fact that huge amount of asset is tied up on it., Manufacturing sector is one of the majors sectors in Ethiopia, It needs high consideration regarding the management of assets and liabilities.

Further, the research study will be used as a source of data for other researcher on similar topic and it will create picture to the general public. Besides, it will serve as a base for further research work on which other interested researcher could do a more in-depth analysis or create new research idea.

## **1.6 Scope and Limitations of the study**

### **1.6.1 Scope of the study**

This research focused on the impact of working capital management on profitability of the selected manufacturing share companies found in Addis Ababa. By taking, sample of 19 manufacturing share companies were selected from Addis Ababa and the analysis is done for five years.

### **1.6.2 Limitation of the study**

The study is limited to manufacturing companies found in Addis Ababa. Because of the fact that there are a lot of firms found in the city than the other part of the country, Addis Ababa is chosen.

The result of the paper is restricted to those selected manufacturing share companies in particular and could be generalized to all manufacturing share companies in Ethiopia. The topic requires much time and money to conduct and come up with important conclusions.

## **1.7 Organization of the Study**

The study organized in five chapters; the first chapter deals with introduction, statement of the problems, objectives of the study, research questions, and methods adopted, significance of the study, and scope and limitation of the study. In the second chapter different literature that relates to the topics of the study reviewed. In the third chapter, the research design including the population and sampling procedure, data and data collection tools, data analysis, research method adopted, Choice of Variable and Research Hypothesis, techniques used in data collection and analysis also present. Then, the fourth chapter discusses the results and analysis of the findings of the study. Finally, the fifth chapter provides the conclusion and recommendation for the study according to the findings.



## CHAPTER TWO

### LITERATURE REVIEW

#### Introduction

This chapter deals with the literature regarding working capital management. Structurally, the chapter comprises in to ten sections.. Under section 2.1 and 2.2 theoretical review of Working capital, Working capital management and their roles on firm's profitability, working capital management definition and importance has been elaborated. section 2.3 explain the relation between liquidity and profitability by presenting different related literatures summarizes their result about the effect of Working capital management on profitability Section2.4 presented the empirical review and finally section 2.5 presented the summery and knowledge gap from the reviewed literature presented.

#### 2.1 Theoretical review

##### 2.1.1 Working Capital and Working Capital Management

##### 2.1.1.1 Working Capital definition & Importance

###### ➤ *Definition of working capital*

According to Bahttacharya (2009) the concept of working capital was perhaps first evolved by Karl Marks1867, though in somewhat different form, and the term he used was “variable capital” meaning outlays for payrolls to advanced workers before the goods they worked on were complete. This ‘variable capital’ was the wage found remains blocked, in work- in- process along with other operating expenses until it is released through sale of finished goods. Although Marx didn't mention, workers also gave credit to the firm by accepting periodical payment of wages which founded a portion of work-in-process Guthman & Dougall (1948) defined the working capital as current asset minus current liabilities. Net working capital represents the excess of current asset over current liability and in an indicator of the firm's ability to meet its short term financial obligation.

### ➤ *Importance of Working Capital*

Just as working capital has several meanings, firms use it in many ways. The first and most critical use of working capital is providing the ongoing investment in short term asset that the company needs to cover its daily expenditures such as payroll, vendor invoices, and inventory purchases. The business also needs working capital for prepaid business costs such as licenses, insurance policies or security deposits.

The second purpose of working capital is addressing seasonal or cyclical financial needs. Since most business doesn't receive prepayment for selling their goods or services, they need to finance their purchase of raw materials, production and sales of goods prior to receiving payments from their customers.

Thirdly, working capital is needed to sustain firm's growth. The firm is expanded not only by investing in new plants or machinery, working capital is also requires to facilitate sales growth. It is because as a business growth, it requires larger investment in inventories, accounts receivable, personnel and other items to increase their sales. (Seidman 2004).

The other use of working capital is to undertake activities, to improve business operations and to remain competitive, such as activities for product development or exploring new markets. In the time of high computation, firms are in need of integrating those activities in to operations on a continuous basis. Consequently, those expenses are more likely to be incurred as small repeated costs rather than as large infrequent investments. Those ongoing investments, accordingly, must be addressed through working capital financing (Seidman 2004).

## **2.2 Working Capital Management definition & importance**

### **➤ *Definition of Working Capital Management***

Working capital management refers to all the actions and decisions of the management which affects the size and effectiveness of working capital. Working capital management requires special attention in present days when cost of capital is rising and funds are scarce. It has been generally established that the performance / profitability of a firm largely depends upon the manner of its working capital management. If a firm is inefficient in managing working capital, it will not only reduce profitability but may also lead to financial crisis. Both inadequate and excessive working capital is detrimental for a business concern. The excessive working capital can result in idle funds which could be used for earning profit while the inadequate working capital will interrupt the operations and will also impairs profitability (Chowdhary and Amin, 2007).

In their studies Chen, Wang,C., M., & jin, L. (2009) Defined working capital management as making decision that affect working capital. Also Explained working capital management as the administration of all aspect of current asset and current liabilities, it includes the firms' investment in short term securities, short term assets, inventories and account receivable.

The working capital meets the short-term financial requirements of a business enterprise. It is a trading capital, not retained in the business in a particular form for longer than a year. The money invested in it changes in form and substance during the normal course of business operations. Just as circulation of blood is very necessary in the human body to maintain life, the flow of funds is very necessary to maintain business (Arshad 2013).

### **➤ *Importance of Working Capital Management***

Working capital management is very imperative because it affects the firm's risk, profitability and value (Smith 1980). Investment in working capital involves a balance/tradeoff between risk and profitability because investment decision which leads to increase in profitability will be inclined to increase risk and vice versa. Efficiency in working capital management is very important for the manufacturing firms where more than half of the assets are current assets.

Efficiency in managing working capital also increases cash flow to the firms which in turn increase the growth opportunities for the firms and return to the shareholders (Blinder and Manccini 1991).

Proper estimation of working capital actually required, is a difficult task for the management because amount of working capital varies across firms over the periods depending upon the nature of business, scale of operation, production cycle, credit policy, availability of raw materials, etc. For this reason efficient amount of funds is necessary to invest permanently in the form of various current assets. For instance, due to time lag between sale of goods and their actual realization in cash, adequate amount of working capital is always required to be made available for maintaining the desired level of sales. A firm can be very profitable if it can translate cash from operations within the same operating cycle, otherwise the firm would need to borrow to support its continued working capital needs (Cheatham 1989).

Siddiquee and Khan (2009) observed that, firms which are better at managing working capital are found to be able to make counter cyclical moves to build competitive advantage. They are also better at generating fund internally and also face lesser trouble while seeking external sources of financing.

Smith (1979 p.149) contends that the goal of working capital management is to replenish stocking points in such a way as to minimize the total of all associated cost, and there by enhance profitability of the organization.

Maintaining high inventory levels can reduce the cost of possible interruption occurred during the production process or the cost of business loss due to the product scarcity. It can also reduce supply cost and protect against price fluctuation. (Blinder and Manccini,1991)

Granting trade credit to customers favors the firm's scales in various ways. Trade credit can incentivize customers to acquire merchandise at times of low demand. And helps firm to strengthen long term relationship with their customers (Smith,M.B & Begmann, E. 1998)

Trade credit received from suppliers is considered as an internal source of financing that compensates the money tied up in the companies' inventories and customer receivables. But

there is another opportunity cost associated with early payment discount if available. In fact this cost may exceed 20 percent, depending on the discount percentage and discount period granted (Blinder & L.J.Maccini 1991). From another aspect, the way Working capital management acts can have a significance impact on both liquidity and profitability of a company companies should make a good balance between these two targets (Shin & Soenen 1998).

### **2.3 Liquidity and Profitability**

For number of years maintaining liquidity has been one of the prime goals of the firms and financial managers because, maintaining high or low liquidity affects the profitability of firm in an adverse manner. The profitability and liquidity, both are important goals for any firm, and to forego one goal at the cost of other can create serious problems for the firm. Profitability is a long term goal for any firm because it is required for the survival of the firm and firm will not continue to exist without profits. On the other hand liquidity is relatively shorter term goal which needs to be addressed to protect the firm from bankruptcy (Scharf 1984).

Different authors addressed this issue of maintaining a tradeoff between these two conflicting goals of profitability and liquidity but only gave a general approach to solve the problem. Walker (1964) stated that increased investment in working capital is associated with decreased risk of inadequate liquidity, risk of lesser inventory for sales and risk of not granting credit for sales and production. Similarly if the firm decreased investment in working capital, it will increase the above mentioned risks. Increased risk also increases profitability of the firm as the decreased investment in working capital can be used for some productive use. Weston and Brigham (1975) also discussed this trade off issue and suggested that investment in working capital should be made till that time marginal return are more than cost of invested capital. And working capital financing should be used instead of long term financing as long as their use does not increase firm's cost of capital. The study conducted by Walker (1964) also encouraged the use of more working capital assets but emphasized on the risk involved as the major determinant of degree of working capital investment.

The general claim in literature centre around liquidity/profitability trade off hypothesis which posit that these two financial terms pose conflicting ends to an organization, hence a pursuit of

one will mean a trade off of the other (Dash & Hanuman, 2008). However, the other side of thinking holds that managers can pursue both liquidity and profitability goals as these two objective have a direct relationship. These two viewed were observed by Chakra borty (2008) when evaluating the relationship between working capital and profitability of Indian pharmaceutical companies. He pointed out that there were two distinct schools of thought on this Issue: first that working capital is not a factor of improving profitability and there may be a negative relationship between them. Secondly, that investment in working capital plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of working capital, output and sales cannot be maintained. These two directions in literature are briefly reviewed number of studies had supported the liquidity/profitability trade-off theory. These include; Shin & Seonen (1998); Deloof (2003); Eljelly (2004); (Garcia-Teruel & Martinez-Salano, 2004); Lazaridiss & Tryfonidis (2005); Nobanee and AlHajjar (2005); Akella (2006), Reheman & Nasr (2007); Sadlovska, & Viswanathan, (2007); Uyar (2009); Garcia-Teruel and Martinez-Solano (2007); Dash and Hanuman (2008); Raheman and Nasr (2007); Mathuva (2009); Samiloglu and Demirgunes (2008); Falope & Ajilore (2009); Ashokkumar and Manohar (2010); Bhunia and Brahma (2011). In these works, significantly negative association between liquidity management and profitability were the results.

