



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

**The Effect of Working Capital Management on Firms Profitability: The Case  
of Steel Manufacturing Firms in Addis Ababa**

**By:**

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**February, 2019**

**Addis Ababa, Ethiopia**

**The Effect of Working Capital Management on Firms Profitability: The Case  
of Steel Manufacturing Firms in Addis Ababa**

**A Thesis Submitted In Partial Fullfilment of The Requirements for The  
Award of The Degree of Master of Science in Accounting and Finance**

**Advisor: Alem. H (PhD)**

**ADDIS ABABA UNIVERSITY  
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## **Statement of Declaration**

I, Yitayal Ashebir, hereby declare that the thesis on the topic entitled “ The effect of working capital management on firms profitability:the case of steel manufacturing companys in Addis Ababa ” submitted by me for the award of the degree of Master of Science in accounting and finance from Addis Ababa university, is original work and it hasn't been presented for the award of any other Degree, Diploma, or other similar titles of any other university or institution.

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## **Statement of Approval**

This is to certify that the thesis entitled “The effect of working capital management on firms profitability:the case of steel manufacturing companys in Addis Ababa ” prepared by Yitayal Ashebir under the supervision of Alem Hagos (PhD) and submitted in partial fulfillment of the requirements for the award of the degree of Master of Science in Accounting and Finance complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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## List of Acronyms

APP	Accounts Payable Period
ARP	Accounts Receivable Period
CCC	Cash Conversion Cycle
CGS	Cost of Goods Sold
CR	Current Ratio
FL	Firm leverage
FS	Firm size
GOP	Gross Operating Profit
GWC	Gross Working Capital
IHP	Inventory Holding Period
GWC	Gross Working Capital
NWC	Net Working Capital
ROA	Return on Asset
ROE	Return on Equity
ROI	Return on Investment
SG	Sales Growth
WC	Working Capital
WCM	Working Capital Management

## **Abstract**

*The purpose of the study is to examine the effect of working capital management on profitability of Steel manufacturing firms in Addis Ababa for the period of 2013-2017 fiscal year. To achieve the objectives of this study, the study employed convenience and purposive sampling techniques and selected sixteen steel manufacturing firms as a sample and secondary data was collected from the selected firms' financial statement. The study adopt quantitative research approach and employed E-views 8 software and the result analyzed using descriptive statistics and regression analysis to ascertain the relationship between the independent variables of working capital components viz., Account receivable period, Inventory holding period, Account payable period, and Cash conversion cycle and the dependent variable (Gross Operating Profit).The result revealed that there is strong negative relation between account receivable period and steel manufacturing firms profitability, likewise strong positive relation between account payable period and steel manufacturing firms profitability, but both inventory holding period and cash conversion cycle have no effect on steel manufacturing firms profitability. The study recommended that the managers of steel manufacturing firms should have minimized cash collection period in order to increase the steel manufacturing firm profitability. Additionally, managers should have settled their credit in long time as possible to enhance steel manufacturing the firms' profitability.*

**Keywords:** *working capital, working capital management, Account receivable period, Inventor holding period, Account payable period, cash conversion cycle and profitability*

## **CHAPTER ONE**

### **1. INTRODUCTION**

This chapter gives a brief background of the effect of working capital management on firm's profitability. It also captured the statement of the problem, general and specific objectives, research hypothesis, significance of study, scope of the study, and the limitations of the study.

#### **1.1 Background of the Study**

The corporate finance literature has traditionally focused on the study of long-term financial decisions, especially those relating to investment, capital structure, dividends or company valuation decisions. However, short-term assets and liabilities are important components of the total assets of a company and also need to be carefully analyzed. The management of these short-term assets and liabilities warrants careful analysis, considering that the management of working capital plays an important role for corporate profitability and risk, and hence for company value.(Juliano, 2014).In view of their importance, there is the need for careful and systematic investigation of these short term assets and liabilities, since they play a vital role for firm's profitability, risk as well as its value (Smith, 1980).

Efficient and effective management of working capital is an important component of overall corporate strategy to create value for the business. Companies always attempt to maintain an ideal stage of working capital that maximizes their value (Howorth and Westhead, 2003; Deloof, 2003; Afza and Nazir, 2009). The working capital management, therefore, encompasses the overall idea of management of current assets and current liabilities. The importance of working capital management is reflected in the fact that financial managers spend a great deal of time in managing current assets and current liabilities. Making arrangement for quicker financial solutions, obtaining an ideal term of credit, ensuring smooth cash operation, making sure receivables accounts are collected at the right time and ensuring an acceptable inventories level constitute the routine roles of financial managers (Prasana, 2000).

Working capital refers to part of the firm's capital, which is required for financing short term or current assets such as cash, marketable securities, debtors and inventories. Funds thus, invested in current assets keep revolving fast and are constantly converted into cash and this cash flow out again in exchange for other current assets. Working capital is also known as revolving or circulating capital or short-term capital. (DeLoof, 2003). When a business entity takes the decisions regarding its current assets and current liabilities it can be termed as working capital management. The management of working capital can be defined as an accounting approach that emphasize on maintaining proper levels of both current assets and current liabilities. Working capital management provides enough cash to meet the short-term obligations of a firm. (Raheman and Nasr,2007).

By looking on the importance of working capital management, the researcher needs to study the effect of working capital management on steel manufacturing firms' profitability in Addis Ababa.

## **1.2 Statement of the Problem**

Working capital management is an important issue in any organization. This is because without a proper management of working capital components, it's difficult for the firm to run its operations smoothly. That is why Brigham and Houston (2003) mentioned that about 60 percent of a typical Financial manager's time is devoted to working capital management. Hence, the crucial part of managing working capital is maintaining the required liquidity in day-to-day operation to ensure firms smooth running and to meet its obligation. (Eljelly, 2004)

Pass and Pike (1987) emphasized that short term finance area particularly working capital management was 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.

In Ethiopia many private and public manufacturing sector did not carry out working capital management practices due to obsolete business process and structure of the company. As a result, there is a huge deficiency problem in manufacturing sector (Samuel and Tarekegn, 2011).

Different researchers in abroad and in Ethiopia have been studied the impact or effect of working capital management on firms' profitability and find a negative effect relation between account receivable period, inventory holding period, cash conversion cycle and firms' profitability and positive effect between account payable period and profitability ( Amarjit;2010,Makori and Jagongo;2008,Ephrem;2011,Mifta;2010;), in the contrast other researchers find out account receivable period, inventory holding period, cash conversion cycle positively related with firms profitability and account payable period negatively associated with firms profitability (Melita, Pertos and Halim;2012,Padachi:2006) and Yadav and Kumar (2014) find there is no relation between working capital management on firms' profitability.

The pervious study indicates that there is a variation among empirical studies and their finding means that the finding of one researcher contradict with other researchers finding of the same topic. Therefore, there is still ambiguity regarding the common effect of working capital management on firms' profitability that might serve as proxies for working capital management and on the knowledge of the researcher there is no studied has done on the effect of working capital management on steel manufacturing firms' profitability in Addis Ababa. Due to the aforementioned reason, the present study was investigated to fill the gap on the effect of working capital on steel manufacturing firms in Addis Ababa.

### **1.3 Objective of the Study**

#### **1.3.1 General Objective**

The general objective of this study is to examine the effect of working capital management on profitability of Steel manufacturing companies in Addis Ababa.

#### **1.3.2. Specific Objectives**

The specific objectives of this study are: -

- i) To evaluate the effect of accounts receivable period on firms' profitability.

- ii) To analyze the effect of inventory holding period on firms' profitability.
- iii) To investigate the effect between account payable period and firms' profitability.
- iv) To examine the relationship between cash conversion cycle and firms' profitability.

#### **1.4 Research Hypothesis**

Based on theories and empirical studies and in the line of (by considering) the above research objectives develop the following hypothesis to find out the effect working capital management on profitability given in the study, the following hypotheses are developed for testing.

HP1: Accounts receivable period have significant negative effect on a firm's profitability.