To prevent breaks or gaps in the trading cycle due to lack of cash, administrators must calculate the cash amount best suited to their level of activity, plan the timing of the relevant payments and collections and draw up a policy of investment in assets with high liquidity that can be converted to cash at a low transactional cost to serve as support for the treasury funds maintained by the company (Kamath, 1985; Srinivasan & Kim, 1986). It is therefore essential to establish the right level of disposable assets to short-term financial investments at companies. Holding the wrong amount in cash or cash equivalent may interrupt the normal flow of business activities.

Moreover, the wrong safety margin may result in financial difficulties, with firms unable to meet needs that may arise at any given time or unable to take advantage of unexpected investment opportunities. Maintaining a cash surplus thus has a number of advantages. It enables companies to carry on the normal transactions that arise in the course of their activities and avoid

any treasury gaps. It also helps them cover any unexpected needs for cash by acting as a preventive balance.

However, there are also disadvantages in being too conservative, as reflected in the opportunity costs entailed by assets with little or no profitability. Having liquid assets available constitutes an opportunity cost for a company, as the return on those assets is lower than the return on productive investments, but there may still be transaction costs arising from the sale or purchase of financial assets, and disadvantages in terms of taxation. The particular importance of disposable asset management as a responsibility of the company treasurer should lead companies to conduct an overall analysis of this point, covering management of the collections circuit, cash and payment circuit (Palom & Prat, 1984). This overall analysis should strive to shorten collection periods, lengthen payment periods and avoid idle resources that do not generate returns (Masson, 1995).

Casanovas & Fernández (2001) is of the idea that treasury management is seen as “administration of the treasury circuit”, entailing chiefly the analysis, study and review of the three circuits indicated (payments, collections and cash holding) However, taking basic treasury principles as their reference, these authors identify and determine more complex techniques, instruments and functions, which they also integrate into treasury management. They mention advanced cash management, which is considered to include the management of short term investments, short-term financing and bank relationships. Therefore, although they stress the essence of treasury management, they analyze and set out more advanced management techniques and tools, which are considered as characteristic of cash management. Optimal balance here means a position when the cash balance amount is on the most ideal proportion so that the company has the ability to invest the excess cash for a return [profit] and at the same time have sufficient liquidity for future needs The objective is to minimize the sum of the fixed costs of transactions and the opportunity cost of holding cash balances, the optimal cash balance is at the point where opportunity cost and transaction cost are equal while the cost of holding the cash is at lowest possible point. The optimal level of cash is determined using the following formula:

$$C^* = \sqrt{2FT/i}$$

Where:

F= the fixed cost of a transaction

T= the total cash needed for the time period involved

i= the interest rate on marketable securities

C\*= cash balance

A research by Smith (1980), Raheman& Nasr, (2007), also states the main purpose of any firm is to maximize profit. But, maintaining liquidity of the firm also is an important objective. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Thus, strategy of firm must maintain a balance between these two objectives of the firms.

First as found by Lazaridis and Tryfonidis (2006) companies may enjoy better pricing when they hold enough cash to purchase from own suppliers and thus they may enhance their profit. So having enough liquidity also affects the profitability of the firm.

Secondly Deloof (2003) has also proved that by minimizing the amount of funds tied up in current assets; firms can reduce financing costs and/or increase the funds available for expansion.

Referring to theory of risk and return, investment with more risk will result to more return. Accordingly, firms with high liquidity of working capital may have low risk then low profitability. On the contrary, firm that has low liquidity of working capital, facing high risk results to high profitability. The issue here is in managing working capital, firm must take into consideration all the items in both accounts and try to balance the risk and return.

Therefore the profitability liquidity tradeoff is important because if working capital management is not given due considerations then the firms are likely to fail and face bankruptcy (Kargar & Bluementhal 1994). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets (Eljelly (2004).



Smith, (1979) emphasized that profitability and liquidity comprised the salient goals of working capital management. Therefore, in the next portion of this chapter, we present the studies specifically on the relationship between working capital management and the profitability of a firm..The management of working capital concerns the management of cash, inventories, accounts receivable and accounts payable (Wubshet Mengesha,(2014).It is necessary for a company to monitor its working capital properly and maintain its balance at the appropriate level(Wubshet Mengesha,(2014)Inefficient financial management including working capital management may damage business enterprises profitability (Gebrehiwot and Wolday 2006)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 (Wubshet Mengesha, (2014)Sound working capital management is essential to the success of businesses. Successfully managing current assets is important in new as well as expanding business. So time should be taken to develop and implement proper working capital management practices that ensure success of business enterprises. (Gebrehiwot & Wolday, 2006).

## **2.4 Empirical Review**

In addition to the above theoretical review, an attempt is made on other empirical studies to look into the working capital management and profitability of manufacturing companies in different countries by different researchers.

Empirical results show that ineffective management of working capital is one of the significant factors causing industrial sickness. Modern Financial management aims at reducing the level of current assets without ignoring the risk of stock outs. Efficient management of working capital is thus an important indicator of sound health of an organization which requires reduction of unnecessary blocking of capital in order to bring down the cost of financing (Arshad 2013).

Deloof (2003), Surveyed on Belgian Firms to find out whether the working capital management affects profitability, using correlation and regression tests he found a significant negative relationship between corporate profitability and number of days accounts receivable, inventories

and accounts payable of Belgian firms. On the basis of these he suggested that manager could increase corporate profitability by reducing the number of day's accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Arshad (2013) conducted a study to find out the relationship between working capital management and profitability of Pakistan cement sector. The research adopted quantitative method of research approach to test a research hypothesis. The survey use ratios of 21 listed cement companies in Karachi stock exchange during the period of 2004 – 2010. In the study the researcher uses regression analysis to investigate the effect of current ratio, quick ratio, net current assets to total assets ratio, working capital turnover ratio and inventory turnover ratio on firm profitability. The result of study showed that there is significant relationship between working capital management and profitability of the firms, the study also indicate that accounts receivables and inventory periods and account payable period lengthen then the profitability increase. The other variables that have significant effects on firm profitability are quick ratio affecting it negatively. This means that any increases in stock increase profits. The other variables included in the regression model working capital turnover ratio and inventory turnover ratios have no statistically significant effects on firm profitability.

In their study Falope and Ajilore (2009) present empirical evidence about the effects of working capital management on firms' profitability by using secondary data sources from annual reports and financial statements of 50 non-financial firms listed in Nigerian Stock Exchange for the time period 1996-2005. The dependent variable, firms' profitability, was measured by return on assets. The independent variables, number of days of accounts receivable, number of days of inventory, number of days of accounts payable and cash conversion cycle were used to measure working capital management. Size (defined as logarithm of assets), sales growth, debt and economic cycle (annual GDP growth rate) were also used as control variables. The study utilized panel data econometrics in a pooled regression with fixed effect models, where time-series and cross-sectional observations were combined and estimated. Significant negative relationship was found between profitability and average collection period, inventory turnover in days, average payment period and cash conversion cycle. According to the researchers, a negative relationship

between number of days of accounts payable and profitability was consistent with the view that less profitable firms wait longer to pay their bills. In this case, profitability affects the account payables and vice versa. Furthermore, the study found no significant variations in the effects of working capital management between large and small firms. Finally, the researchers were suggested that managers can create value for their shareholders if they manage their working capital in more efficient ways by reducing the number of days of accounts receivable and inventories to a reasonable minimum.

In his study Tufail (2008) investigated the impact of working capital policies on profitability. Return on assets was used as a measure of profitability. Current assets to total assets ratio was used to compute the investment policy of working capital management, and to determine financing policy of working capital management current liabilities to total assets ratio is used. Other variables that are used in the study are quick ratio, debt to equity ratio and size of the firms. Secondary data of 117 textile firms listed on Karachi stock exchange was taken for a period of six years i.e. 2005-2010. Results of the regression analysis show that aggressiveness of working capital management policies is negatively associated with profitability. Moreover liquidity and size of the firm have positive relation profitability whereas debt to equity ratio is negatively correlated with profitability.

Bhunja (2012) was examines the relationship between the working capital management and profitability of Indian private sector small-medium steel companies. Working capital management and profitability indicators over the period from 2003 to 2010 was modeled as a linear regression system in multiple correlation and regression analysis. The study shows a small relationship between working capital management, including working capital cycle and profitability. Multiple regression tests confirm a lower degree of association between the working capital management and profitability. They conclude that liquidity position has no impact on profitability. The study concluded that there is no association between debt financing and profitability and working capital management and working capital cycle has no impact on profitability.

in his study Padachi (2006) try to analyze the impact of working capital management 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) by using panel data analysis for the period 1998 – 2003. The regressions were 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.

Pass and Pike (1987) emphasize on short term finance area particularly working capital management which was given very less attention in contrast to long term investment. Working capital management played a very vital and important role in the growth of firm and in enhancement of profitability. In continuation of their work they have discussed that deficiency in the planning and control of working capital management is one of the main causes of business failure and it is a neglected subject which has been all too little investigated or written about.

Mathuva (2010) investigated the impact of working capital management components (average collection period, inventory conversion period, and average payment period) on corporate profitability measured by the net operating profit for a sample of 30 firms listed on Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. Both the pooled OLS and the fixed effects regression models were used. The result of the study shows that (1) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability. This means that more profitable firms take the shortest time to collect cash from their customers; (2) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability. This means that firms which maintain sufficiently high inventory levels reduce costs of possible interruptions in the production process and loss of business due to scarcity of products. This reduces the firm supply costs and protects them against price fluctuations; (3) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability. This means that the longer a firm takes to pay its creditors, the more profitable it is. Based on the findings, the

management of a firm can create value for their shareholders by increasing inventories to a reasonable level, taking long to pay creditors to the optimum level and reducing the cash conversion cycle to its minimum.

The study by Kaddumi (2012) revealed the effect of working capital management on performance. The study utilizing unbalanced data for a sample of 49 Jordanian Industrial corporations listed at Amman Stock Exchange - 2005 to 2009. He used two alternative measures of profitability as proxy for the performance and five proxies for the Working Capital Management. Twenty models panel data cross-sectional time series have been tested by employing two regression models; the Fixed-Effects Model and the Ordinary Least Squares Model. The findings of the study were significantly consistent with the view of the traditional working capital theory. The researcher suggests that working capital management and performance are positively correlated. The regression result also shows that Jordanian industrial firms follow a conservative investing policy and less aggressive financing policy.

In their work, Shin & Soenen (1998) suggested that efficient working capital management was very important for creating value for the shareholders. By using correlation and regression analysis they justified the relationship between the length of net trading cycle, corporate profitability and risk adjusted stock return. They found a strong negative relationship between lengths of the firm's net trading cycle and its profitability. In addition, they found that shorter net trade cycles associated with higher risk.

Lazaridis and Tryfonidis (2006) investigated the relationship between working capital management and corporate profitability using quarterly data of 131 firms listed at Athens Stock Exchange of Greece. Cash conversion cycle has been used as a measure of working capital management whereas gross profit has been taken as profitability measure. The size of the firms as measured by natural logarithm of sales, financial debt of firm and fixed financial assets to total assets ratio were used as control variables. Pearson correlation analysis showed a negative relationship of gross profit with cash conversion cycle, number of days of accounts receivables and inventory and there is a positive relationship between gross profit and number of accounts payable days. In order to validate the robustness of correlation results, four regressions were run the results provides that cash conversion cycle, number of days accounts receivables and

inventory were negatively related with gross profit while the number of days accounts payables were positively related to gross profit. All results were statistically significant at 1 percent level of significance indicating that managers can create profits by keeping current assets and current liabilities to an optimal level.

Teruel and Solano (2008) took samples of small to medium-sized Spanish firms for the 1996-2002 periods and found that the firms can create value by reducing the days-in-inventory period and the debtor's collection period, thus leading to the reduction in the cash conversion cycle.

On the other hand, though, other researchers support that investing more in cash conversion cycle (conservative policy) may lead to increased profitability since maintaining high inventory levels is expected to increase sales, reduce supply costs, reduce cost of possible interruption in production and protect against price fluctuations (Blinder and Maccini, 1991). Another study by Ng *et al*, (1999) stated that longer debtors' collection period may also strengthen the relationship with customers and hence may lead to an increase in sales revenue.

Rafuse (1996) analyzed the different aspects of optimal working capital management and its components. His article argued that attempts to improve working capital management by delaying the payments to creditors is an inefficient and ultimately damaging practice, both to its practitioners and to economy as a whole. The study claimed that altering debtors and creditors levels would rarely produce any net benefit rather it will harm the sales or the financing options of the firm. The study proposed that stock reduction strategies based on some "Lean Production" techniques might be far more effective than any other single working capital management technique. Reducing stock would produce major financial advantages by improving cash flows, reducing operational level costs of inventory and reducing capital spending. Moreover, it is further argued that the "Lean" world-class companies are systematically better than their counterparts in every important aspects and characteristics that makes a company "Lean" is low stock levels.

Ganesan (2007) tried to examine the working capital management efficiency of firms from telecommunication equipment industry in India. The relationship between working capital management efficiency and profitability is examined using correlation and regression analyses.

Working capital management efficiency was measured by day's sales outstanding, day's inventory outstanding and day's payable outstanding. Days of working capital was also use as a comprehensive measure. The firm's profitability was measured using the operating income plus depreciation related to total assets. This measure is indicator of the raw earning power of the firm's assets. Another profitability measure used for this analysis was the operating income plus depreciation related to the sales. ANOVA analysis was done to study the impact of working capital management on profitability. Using a sample of 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001-2007, this study found evidence that even though "days working capital" is negatively related to the profitability, it was not significantly impacting the profitability of firms Intel communication equipment industry.

Samiloglu and Demirgunes (2008) investigated the effect of working capital management on firms' profitability for a sample of manufacturing firms listed in Istanbul Stock Exchange (ISE) for the period 1998-2007. The data was taken from the quarterly financial statements of the sampled firms from ISE database and 5,843 firm quarter data was used. The dependent variable, firm profitability, was measured by return on assets. Accounts receivable period, inventory period and cash conversion cycle were used as proxies for working capital management policies. Like other many working capital literatures, firm size, firm growth, leverage and fixed financial assets were used as control variables. The data has been analyzed under a multiple regression model. The empirical results of the study showed that accounts receivable period, inventory period and leverage significantly negatively affect profitability of the sample firms, while firm growth (in sales) significantly and positively. However, it was also concluded that cash conversion cycle, size and fixed financial assets have no statistically significant effects on profitability of the sampled firms.

Wang (2002) who analyzed a sample of Japanese and Taiwanese firms, both emphasized that the way the working capital is managed has a significant impact on the profitability of firms and increase their profitability by reducing number of days, accounts receivable and reducing inventories. A shorter Cash Conversion Cycle and Net Trade Cycle are related to better performance of firms.

On their research Blinder and Maccini (1991) stated that, divergent to traditional belief, more investment in working capital (conservative policy) might also increase profitability. When high inventory is maintained, it reduces the cost of interruptions in the production process, decrease in supply cost, protection against price fluctuation and loss of business due to scarcity of products

In their study shin and Soenen (1993) on large sample and with longer time period, examined the relationship between aggressive working capital management and profitability of United States firms. Cash conversion cycle (CCC) has been taken as a measure of working capital management, where a shorter cash conversion cycle represents the aggressiveness of working capital management whereas pre-tax return on assets and equity has been used as profitability. The data has been collected for a period of twenty-four years from 1974 through 1993 for 2,718 firms. The relationship between the cash conversion cycle and profitability measures has been tested through cross-sectional regression analysis. The results indicated a significant negative relationship between the cash conversion cycle and profitability indicating that more aggressive working capital management is associated with higher profitability. The shorter the cash conversion cycle leads to greater the return on assets and return on equity.

Sen and Oruc (2009) in their study aimed to determine the relationship between efficiency levels of working capital management and return on total assets of 49 production firms being traded in ISE (Istanbul Stock Exchange) by using 3 month-table data of 15 years (i.e. 1993-2007) for the total of 60 periods. They tried to explain the relationship between different indicators of efficiency in working capital management (cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period) and return on total assets through two models. The results, in terms of both models, in all the firms involved in the study there is significant negative relationship between cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period and return on total assets.

(Wobshet Mengesha 2014) 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. In his research, he concluded that there is 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.

Ephrem,w(2011) also in his study signify the impact of working capital management on the profitability of a sample of 30 manufacturing companies covering a period from 1998-2002 in Addis Ababa area contend ,The Cash Conversion Cycle and average collection period offer easy and useful way to check working capital management efficiency. To be profitable, firms must try to keep these numbers of days account receivable and number of days required by firms to convert their operations in to cash, to minimum level. The research also claims a significant negative relation between enterprises profitability and the number of days accounts payable. Showing that the longer it takes firms to pay their obligations the less profitable they will be.

Theoretically, it is found that there exist a negative relationship between liquidity and profitability of the firms; therefore, the measures of liquidity, Current Ratio should have negative association with the profitability. However, in this research it is proven to be a 65 positive relationship between current ratio and net operating profitability which indicates that small firms with high liquidity ratio are better-off than those with lower current ratio. Empirical researches have also found both positive and negative association between current ratio and profitability.

As far as size is concerned the study found that there is a positive but not significant relationship between sizes of firms (measured by logarithm of sales) and net operating profitability.

## **2.5 Summary and Knowledge Gap**

Although lot of scholars provided much descriptive and empirical evidence on financial management practices, it appears that there are still some gaps in the literature which need to be addressed.

*First*; there is no agreement on the sign of relationship between the above mentioned variables and their impacts on profitability. If we take cash conversion cycle as an example, some of literature suggests that cash conversion cycle (a comprehensive measure of working capital management) is positively related to firm profitability: Blinder and Maccini (1991) shows that longer cash conversion cycles increase the firm's profitability. The other strands of literature, however, suggest that shorter cash conversion cycle increases the firms' profitability Wang

(2002), shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009). On the other hand other researchers like (Bhunja, 2012), Samiloglu and Demirgunes (2008), Amarjit gill, (2010) concluded that there is no significant relationship between the two. We can see it from the above mentioned literatures there is no consensus on the nature of relationship between the variables. This study therefore, seeks to contribute to this research gap.

Secondly; As Demirguc-Kunt and Maksimovic (2002) indicated, firms operating in countries with more developed banking systems grant more trade credit to their customers, and at the same time they receive more finance from their own suppliers. With limited access to the long-term capital markets, Working capital management is importance to developing countries. This suggests that in developing countries manufacturing firms have fewer alternative sources of external finance available, which makes them more Dependent on short-term finance. But Studies that investigated the association between profitability and working capital management practices on manufacturing firms from the perspective of developing countries are rare.

Thirdly; in case of Ethiopia there are few literatures like Ephrem,W, (2011), Getachew.J and Natarajan ,V.( 2013.), Wobshet Mengesha, (2014) who try to identify the impact of working capital management on the performance of the firm. To identify this relationship those previous studies use variables like Cash conversion cycle, Accounts receivable period, inventory conversion period and accounts payable period are used as independent working capital variables. Thus, here in this study include some additional dependent variable like return on asset that is believed to have some impact on the firm's profitability. Finally; to the knowledge of the researcher the empirical studies on the area working capital and profitability in case of manufacturing share company in Addis Ababa was not done. This study therefore, seeks to contribute to this research gap and identify which variables of working capital have a significant effect on the profitability of manufacturing share companies that is located in Addis Ababa.