The level of accounts receivable is expected to have an impact on a company's profitability (Emery 1987; Mian and Smith 1992; Deloof and Jegers 1999; Peel et al. 2000; Garcia-Teruel and Martinez-Solano 2010a). A higher accounts receivable show that the company takes longer time to collect amounts owed by customers while a shorter accounts receivable means that the company is able to collect amount owed by customers at a faster time period.

High level of accounts receivable can however have a negative effect on companies' profitability. In the first instance, the granting of credit represents a cost to the company (Cheng and Pike 2003) and therefore a reduction in profitability. A company may have to seek alternative sources of funds to finance the investment in customers as a result of the credit granted. The use of internally generated funds to finance the credit granted to customers may reduce profitability because it will represent the opportunity cost of investing such an amount in other profitability enhancement ventures. Alternatively, the use of external funds may equally lead to profitability minimization because the company will have to pay interest on those amounts borrowed. Accounts receivable may also impair company profitability because of the occurrence of bad debt (Pike and Chang 2001). The prior studies have postulated a negative association between accounts receivable period and profitability (see, Deloof 2003; Garcia-Teruel and Martinez-Solano 2007; Sen and Oruc 2009; Dong and Su 2010; Gill et al. 2010). A reduction in the level of accounts receivable may result in profitability maximization. In light of the above empirical studies and theoretical grounds the hypothesis developed as above.

HP2: Inventory holding period of a firm is significant negative effect on a firm's Profitability.

A high level of inventory may also result in a reduction in company profitability. This is because the high level of inventory represents amount of money locked up. Capital locked up in inventory may cause a sub-optimization of financial resources because such an amount could have been invested in a profitable project in order to improve profitability. Also, the lock up of capital in inventory may require the company to sort after short-term financing, which may increase the financing cost to the company and thereby reduce profitability. High inventory may also minimize profitability in the sense that it will increase the associated costs of holding inventory. Such holding costs include: security cost, rent, heating, obsolesce, theft etc. According to Koumanakos (2008), excessive inventory frequently compensates for sloppy and inefficient management, poor forecasting and inadequate attention to process and procedures. However, Nobanee and AlHajjar (2009) suggest that care must be taking with actions to reduce the inventory level in order to avoid inventory shortages that could cause customers to buy from competitors. Empirical examination by prior studies found a negative association between inventory holding period and profitability ( Deloof 2003; Nobanee and Alhajjar 2009; Falope and Ajilore 2009, Raheman and Nasr 2007).

A reduction in the level of inventory may result more in profitability maximization than the increase in inventory holding period.in light of the above empirical studies and theoretical grounds the hypothesis developed as above.

HP3: The account payable period of a firm is significant positive effect on a firm's Profitability.

There are many reasons for expecting a significant relationship between accounts payable period and company profitability. A higher value of the specifies that the company wait longer before settling suppliers and a lower value of the accounts payable period denotes the short time frame that it takes a company to pay its debts to suppliers.

Mathuva (2010) found a positive and highly significant association between accounts payable period and profitability, therefore maintaining that companies' profitability are enhanced when

they take advantage and use suppliers' credit for working capital needs. A positive relationship was also found by the following researchers: Falope and Ajilore (2009), Vishnani and Shah (2007), Raheman et al (2010), Sen and Oruc (2009) and Dong and Su (2010). In light of the above empirical studies and theoretical grounds the hypothesis developed as above.

HP4: The cash conversion cycle of a firm is significant negative effect on a firm's Profitability.

A shorter cash conversion cycle may improve companies profitability because it will reduce or avoid the over reliance on external finance. In this case the company may be financing part of its current assets with suppliers' credit, thereby avoiding the need for short-term loan, which can be very expensive.

An efficient use of WC means that the company is able to quickly convert inventory into sales and at the same time fast in collecting receivables, but slow in paying suppliers. For example, Nobanee (2009) maintains that efficiency of WCM is based on the principle of speeding up cash collections as quickly as possible and slowing down cash disbursements as slowly as possible. Mathuva (2010) postulated a negative association between cash conversion cycle and profitability, and therefore argued that minimizing the investment in current assets can help in boosting profitability. However, pursuing such an aggressive strategy may result in lower company profitability. This is because trying to sell to customers on immediate cash payment basis or collecting amount owned as quickly as possible may deter customers from patronising the company's products. Also, delaying payments to suppliers may impair profitability of companies because of the lost saving on cash discount available. Negative association has been postulated between cash conversion cycle and profitability of companies (see, Nobanee et al. 2010; Uyar 2009; Wang 2002; Zariyawati et al. 2009; Lazaridis and Tryfonidis 2006; Garcia-Teruel and Martinez Solano 2007).

### **1.5. Significance of the Study**

Much has been written and studied about working capital management and profitability of the firm in different country, but this research add some insight about this issue related to Ethiopia

literature. Similarly, it benefits to the managers to expand their learning curve to reduce the possibility of default, especially in turbulent time; in view that working capital management has influence on the profitability performance of the firms. Furthermore, this study is also of importance for practitioner, policy maker, academician and firm managers with regards to issue associated with the effect of working capital management on profitability of firm, as it enables minimization of firm's cost of finance and further planning being conducted in order to maximize firm's profitability and shareholders' wealth. Besides, the study helps as a guideline for those who conduct their study on similar topic and it gives brief information for the shareholders, prospective customers and creditors of a firm regarding profitability in relation to efficient working capital management and policy. Finally, this study will act as a reference point to other researchers in the same field as it is directly linked to the current interest in sustainable financial management practices in both private and public sector.

Hence, the findings of this study have a great contribution to understanding the effect of working capital management on steel manufacturing firm's profitability in Addis Ababa. This study will greatly benefit higher managers and finance manager of steel manufacturing firms in Addis Ababa, by understanding the relationship between working capital management and profitability can be make working capital policies and improve their working capital management that enhance profitability. In light of the above empirical studies and theoretical grounds the hypothesis developed as above.

### **1.6 Scope of the Study**

This study delimited to investigate the effect of working capital management on firms' profitability of steel manufacturing companies in Addis Ababa. It's because of the researcher couldn't find enough related study, regarding the working capital management for such steel manufacturing firms, this sector is a major contributor to the economy growth in the country and the study used account receivable period, inventory holding period, account payable period and cash conversion cycle as independent variables and gross operating profit measurement of profitability as dependent variable. The firms' location chosen due to there is a lot of firms found in city than other part of the country.

The analysis using secondary source of data, which is financial statements of selected steel manufacturing firms. The study took sixteen steel manufacturing companies for the last 5 years

that is from 2013 to 2017 fiscal year, due to the availability of data the researcher selected the period of 2013 to 2017.

### **1.7 Limitations of the Study**

Every research study faces a certain limitation till its end. While conducting this research study, a number of limitations were occurred. The challenge for the researcher faced on conducted this study was getting all necessary data from the firms due to firms are found in different part of the city and most of the firms were not willing to give their financial statement. Additionally, the researcher challenged because of there was shortage of time with all activities of the research according to researcher's full-time work and there was high cost, as it is fully covered by the researcher.

## **CHAPTER TWO**

### **2. LITERATURE REVIEW**

The main purpose of this chapter is to create a good understanding and knowledge about the study for the readers by review the literatures and review various empirical studies done on the impact or effect of working capital management on profitability. In the line of the above purpose this chapter serves as background for this study by describing concepts of Working Capital, Types of working capital, working capital management, component of working capital and other concepts that related with working capital management and profitability. Finally, the chapter summery and knowledge gap are stated.

#### **2.1 Theoretical Literature Review**

The aim of this chapter is to create well understanding of working capital management and introduces drivers behind working capital, the theoretical review of working capital management and reviews of prior research made on working capital management.

##### **2.1.1 An Overview of Financial Management**

Financial management is mainly concerned with how to optimally make various corporate financial decisions, such as those pertaining to investment, financing, dividend policy, and working capital management, with a view to achieving a set of given corporate objectives. Maximizing shareholder wealth is generally considered the most important corporate objective.