## **CHAPTER THREE**

### **RESEARCH DESIGN**

#### **Introduction**

The preceding chapter indicated the literature on working capital management and firm profitability. Both theoretical and empirical reviews have been made, and indicated the absence of empirical studies in Ethiopia regarding to working capital management and profitability of manufacturing share companies. The purpose of this chapter is to present how the researcher designed the research hypotheses and the research approach adopted by the study.

#### **3.1 Population and Sampling Procedure**

The population of study comprised from 25 manufacturing share companies in Addis Ababa. In selecting firms included in this study, convenience and purposive sampling designs have been used. Addis Ababa region is found to be convenient to obtain the required data with the limited time and fund and selecting only manufacturing share companies also helps to avoid bias.

The purposive sampling method used is due to the following requirements. The study first selects companies that are engaged only in manufacturing sector from the business classification. According to the ISIC industries are classified as ISIC division 1-5 agriculture, ISIC division 15-37 Manufacturing and ISIC division 75-85 service. This helps to avoid bias that may result from industrial classification since firms operating in different industries have different decision criteria in selecting sources of funds needed for executing investment opportunities and have different working capital requirements Kaddumi (2012). To mitigate this problem the researcher limited the study population only to those companies engaged in manufacturing industry. The other criterion used in selecting sample units to be included in the study was holding a complete 5 years financial statement data which is from 2010 to 2014. The reason for selecting to this period is due to the latest data for the investigation available for these periods.

Therefore, According to CSA (2014) there are 25 manufacturing share companies in Addis Ababa. And the sample consists of 19 manufacturing share companies in Addis Ababa which is

76 percent of the population. Since some companies whose data not available for the entire study period or whose financial years were not uniform and some of the companies have started their operation after the year 2010 G.C. further increment of sample size become impossible. All the data were collected on annual base and the figures for the variables were on June 30 of each year under study.

According to Brooks (2008) while there is no definitive answer for an appropriate sample size for model specification, it should be noted that most testing procedures in econometrics rely on asymptotic theory. This theory says that as the sample size approaches to the population, the results from the sample estimates are more appropriate for generalizing to the general population. Thus in this case the sample size was large enough to make appropriate generalization to the overall population. The details of the companies under this study have shown in the appendices 1.

### **3.2. Research Approach Adopted**

As noted by McKerchar, 2008 (cited in Yesegat, 2009), the choice among the three research approaches is guided by mainly the research problem apart from the underlying philosophy of each research methods.

In this study Quantitative methods approach has been applied to meet the overall objective of the study and to answer research hypothesis under it. In quantitative analysis, here, First: The researcher used correlation to measure the degree of association between different variables under consideration. Second: Regression analysis has been conducted to estimate the causal relationships between the chosen dependent and independent variables. According to Kothari (2004) regression analysis is concerned with the study of how one or more variables affect changes in another variable.

### **3.3. Data and Data Collection**

To gather the necessary data copies of audited financial statements in the form of income statement and statement of financial position over the period of five years has been used. Most of the required data obtained from the financial statements submitted to the Ethiopian Revenues and

Customs Authority (ERCA). However, due to incompleteness of data obtained from ERCA some of the data used obtained directly from the respective companies. Research conducted by using appropriate data collection instruments will increase the credibility and value of research findings (Koul 2006).

### **3.4. Analysis Technique**

To test the proposed hypotheses, statistical analyses carried out using the following methods and the *E - views software* has been used to analyze financial data.

First, descriptive statistics has been calculated over the sample period. This is in line with Malhotra (2007), which states using descriptive statistics methods helps the researcher in picturing the existing situation and allows relevant information. At this stage, mean, standard deviation, maximum and minimum values of the required variables have been computed. Then, correlation analyses between dependent and independent variables were made. Finally, Researcher used panel Least Squares methods for analysis. Panel data, where time-series and cross-sectional observations were combined to estimate the regression output. The stepwise least square regression method also conducted in order to test the assumptions of classical linear regression model.

### **3.5. Variable Choice and Research Hypothesis**

After reviewing several literatures, the following best fitted variables were selected to measure the impact of working capital management on profitability. The choices of operational definitions as well as the expected signs of the study variables were based on previous studies.

#### **3.5.1. Dependent Variable**

##### **3.5.1.1 Return on Assets (ROA)**

Amongst various measures of profitability ROA is a better one since it relates the profitability of the business to the asset base, and also it is a simplest one to measure the profitability. It also explains the performance and progress of the business in utilizing its resources to generate the

income (Padachi 2006). 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). The major difference between ROA and ROE is that ROA remain unaffected by the company choice of structure i.e. the choice of using debt versus equity to fund operation. 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 (Gitman 2002). If the return on asset showing positive value it indicates that the firms are efficient enough in generating profit with its available assets. It is used by influential researchers as a dependent variable for the measurement of profitability such as Afza and Nazir (2008), Mohamad and Saad (2010), Danuletiu (2010), Padachi (2006) and Deloof (2003).

ROA is calculated by the following formula: **ROA = NI/TA**

Where;

ROA: Return on Asset;

NI: Net Income;

TA: Total Assets

### **3.5.2. Independent Variables and Their Respective Hypothesis**

In this research the independent variables, Accounts Receivable days (ARD), Inventory Holding Period (ICP) and Accounts Payable days (APD) and Cash Conversion Cycle (CCC) were used to measure working capital management.

#### **3.5.2.1 Accounts Receivable Days (ARD)**

Account receivable days has been used as a proxy for cash collection policy and represent the average time it takes to collect payments from customers. From literatures the higher the investment in account receivable, the lower will be the profitability and vice versa. If a firm collects its accounts receivable quickly the fund will be available for productive usage. This intern leads to more sales which ultimately results in an increase in profitability.

Deloof (2003);Padachi (2006); Samiloglu and Demirgunes (2008); Lazaridis and Tryfonidis (2006); Sen and Oruc (2009); Falope and Ajilore (2009) all point out negative relation between account receivables and firms profitability. In other words, having an account receivables policy which leads to low as possible account receivables will lead to the highest profitability. Thus, based on the above explanation and various empirical studies, the following hypothesis is expected:

**H1:** There is significant and negative relationship between account receivable days (ARD) and Profitability.

The formula to calculate ARD is:

$$\text{ARD} = \frac{\text{Account receivable}}{\text{sales}} * 365\text{days}$$

### **3.5.2.2. Inventory Conversion Period (ICP)**

Inventory Conversion Period is the average time it takes to acquire and sell inventory. The longer the inventory storage period, the higher will be the investment tied up in inventory. Therefore, the higher the investment invested in inventory, the lower will be the profitability of firms. The reason for this could be tied up of more funds and/or deterioration and obsolescence of inventory due to longer inventory period leads to lower profitability.

(Deloof, 2003),Padachi (2006) ,Teruel and Solano (2007) Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006), Sen and Oruc (2009), Falope and Ajilore (2009) found a significant negative relation between performance of firms and Inventory Conversion Period. This explains that an increase of the inventories conversion period may lead to a decrease in sales which leads to lower profit for the companies.

Thus the hypothesis will be;

**H2:** There is significant negative relationship between Inventory Conversion Period (ICP) and Profitability of the firm.

The formula to calculate ICP is:

$$\text{ICP} = \frac{\text{Ending Inventories}}{\text{Cost of Goods Sold}} * 365\text{days}$$

### 3.5.2.3. Accounts Payable Days (APD)

Account payable days used to proxy for payment policy and tell us how long it takes the firm to repay for purchasing of inventory. Account payable is an interest free form of short term financing and many companies use them to the last day possible before payment is due. Positive relationship between accounts payable period and profitability can be explained by the increased availability of funds caused by the delayed payment of accounts payable because such funds can thus be used for productive purposes that can increase profitability. (Arshad, 2013, Lazaridis and Tryfonidis 2006) stated that account payable is the largest source of short term financing for American corporation.

**H3:** There is significant and positive relationship between account payable days (APD) and Profitability.

The formula to calculate APD is:

$$\text{APD} = \frac{\text{accounts payable}}{\text{cost of sales}} * 365\text{days}$$

### 3.5.2.4 Cash Conversion Cycle (CCC)

Cash conversion cycle (CCC) is a comprehensive measure of working capital management. It shows the time lag between expenditure for the purchases of raw materials and the collection of sales of finished goods. The longer the cycle, the larger the funds blocked in working capital hence the greater for the needs of financing of current asset.

In their studies Wang (2002), shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009) examined the empirical relationship between CCC and ROA show a significant and negative relationship.



**H4:** There is significant and negative relationship between Cash Conversion Cycle (CCC) and Profitability of the firm.

The formula to calculate CCC is:

$$CCC = [ARD + ICP] - APD$$

Where: CCC: cash conversion cycle;

ARD: Account receivable days;

ICP: Inventory conversion period;

APD: Accounts payable days;

### **3.5.3. Control Variables**

Control variables play an active role in quantitative studies. These variables are a special type of independent variable that is measured in a study because they potentially influence the dependent variable. In this study the researcher uses firm size, inflation and GDP ratio as a control variable.

The most widely used type of measurement for firm size is the natural logarithm of total asset, which is used by many researchers like Lazaridis & tryfonidis( 2006), Padachi (2006) the size of the firm has been measured by the logarithm of its total assets, as the original large value of total assets may disturb the analysis. The variable GDP was also selected as a control variable since change in economic conditions in the country affect the profitability of firms. It used as a control variable in Lamberson (1995). The third control variable Inflation was selected as a control variable because according to the recent theory of information asymmetry in the credit market an increase in the rate of inflation drives down the real rate of return not just on money, but on assets in general. The implied reduction in real returns exacerbates credit market frictions. Inflation is calculated based from consumer price index.

**Table 3.1 Dependent, Independent and control variables**

Dependant variable	Return on asset(ROA)
Independent/explanatory variables	Account receivable days (ARD)
	Inventory conversion period(ICP)
	Account Payable Days(APD)
	cash conversion cycle (CCC)
Control variables	Size ( log of total Asset)
	GDP
	Inflation

### 3.5. Model Specification

The equation to investigate the relationship between working capital management and profitability will be as follows: The researchers has been used the model that was employed by Akoto, A.V, & Angmor, (2013), Raheman A,(2007).The general forms of the model is:

$$ROA_{it} = \beta_0 + \sum \beta X_{it} + u_{it} \quad (\text{Eq. 3.1})$$

Where:

ROA<sub>it</sub>: Return on Asset of firm i at time t.

β<sub>0</sub>: The intercept of equation;

$\beta_i$ : Coefficients of  $X_{it}$  variables;

$X_{it}$ : The different independent variables for working capital Management of firm  $i$  at time  $t$  (Time);

$u_{it}$ : The error term;

Specifically, the above ordinary least squares model is converted into specified variables it becomes:

$$ROA_{it} = \beta_0 + \beta_1 ARD_{it} + \beta_2 APD_{it} + \beta_3 ICP + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 CLTAR_{it} + \beta_7 DROA1113 + \beta_8 DROA1114 + \beta_9 LOS_{it} + \beta_{10} GDP_{it} + \beta_{11} INF_{it} + u_{it}. \quad (\text{Eq. 3.2})$$

Where:

$\beta_0$ : The intercept of equation;

ROA: the return on assets;

ARD: accounts receivable days;

APD: accounts payable days;

ICP: inventory Conversion Period;

CCC: Cash Conversion Cycle;

LOS: Natural logarithm of total asset;

INF: inflation;

$u_{it}$ : The error term;

$\beta_7 DROA1113$  and  $\beta_8 DROA1114$  are dummy variables in the year 2011.

The definition of all the variables in the model follows standard finance literature

<b>Table 3.2 explanatory variables and their expected effect on the dependent variables</b>		
ROA	Return on asset(ROA)	
ARD	Account receivable days (ARD)	Negative
ICP	Inventory conversion period	Negative
APD	Account Payable Days(APD)	Positive
CCC	Cash Conversion Cycle (CCC)	Negative
	Size (log of total asset)	
	GDP	
	inflation	

### 3.6. INFLATION

**Inflation** is a sustained increase in the general price level of goods and services in an **economy** over a period of time. When the price level rises, each unit of **currency** buys fewer goods and services. Consequently, inflation reflects a reduction in the **purchasing power** per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general **price** index, usually the **consumer** price index, over time. The opposite of inflation is **deflation**.

### NATURAL LOGARITHM OF TOTAL ASSET

The size of the firm has been measured by the logarithm of its total assets, as the original large value of total assets may disturb the analysis. The value of the asset may reduce to its lowest value in proportionate manner.

### What is an Error Term

An error term is a variable in a statistical model, which is created when the model does not fully represent the actual relationship between the independent variables and the dependent variables. As a result of this incomplete relationship, the error term is the amount at which the equation may differ during empirical analysis. The error term is also known as the residual, disturbance or remainder term. It is often said that the error term in a regression equation represents the effect of the variables. That were omitted from the equation, the **error** (or **disturbance**) of an observed value is the deviation of the observed value from the (unobservable) *true* value of a quantity of interest

## **CHAPTER FOUR**

### **DATA PRESENTATION AND ANALYSIS**

#### **Introduction**

This chapter presents the results of the various indicators for performance of manufacturing firms and their respective working capital variables. The research has employed 8 variables for the analysis purpose, seven independent and control variables and one dependent profitability measurement variable. Four independent variables are proxies for working capital management of the sample firms. Other three variables (firm size as measured by the natural logarithm of total asset inflation made by consumer price index and the GDP growth rate of Ethiopia) are independent control variables

Table 4.1	<b>Presents Descriptive Statistics for 19 Manufacturing Firms in Addis Ababa for a Period of Five Years From 2010 To 2014.</b>							
	<b>ROA</b>	<b>ARD</b>	<b>APD</b>	<b>AID</b>	<b>CCC</b>	<b>SIZE</b>	<b>GDP</b>	<b>INF</b>
Mean	0.053111	45.79063	66.52968	254.0344	227.3405	18.74011	10.16000	0.201895
Median	0.040000	32.00000	18.00000	257.0000	249.0000	18.57000	10.30000	0.180000
Maximum	0.300000	430.0000	758.0000	755.0000	767.0000	20.60000	11.40000	0.340000
Minimum	-0.25	0.000000	0.000000	0.000000	-392	16.18000	8.700000	0.080000
Std. Dev.	0.085148	57.63315	137.3791	152.2280	200.5143	0.956442	0.900520	0.093812
Skewness	-0.285916	3.590898	3.687808	0.652176	-0.131937	0.189653	-0.323956	0.221680
Kurtosis	5.002435	22.74700	17.29701	3.843000	3.770059	2.498602	2.162814	1.630770
Jarque-Bera	17.16625	1747.692	1024.433	9.547427	2.622875	1.564624	4.435987	8.199127
Probability	0.000187	0.000000	0.000000	0.008449	0.269433	0.457347	0.108827	0.016580
Sum	5.045580	4350.110	6320.320	24133.27	21597.35	1780.310	965.2000	19.18000
Sum Sq. Dev.	0.681524	312228.6	1774064.	2178296.	3779361.	85.98950	76.22800	0.827259
Observations	95	95	95	95	95	95	95	95

#### **4.1. Descriptive Statistics**

In this section the results from descriptive statistics are discussed. 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.

As it is displayed in table 4.1 the mean value of firms return on asset is 5.3 percent of total assets. The higher the return on assets indicates that the firms is effective enough in generating profit from its available assets and the reverse is true for decrease in return on assets. The standard deviation is 0.085 it means that value of profitability can deviate from mean to both sides by 8.5 percent. Its minimum value is -25 percent while the maximum is 30 percent.

Likewise, the Accounts receivable period, a measurement for collection is averaged to 45.79 days for the sampled firms. This average of the account receivable period shows that, firms in the sample wait 45.79 days on average to collect cash from credit sales. The Account receivable period can vary by 57.63 days to both sides of the mean value. The minimum and the maximum Account receivable period for the sampled firms are 0 and 430 days respectively. The minimum value of zero means the firm didn't use account receivable at all or a firm use cash to sell its product.

The Mean value of Inventory conversion days is 254.03 days. This means, firms in the sample needs on average 254.03 days to sell inventory. As it is shown in the above table, the standard deviation of inventory holding period is 152.22 days. To the sample firms the inventory holding period ranges between zero and 755 days of minimum and maximum values respectively.

The Mean value of Accounts payable period as a proxy for payment is 66.53 days with the standard deviation of 137.38 days. The minimum and maximum period ranges between 0 zero and 758 days.

In addition to the above three specific variables, cash conversion cycle (CCC) is also used as comprehensive measures of the efficiency of working capital asset management.



The Mean time for converting inventory to cash is 227.34 days with the standard deviation of 200.51 days. The minimum value of -392 days shows 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 767 days which is a very long period and it shows that a firm records a large inventory turn-over and/or cash collections from credit and/or shortest payment period for credit purchases. It means the accounts receivable period and/or the inventory holding period are very long and/or the accounts payable period of the firm is very short.

In addition the explanatory variables, the above table also includes the descriptive statistics of control variables that are used in the study. To control the size effect, firm size as natural logarithm of total asset is used as a control variable. The mean value of natural logarithm of total asset is 18.74 (134,009,000.00 Br.) while the standard deviation is 0.95. The maximum value of natural logarithm of total asset for a company in a year is 20.6 and the minimum is 16.18.

The other control variable is GDP which has annual average growth rate of Ethiopia is 10.16 percent with a standard deviation of 0.9 on the study period. The lower and higher annual GDP growth rates during the study period are 8.7 percent and 11.4 percent respectively.

Inflation was used as a control variable in the study and has a mean value of 0.2 for the study period. The lower and higher inflation rates during the study period are 8 and 34 percent.

**Table 4.2 Correlation matrix of variables**

	ROA	ARD	APD	AID	CCC	SIZE	GDP	INF
ROA	1							
ARD	-0.08114594	1						
APD	0.387733148	0.54046124	1					
AID	-0.02847195	0.1456821	0.00642511	1				
CCC	-0.31664357	-0.07708373	-0.5532628	0.726048126	1			
SIZE	0.542653789	-0.21524205	-0.2503615	0.082755893	0.173176294	1		
GDP	0.008948488	-0.0353481	0.02512771	0.135562517	0.062242972	- 0.020387401	1	
INF	0.075812044	0.11406513	0.02516461	0.128047449	-0.117132112	- 0.089400267	0.41591471	1

## 4.2. Correlation Analysis

Prior to regression result, it is important to check the correlation between different variables on which the analysis is built. Correlation is a way to index the degree to which two or more variables are associated with or related to each other.

Table: 4.2 presents the result of the correlation analysis of Profitability Measure of return on asset with inventory holding period, account receivable period, accounts payable period, cash conversion cycle, GDP, firm size, and inflation.

Findings of correlation analysis in *table 4.2* reveal that there exist negative relationships between account receivable period and profitability measures of return on asset. The implication of this relationship may be because of, the collection of receivables in a short period of time may help firms to reduce the probability of uncollectable from default and in addition to that firms can invest the money on other profitable operation, so that it would increase the profit. The correlation analysis also shows that, the relationship between Average inventory days and profitability measures is negative this relationship may exist because in the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations. The correlation between account payable days and the Return on asset show a positive relationship this relation exist because in this case firms make delayed payment, it helps to get interest free money to invest on some other profitable operation.

The cash conversion cycle has negative relationship with firms' profitability the implication is that the increase or decrease in cash conversion cycle will negatively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher will be the profitability and vice versa.