Financial management mainly concerns planning, raising funds, analysis of project profitability, and control of cash, as well as the accounting functions relating to reporting profits and taxes. A Financial manager is an executive who manages one or more of these functions. As we have seen, Financial management plays a role in many facets of any business. That is why financial managers participate in virtually all the major decisions and occupy key positions at the center of all business organizations. (Cheol, 2011)

Financial management, also called corporate finance, focuses on decisions relating to how much and what types of assets to acquire, how to raise the capital needed to buy assets, and how to run

the firm so as to maximize its value. The same principles apply to both for-profit and not-for-profit organizations. (Eugene, 2009)

### **2.1.2 Definition and Concept of Working Capital**

The term working capital originated with the old Yankee peddler who would load up his wagon and go off to peddle his wares. The merchandise was called “working capital” because it was what he actually sold, or “turned over,” to produce his profits. The wagon and horse were his fixed assets. He generally owned the horse and wagon (so they were financed with “equity” capital), but he bought his merchandise on credit (that is, by borrowing from his supplier) or with money borrowed from a bank. Those loans were called working capital loans, and they had to be repaid after each trip to demonstrate that the peddler was solvent and worthy of a new loan. Banks that followed this procedure were said to be employing “sound banking practices.” The more trips the peddler took per year, the faster his working capital turned over and the greater his profits. (Gapenski, 1996)

The traditional definition of working capital shows how much cash (or liquid assets) is available to satisfy the short-term cash requirements imposed by current liabilities (Lorenzo, 2010). Working capital concerns managing the day-to-day short-term operations of a firm. (Hatem and Yomna, 2018)

Working capital is the capital/funds required for day to day operations of the business (Kaveri,1985) refers to it as the difference between current assets and current liabilities. Managing the firm’s working capital is a day-to-day activity that ensures that the firm has sufficient resources to continue its operations and avoid costly interruptions.

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 form and substance during the normal course of business operations. The need for maintaining an adequate working capital can hardly be questioned. 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. If it becomes weak, the business can hardly prosper and

survive. Working capital starvation is generally credited as a major cause of business failure in many developed and developing countries. The success of a firm depends ultimately, on its ability to generate cash receipts in excess of disbursements. The cash flow problems of many businesses are worsened by poor financial management and in particular the lack of planning cash requirements (Jarvis et al, 1996).

The concept of working capital was first evolved by (Marx, 1867). Marx used the term 'variable capital' meaning expenditure for payrolls advanced to workers before they completed the goods they worked on. He differentiated this with 'constant capital', which he regarded as nothing but 'dead labor', that is, expenditure for raw materials and other instruments of production produced by labor. This 'variable capital' was the wage fund which remains blocked in terms of financial management, in work-in-process along with other operating expenses until it is released through sale of finished goods. Although Marx did not mention that workers also gave credit to the firm by accepting periodical payment of wages which funded a portion of work-in-process, the concept of working capital, as we understand today, was embedded in his 'variable capital'.

With the evolution of the concept came a controversy about the definition of working capital, different people use the term 'working capital' differently; Working capital is usually defined as the current assets less current liabilities. The major elements of current assets are inventories, accounts receivables and cash (in hand and at bank) while that of current liabilities are accounts payable and bank overdrafts.

Weston and Brigham (1977) working capital' as the capital invested in different items of current assets needed for the business, that is, inventory, debtors, cash and other current assets such as loans and advances to third parties. These current assets are essential for smooth business operations and proper utilization of fixed assets.

Net Working Capital (NWC) technically, is the difference between current assets and current liabilities, while Gross Working Capital (GWC) refers to the sum of all current assets.

Khan and Jain (2007) also argued that there are two concepts of working capital; gross and net. The term gross capital also referred to as working capital means the total current assets of a

business. The term net working capital can be defined in two ways (i) net working capital is the difference between current assets and current liabilities; (ii) that portion of current assets which is financed with long- term funds. The extensive literature on the subject reveals the component of working capital as consisting of current assets less current liabilities. The working capital is affected by a number of factors, including the nature of the business, credit policy, conditions of supply, price level changes.