### **4.3. Testing Assumptions of Classical Linear Regression Model (CLRM)**

Before running the regressions, the data sets have been tested. The Model had normality problem (Observations that are very extreme compared to other observations) that may cause problems in estimating the regression coefficients and some correction actions have been taken. To mitigate this normality problem researcher used dummy variables to remove big outliers in the data that was appeared in a company's at 2013 and at 2014.

### **Test for average value of the error term is zero**

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term (i.e.  $\beta$ ) was included in the regression equation, the average value of the error term in this study is expected to be zero.

### **Test for Homoscedasticity**

It has been assumed that the variance of the errors is constant. This is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroscedastic. To test this assumption the white's test was used having the null hypothesis of homoscedasticity. In this case, both the  $F$ - and  $\chi^2$  ('LM') versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the  $p$ -values in appendix 3 are considerably in excess of 0.05 we couldn't reject the null hypothesis of homoscedasticity .

In addition to that E-Views presents three different types of tests for heteroscedasticity. The test statistics in appendix 3 give us the information to determine whether the assumption of homoscedasticity is valid or not. Seeing the auxiliary regression in the second table can provide useful additional information on the source of the heteroscedasticity if any is found. In this case, both the  $F$ - and  $\chi^2$  ('LM') versions of the test statistic give the same conclusion that there is no evidence for the presence of heteroscedasticity, since the  $p$ -values are considerably in excess of 0.05. The third version of the test statistic, 'Scaled explained SS', which as the name suggests is based on a normalized version of the explained sum of squares from the auxiliary regression, suggests in this case that there is also no evidence of heteroscedasticity.

### **Test for absence of autocorrelation assumption**

The test for autocorrelation was made by using Durbin and Watson (1951). Durbin--Watson(DW) is a test for first order autocorrelation i.e. it tests only for a relationship between an error and its immediately previous value. DW is approximately equals to  $2(1 - \hat{\rho})$ , where  $\hat{\rho}$  is the estimated correlation. The null hypothesis for the DW test is no autocorrelation between the

error term and its lag. According to Brooks (2008), DW has 2 critical values: an upper critical value (dU) and a lower critical value (dL), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected.-

Then we look up the two critical values from the Durbin Watson tables, and these would depend on how many variables and how many observations and how many regressors (excluding the constant this time) we had in the model.

The study used the dL and dU values for 95 observations. As per the DW table in the *appendix 5*, for 95 observations with 9 explanatory variables at 1% level of significance, the dL and dU values are 1.336 and 1.741 respectively. The DW of the regression was 1.757032 and this value lies in the no autocorrelation region.

In Appendix 4 of the regression output of Breusch-Godfrey Serial Correlation LM Test, EViews offers two versions of the test – an *F*-version and a  $\chi^2$  version, while the second table presents the estimation from the auxiliary regression. The conclusion from both versions of the test in this case is that the null hypothesis of no autocorrelation should not be rejected. This also agrees with the *DW* test result.

### **Test for Normality assumption**

A normal distribution is not skewed and is defined to have a coefficient of kurtosis 3. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. Skewness measures the extent to which whether a distribution is symmetric about its mean value or not, and kurtosis measures how fat the tails of the distribution are.

To fulfill a normality assumption the Bera-Jarque probability statistics/P-value is expected not to be significant even at 10% significant level (Brooks 2008). As shown in the histogram in *appendix 3* kurtosis approaches to 3 (i.e. 2.855) and the Jarque-Bera statistics was not significant at 10% level of significance. Hence, the null hypothesis that the error term is normally distributed should not be rejected and it seems that the error term in all of the cases follows the normal distribution.

## **Test for absence of series multicollinearity assumption**

This assumption is concerned with the relationship exist between explanatory variables. If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brooks 2008). When there is multicollinearity, the amount of information about the effect of explanatory variables on dependent variables decreases.

How much correlation causes multicollinearity however, is not clearly defined. However, Hair et al (2006) argue that correlation coefficient below 0.9 may not cause serious multicollinearity problem. Malhotra (2007) stated that multi colinearity problem exists when the correlation coefficient among variables is greater than 0.75 and it leading to inefficient estimation and less reliable results. This indicates that there is no consistent argument on the level of correlation that causes multicollinearity. In this study correlation matrix for 7 variables shown below in the table had been estimated. The results in the following correlation matrix at table 4-2 show the highest correlation of 0.72604 which is between cash conversion cycle and average inventory days. The result correlation matrix shows there are no correlation which above 0.75 and 0.9 according to, Malhotra (2007) and Hair et al (2006) respectively, we can conclude in this study that there is no problem of multicollinearity.

### **4.4. Choosing Random Effect (RE) Versus Fixed Effect (FE) Models**

According to Dougherty 2011, Brooks (2008) stated that if the observations are based on a random sample then both random effect model and fixed effect model are applicable to it. To check that which of these models should be used, Housman's specification test is applied. But if the sample is not selected randomly fixed effect model is more appropriate. The researcher selected 19 companies out of 25 manufacturing companies in Addis Ababa this represents 76% of the population for this the study has used a fixed effect model .

## Results of the Regression Analysis

A major weakness of Correlations is that it doesn't 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). The results are presented in Appendix 2.

The panel least squares model were:

$$ROA_{it} = \beta_0 + \beta_1 ARD_{it} + \beta_2 APD_{it} + \beta_3 ICP + \beta_4 CCC_{it} + \beta_5 DROA1113 + \beta_6 DROA1114 + \beta_7 LOS_{it} + \beta_8 GDP_{it} + \beta_9 INF_{it} + u_{it}. \quad (\text{Eq. 4.1})$$

Where:

$\beta_0$ : The intercept of equation;

ROA: the return on assets;

ARD: accounts receivable days;

APD: accounts payable days;

ICP: inventory Conversion Period;

CCC: Cash Conversion Cycle;

LOA: Natural logarithm of total asset;

GDP: gross domestic product;

INF: inflation;

The result of the regression output presented in *appendix 4* shows the impact of working capital management variables on the performance of manufacturing companies.

The output shows highest explanatory power of the model. It is measured by  $R^2$ . The  $R^2$  measures the success of the regression in predicting the values of the dependent variable in the

sample. In standard settings, may be interpreted as the fraction of the variance of the dependent variable explained by the independent variables. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. As it said before, R2 values indicate the explanatory power of the model and in this study adjusted R2 value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models.

The p-value shows at what percentage the level of each variable is significant or insignificant. From the appendix 1 the value of adjusted R<sup>2</sup> is 0.73. There is a rule of thumb which can be used to determine the adjust R2 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). Here in the study adjusted R2 of 0.73 indicates that the formula is strong fit for predicting the ROA.

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 jointly. We can see from the appendix 4 of regression result F -statistics of 10.65 highly significant at 1% with p-value of 0.000.

In the regression outputs the beta coefficient may be negative or positive; beta indicates that each variable's level of influence on the dependent variable. P-value indicates at what percentage or precession level of each variable is significant. The positive beta coefficient means that variable has a positive impact on your dependent variable, and a negative one has a negative impact. It tell us On average when independent variable increase by 1 percent the dependent increase by beta amount but the independent variables should a statistically significant impact on the dependent variable.

The C is the constant, where the regression line intercepts the y axis, representing the amount the dependent will be when all the independent variables are 0. Here C is -0.62 the probability of the coefficient is significant.

**Operational model:** the operational panel least square regression model used was:

$$ROA_{it} = \beta_0 + \beta_1 ARD_{it} + \beta_2 APD_{it} + \beta_3 ICP + \beta_4 CCC_{it} + \beta_5 LOS_{it} + \beta_6 GDP_{it} + \beta_7 INF + uit.$$



Specifically, when the above panel least squares model is converted into specified variables with their coefficient it becomes:

$$ROA_{it} = -0.67 - 7.02ARD_{it} + 1.26APD_{it} - 0.000155ICP_{it} - 9.21CCC_{it} + 0.155DROA1113_{it} - 0.175DROA1114_{it} + 0.02LOS_{it} + 0.0092GDP_{it} + 0.123NFI_{it} + u_{it}$$

From the regression output in *appendix 1*, in line with the initial hypothesis, the results of this regression indicate that the coefficient of account receivable days is negative and significant at  $p$ -value of 0.66. In conformity with the initial hypothesis which states that there is significant negative relationship between inventories holding period and profitability of firms. Coefficient of Inventory Holding Period is negative and  $p$ -value of 0.13 attached to the test statistic. Opposed from the initial hypothesis the result of the regressions analysis shows that, Account Payable days has no significant impact on firms' profitability even at 10% level of significance. In the regression model, the beta coefficient of Cash Conversion Cycle is 0.21 and the  $p$ -value of 0.22 attached to the test statistic shows that this hypothesis significance at 5% level.

## **4.5. Discussion of the Regression Result**

### **4.5.1. Accounts Receivable Days and Profitability**

In line with the initial hypothesis, the results of this regression indicate that the coefficient of account receivable days is negative and  $p$ -value of 0.66 attached to the test statistic shows significance at 10% level. It implies that the increase or decrease in the number of days taken by firms to collect cash will significantly and negatively affect profitability of the firm. This negative relationship implies the number of days to collect cash from credit customers becomes too long; it will adversely affect profitability of the firms. The reason may be because if a firm collects its accounts receivable quickly, the fund will be available for productive usage. In this sense, the negative relationship between accounts receivable period and firms' profitability is consistent with the view that the lesser the time it takes customers to pay their bills, results more cash available to replenish the inventory, this in turn leads to more sales which ultimately results in an increase in profitability. The result is basically consistent with the findings of Deloof(2003), Padachi (2006), Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis

(2006), Sen and Oruc (2009), Falope and Ajilore (2009). All point out negative relation between account receivables and firms profitability.

### **Inventory Holding Period and Profitability**

The result from this study is in line with the initial hypothesis which states that there is significant negative relationship between inventory holding period and profitability of firms. Coefficient of Inventory Holding Period is negative and  $p$ -value of 0.13 attached to the test statistic shows that the variable is almost significant at 10% level. This result is in line with the findings of Deloof(2003),Padachi (2006) ,Teruel and Solano (2007) Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006), Sen and Oruc (2009), Falope and Ajilore (2009), all points out that the companies with low inventory conversion period have more efficient working capital management. The implication is that the increase or decrease inventory holding period will significantly and negatively affect profitability of the firms. In simple terms, the shorter the firm's inventory holding period, the higher will be the profitability and vice versa. It can be also interpreted as if the inventory takes more time to sell, it will adversely affect profitability. The reason for this could be tied up of more funds plus deterioration and obsolescence of inventory due to longer inventory period leads to lower profitability.

### **4.5.2. Accounts Payable Days and Profitability**

Opposed from the initial hypothesis, the result of the regression analysis has no significant impact on firms' profitability even at 10%. The result is basically consistent with the findings of Rafuse, (1996) who founds insignificant relationship between accounts payable period and profitability. The researcher accepts these results for two reasons. First, in the literature of working capital, research findings indicated both negative and positive significant relationships between accounts payable period and profitability of firms. A 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. On the other hand, a negative significant relationship between accounts payable period and profitability can be explained by the benefits of early payment discounts. What if, if these two benefits off-set each other? There will be no significant relationship between accounts payable period and profitability of firms. Second it is

not delaying payment or making it fast that matters. What matters is for what purpose we use the fund at hand i.e. if we make it idle we expect no additional profits from delaying payments for accounts payable. On the other hand, if we use it for productive purpose we can expect some additional profits. Therefore, there may be a significant relationship between accounts payable period and profitability of firms.

### **4.5.3. Cash Conversion Cycle and Profitability**

The beta coefficient of Cash Conversion Cycle shows a negative and the  $p$ -value of 0.22 attached to the test statistic shows the significance of the variable at 5% level of significance. This negative relationship is consistent with some previous findings of Wang (2002), shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009). The implication is that the increase or decrease in cash conversion cycle will significantly and negatively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher will be the profitability and vice versa. As stated earlier, cash conversion cycle is an additive function of accounts receivable period, inventory holding period and accounts payable period; i.e. cash conversion cycle is equal to accounts receivable period plus inventory holding period minus accounts payable period. Managing cash conversion cycle efficiently, means efficient management of these three items. By managing efficiently the accounts receivable period, inventory holding period and accounts payable period (by making short accounts receivable period and inventory holding period and/or making long accounts payable period) managers can control the efficiency of cash conversion cycle and its impact on profitability.

by and large, the researcher failed to reject three hypotheses that indicate the relationship between profitability measurement of return on asset and ARD, ICP, CCC, whereas, the researcher rejected one hypotheses indicating the relationship between ROA and APD.

**Table 4.3 Summary of actual and expected signs of explanatory variables on the dependent variables**

Independent variables	Expected Impact on return on asset	Actual Impact
ARD	Negative and significant	negative and significant
ICP	Negative and significant	negative and significant
APD	positive and significant	Positive and insignificant
CCC	Negative and significant	negative and significant

## **CHAPTER FIVE**

### **CONCLUSION, RECOMMENDATIONS AND FURTHER RESEARCH**

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

#### **5.1. Summary and Conclusion**

##### **5.1.1 Summary**

As stated by Siddiquee & Khan (2009) it has been observed that, firms which are better at managing working capital are found to be able to build a better competitive advantage. They are also better at generating fund internally and also face lesser trouble while seeking external sources of financing. Efficient level of working capital should be present for smooth running of business regardless of the nature of business.

From this study, it is concluded that maintaining efficient level of working capital is very important for manufacturing sector as well as for all other sectors of business to manage the optimum level of working capital needed.

Out of 25 manufacturing share companies found in Addis Ababa ,the researcher has taken a sample of 19 manufacturing share companies for the manufacturing period , which covered the year in operation from 2010 G.C to 2014 G.C has been used to conduct the study. The data was analyzed and interpreted descriptively and quantitatively.

The study used return on assets as, dependent profitability variable, where as Accounts receivable period, inventory holding period and accounts payable period used as independent working capital management variables. In addition, the study used firm size measured by logarithm of total asset, annual GDP growth rate and inflation rate as control variables.

There is significant negative relation between profitability and the number of day's accounts receivable. Which indicates that the shorter the collection period of firms to receive their receivables, the more profitable they will be. This negative relationship can be elaborated as the

number of days to collect cash from credit customers becomes too long, it will adversely affect profitability of the firms. This relationship because of, if a firm collects its accounts receivable quickly the fund will be available for other productive usage.

The researcher also found that the negative relationship between inventory conversion period and profitability. It shows that the longer it takes firms to replenish the inventory, the less profitable they will be. This shows the obsolescence of inventory due to longer inventory period leads to lower profitability.

Opposite to the research hypothesis the study has found insignificant relation between account payable day and profitability of manufacturing firms.

### **5.1.2 Conclusion**

Based on the above summary the researcher has reached on the following conclusion. The findings of the study has shown that negative significant relation between cash conversion cycle and financial performance of manufacturing share companies. As it can be tried to show previously, cash conversion cycle is an additive function of accounts receivable period, inventory holding period and accounts payable period; i.e. cash conversion cycle is equal to accounts receivable period plus inventory holding period minus accounts payable period. Managing cash conversion cycle efficiently, means efficient management of these three items,

### **5.2. Recommendation**

The findings of the research study are supportive for the financial managers of the manufacturing companies as the same time; it gives the information regarding the management of short-term capital. Hence, the information is useful for maintaining a healthy competition and improving own organization. Depending on the above findings and the conclusions drawn thereof, the researcher has suggested the following recommendation for the managers and employees of these manufacturing share companies.

The research result shows that, there exists a negative relationship between CCC and return on assets (ROA) hence, the researcher arrives at the point, Management of CCC is an important

factor in working capital management, and managers of the firms should apply suitable CCC procedure management and control mechanism.

Efficient management of cash conversion cycle means, Managing these three items i.e.,(ARD, ICP, and APD); therefore, the researcher recommended that to be profitable, manufacturing companies must try to keep these numbers of days to minimum level by developing a clear procedure for collecting the receivables and managing their inventories. If a firm collects its accounts receivable rapidly (which is part of CCC) the fund will be easily available for other productive usage hence, the firm does not get a liquidity problem. In a sense that the lesser the time it takes our customers to pay their bills, results more cash available to replenish the inventory, this in turn leads to more sales which ultimately results in an increase in profitability. In addition to that the collection of receivables in a short period of time may help firms to reduce the uncollectable from default. But In following its collection procedures the circumstance of customer's should be kept in mind. Good customers in temporary complexity should be treated differently from habitual defaulters; otherwise firms may lose their loyal customers. On top of that, if managers reduce stocks which the firm produce frequently, it will bring major financial advantages by improving cash flows to the firm further, it reduce loss which can be resulted from deterioration and obsolescence of inventory due to holding inventory for a long period this in return helps, the firm to reduce operational level costs of inventory (decreasing CCC). In the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at the expense of profitable operations. Moreover the researcher recommends that marketing, purchasing and manufacturing departments should have to create strong linkage and communications so as to feed each other. In general the above discussions demonstrate that collecting payments from customers earlier, (not absolutely), keeping products in stock less time, are all associated with an increase in the firm's profitability.

### **5.3. Further Research**

This research has paved a way for future research especially in Ethiopian context. There are several possible avenues for future research and improvements in working capital management. The expected benefit it will provide can be expressed in the following points.

1. Since, there is in general a limited study in the area of working capital management in case of manufacturing share companies in Ethiopia; this study can be extended by using more data from a cross-section of Ethiopian manufacturing S.C. This may assist in improving current understanding of the working capital management and associated performance in developing countries like Ethiopia.
2. Even though, this study has given more emphasis on manufacturing sector it can be used as an input for the financial sectors or non-manufacturing sector. Hence, the future researchers may use this study as a source of data for their further or new studies on this regards too.
3. The future research can be extended in the area of working capital management is, the working capital practices followed in different sectors using the primary data collected directly from the financial managers of different firms. Such type of study will provide a fresh understanding of respective managers that how they perceive and manage the working capital of the firm.
4. Another additional consideration for advance research for the proposed study is that the data used here is based on only 5 years due to the limitation of access for data availability; consequently, this study can be further extended in terms of number of years to be considered as well. and
5. The results appraised from this study should be assessed keeping in mind that there could be many other dependent and independent variables which affects the results of the study as well besides the variables mentioned above, that can explain working capital management and profitability correlation and this study is limited only to the effect of selected variables in measuring the efficiency of working capital management, Therefore, this study can be extended by including some other variables in the model.



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## Appendix 1. Fixed Effect Regression Result for the Impact of Working Capital Management Variables on ROA.

Dependent Variable: ROA

Method: Panel Least Squares

Date: 04/02/16 Time: 12:23

Sample: 2010-2014

Periods included: 5

Cross-sections included: 19

Total panel (balanced) observations: 95

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.625401	0.202299	-3.091470	0.0029
ARD	-7.020.05	0.000160	0.438333	0.6626
APD	1.260.05	0.000109	-0.115176	0.9087
AID	-0.000155	0.000103	-1.506305	0.1367
CCC	-9.21E-05	7.44E-05	1.237159	0.2203

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DROA1113	0.155033	0.055243	2.806382	0.0066
DROA1114	-0.175590	0.055397	-3.169654	0.0023
SIZE	0.030724	0.009602	3.199585	0.0021
GDP	0.009247	0.005773	1.601896	0.1139
INF	0.123693	0.056590	2.185782	0.0323

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**Effects Specification**

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Cross-section fixed (dummy variables)

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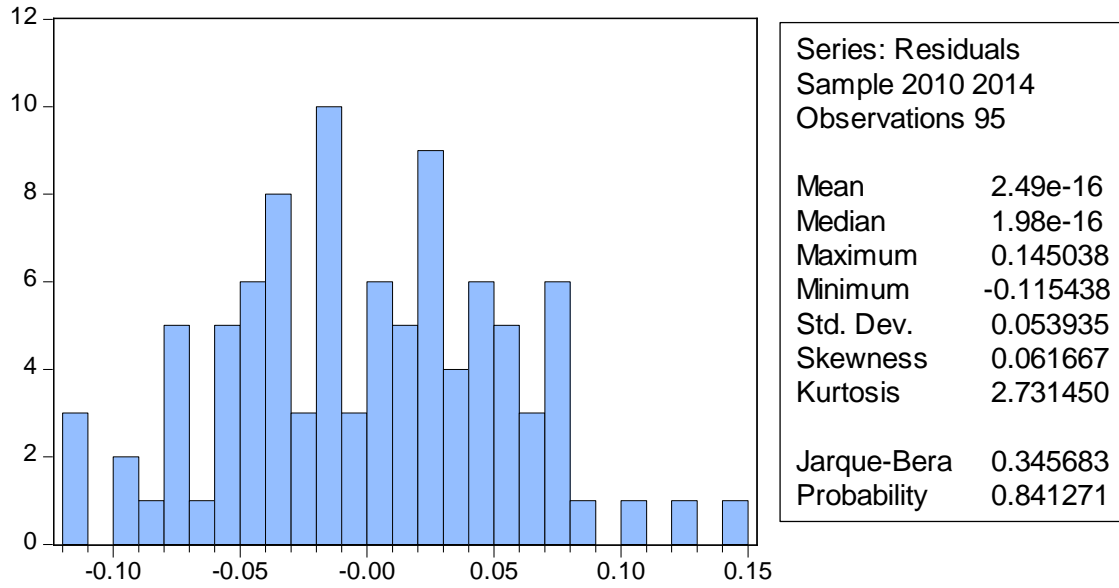
R-squared	0.811108	Mean dependent var	0.053111
Adjusted R-squared	0.734987	S.D. dependent var	0.085148
S.E. of regression	0.043834	Akaike info criterion	-3.176529
Sum squared resid	0.128735	Schwarz criterion	-2.423807
Log likelihood	178.8851	Hannan-Quinn criter.	-2.872373
F-statistic	10.65555	Durbin-Watson stat	1.738349
Prob(F-statistic)	0.000000		

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## Appendix-2 Normality Test



### Appendix 3. Heteroskedasticity Test: White

#### Heteroskedasticity Test: White

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F-statistic	0.357882	Prob. F(9,85)	0.9517
Obs*R-squared	3.468441	Prob. Chi-Square(9)	0.9428
Scaled explained SS	2.403837	Prob. Chi-Square(9)	0.9834

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Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 04/18/16 Time: 20:28

Sample: 2010 2014

Included observations: 95

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002022	0.005514	-0.366704	0.7148

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ARD^2	-1.66E-08	3.22E-08	-0.516179	0.6071
APD^2	9.97E-10	6.92E-09	0.144040	0.8858
AID^2	6.13E-09	8.16E-09	0.751370	0.4545
CCC^2	-4.85E-09	7.40E-09	-0.654845	0.5143
DROA1113^2	-0.002137	0.004027	-0.530638	0.5971
DROA1114^2	-0.002140	0.004144	-0.516292	0.6070
SIZE^2	8.48E-06	1.19E-05	0.711069	0.4790
GDP^2	1.56E-05	2.65E-05	0.587850	0.5582
INF^2	0.006358	0.012081	0.526271	0.6001
<hr/>				
R-squared	0.036510	Mean dependent var		0.002878
Adjusted R-squared	-0.065507	S.D. dependent var		0.003808
S.E. of regression	0.003930	Akaike info criterion		-8.140932
Sum squared resid	0.001313	Schwarz criterion		-7.872103
Log likelihood	396.6943	Hannan-Quinn criter.		-8.032305
F-statistic	0.357882	Durbin-Watson stat		1.757032

Prob(F-statistic) 0.951688

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#### Appendix 4. Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

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F-statistic 6.170777 Prob. F(3,82) 0.0008

Obs\*R-squared 17.49707 Prob. Chi-Square(3) 0.0006

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Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 04/18/16 Time: 20:17

Sample: 2010 2014

Included observations: 95

Presample missing value lagged residuals set to zero.

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.032385	0.142389	0.227441	0.8206

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ARD	6.55E-05	0.000127	0.514370	0.6084
APD	-5.34E-05	8.53E-05	-0.626795	0.5325
AID	1.80E-05	7.75E-05	0.232600	0.8167
CCC	-5.25E-05	7.37E-05	-0.711802	0.4786
DROA113	-0.047487	0.055149	-0.861073	0.3917
DROA1114	0.016075	0.058231	0.276052	0.7832
SIZE	-0.001149	0.006030	-0.190574	0.8493
GDP	0.000219	0.006696	0.032717	0.9740
INF	-0.023708	0.065401	-0.362505	0.7179
RESID(-1)	0.451348	0.112211	4.022307	0.0001
RESID(-2)	-0.069512	0.121866	-0.570399	0.5700
RESID(-3)	0.122175	0.113481	1.076610	0.2848

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R-squared	0.184180	Mean dependent var	2.49E-16
Adjusted R-squared	0.064791	S.D. dependent var	0.053935
S.E. of regression	0.052158	Akaike info criterion	-2.942551
Sum squared resid	0.223078	Schwarz criterion	-2.593073
Log likelihood	152.7712	Hannan-Quinn criter.	-2.801335
F-statistic	1.542694	Durbin-Watson stat	1.874986





33 1.171 1.291 1.114 1.358 1.055 1.432 0.995 1.510 0.935 1.594 0.876 1.683 0.816 1.776 0.757 1.874 0.698 1.975 0.641 2.080  
34 1.184 1.298 1.128 1.364 1.070 1.436 1.012 1.511 0.954 1.591 0.896 1.677 0.837 1.766 0.779 1.860 0.722 1.957 0.665 2.057  
35 1.195 1.307 1.141 1.370 1.085 1.439 1.028 1.512 0.971 1.589 0.914 1.671 0.857 1.757 0.800 1.847 0.744 1.940 0.689 2.037  
36 1.205 1.315 1.153 1.376 1.098 1.442 1.043 1.513 0.987 1.587 0.932 1.666 0.877 1.749 0.821 1.836 0.766 1.925 0.711 2.018  
37 1.217 1.322 1.164 1.383 1.112 1.446 1.058 1.514 1.004 1.585 0.950 1.662 0.895 1.742 0.841 1.825 0.787 1.911 0.733 2.001  
38 1.227 1.330 1.176 1.388 1.124 1.449 1.072 1.515 1.019 1.584 0.966 1.658 0.913 1.735 0.860 1.816 0.807 1.899 0.754 1.985  
39 1.237 1.337 1.187 1.392 1.137 1.452 1.085 1.517 1.033 1.583 0.982 1.655 0.930 1.729 0.878 1.807 0.826 1.887 0.774 1.970  
40 1.246 1.344 1.197 1.398 1.149 1.456 1.098 1.518 1.047 1.583 0.997 1.652 0.946 1.724 0.895 1.799 0.844 1.876 0.749 1.956  
45 1.288 1.376 1.245 1.424 1.201 1.474 1.156 1.528 1.111 1.583 1.065 1.643 1.019 1.704 0.974 1.768 0.927 1.834 0.881 1.902  
50 1.324 1.403 1.285 1.445 1.245 1.491 1.206 1.537 1.164 1.587 1.123 1.639 1.081 1.692 1.039 1.748 0.997 1.805 0.955 1.864  
55 1.356 1.428 1.320 1.466 1.284 1.505 1.246 1.548 1.209 1.592 1.172 1.638 1.134 1.685 1.095 1.734 1.057 1.785 1.018 1.837  
60 1.382 1.449 1.351 1.484 1.317 1.520 1.283 1.559 1.248 1.598 1.214 1.639 1.179 1.682 1.144 1.726 1.108 1.771 1.072 1.817  
65 1.407 1.467 1.377 1.500 1.346 1.534 1.314 1.568 1.283 1.604 1.251 1.642 1.218 1.680 1.186 1.720 1.153 1.761 1.120 1.802  
70 1.429 1.485 1.400 1.514 1.372 1.546 1.343 1.577 1.313 1.611 1.283 1.645 1.253 1.680 1.223 1.716 1.192 1.754 1.162 1.792  
75 1.448 1.501 1.422 1.529 1.395 1.557 1.368 1.586 1.340 1.617 1.313 1.649 1.284 1.682 1.256 1.714 1.227 1.748 1.199 1.783  
80 1.465 1.514 1.440 1.541 1.416 1.568 1.390 1.595 1.364 1.624 1.338 1.653 1.312 1.683 1.285 1.714 1.259 1.745 1.232 1.777  
85 1.481 1.529 1.458 1.553 1.434 1.577 1.411 1.603 1.386 1.630 1.362 1.657 1.337 1.685 1.312 1.714 1.287 1.743 1.262 1.773  
90 1.496 1.541 1.474 1.563 1.452 1.587 1.429 1.611 1.406 1.636 1.383 1.661 1.360 1.687 1.336 1.714 1.312 1.741 1.288 1.769  
95 1.510 1.552 1.489 1.573 1.468 1.596 1.446 1.618 1.425 1.641 1.403 1.666 1.381 1.690 1.358 1.715 1.336 1.741 1.313 1.767  
100 1.522 1.562 1.502 1.582 1.482 1.604 1.461 1.625 1.441 1.647 1.421 1.670 1.400 1.693 1.378 1.717 1.357 1.741 1.335 1.765  
150 1.611 1.637 1.598 1.651 1.584 1.665 1.571 1.679 1.557 1.693 1.543 1.708 1.530 1.722 1.515 1.737 1.501 1.752 1.486 1.767  
200 1.664 1.684 1.653 1.693 1.643 1.704 1.633 1.715 1.623 1.725 1.613 1.735 1.603 1.746 1.592 1.757 1.582 1.768 1.571 1.779