### **2.1.3 Types of Working Capital**

Working capital is invested usually in all types of inventories such as raw materials, spares, finished goods etc and credit extension to debtors and cash in hand. According to Paramasivan and Subramanian (2009), working capital is classified into:

#### **Balance sheet view and Operating cycle view**

On the basis of balance sheet view, working capital are described below:

The two most important terms when discussing working capital are gross working capital and net working capital. The investment that is needed for receivables, inventories and cash is generally called working capital or gross working capital. It is simply called current assets in the balance sheet of a firm. A certain part of the investment in working capital is financed by short-term financing (current liabilities)-meaning payables, current maturities etc. The difference between the current assets and current liabilities is the net working capital.

Net working capital indicates how much a company has to invest of its long-term capital to finance its working capital. Net working capital can be negative, in which case the company has more current liabilities than assets.

A separation between operational working capital and financial working capital has to be made. The operational working capital, that is, the part that can be optimized and affected by the company's operations, are the accounts receivable, inventories and accounts payable. The rest, i.e cash, marketable securities, prepaid and all other current liabilities are a financial decision of the company, and has very little to do with the company's operations in itself.

On the basis of operating cycle view, types of working capital are described below:

***Permanent / fixed working capital:*** it refers to a minimum amount of investment in all working capital which is required at all times to carry out minimum level of business activities (Brigham and Houston, 2003). In other words, it represents the current assets required on a continuing basis over the entire year. Further, working capital has a limited life and usually not exceeding a year, in actual practice some part of the investment in that is always permanent. Since firms have relatively longer life and production does not stop at the end of a particular accounting period some investment is always locked up in the form of raw materials, work-in progress, and finished stocks. Investment in these components of working capital is simply carried forward to the next year. This minimum level of investment in current assets that is required to continue the business without interruption is referred to as permanent working capital (Fabozzi and Peterson, 2003).

***Temporary working capital:*** it's also known as the circulating or transitory working capital.

This is the amount of investment required to take care of the fluctuations in the business activity. Fabozzi and Peterson (2003 p. 678) they defined as a rise of working capital from seasonal fluctuations in a firm's business. Because firms do not have to maintain this form of working capital throughout in the year, or year after year, it may be better to use short-term (bank credit) rather than long-term sources of capital to satisfy temporary needs. In other words, it represents additional current assets required at different times during the operating year. For example, extra inventory has to be maintained to support sales during peak sales. Similarly, receivable also increase and must be financed during period of high sales. On the other hand, investment in inventories, receivables and the like will decrease in periods of depression (special working capital). Temporary working capital fluctuates over time with seasons and special needs of firm operations, whereas, permanent WC changes as firm sizes increases overtime. Further, temporary WC is financed by short term debt.

#### **2.1.4 Working Capital Management**

Working capital management involves finding the optimal levels for cash, marketable securities, accounts receivable, and inventory and then financing that working capital for the least cost. (Eugene,2009)

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. (Chen, Wang & Jin, 2009)

The management and control of working capital is of vital importance to companies and forms a major workload function of the finance manager and accountant. By working capital, the commonly accepted descriptive term for these resources, we mean the company's investment in short-term assets; traditionally these relate to items coming under the balance-sheet heading of current assets (in practice, of course, all capital is working, whether invested in fixed or current assets). Thus inventories (stocks), accounts receivable (debtors), short-term investments and cash balances all come within the term working capital. Apart from the efficient operation and control of these assets, the finance manager will also be concerned with their financing. In this the finance manager will be faced with numerous alternative sources, both short-term and long-term. Short-term financing is generally shown under the heading of current liabilities and includes items such as bank overdrafts and credit received from suppliers. The efficient financing of current assets by short-term liabilities also comes within the scope of working-capital management. (Michael, 1976)

Working capital (or short-term financial) management is manage each of the firm's current assets (inventory accounts receivable, marketable securities, and cash) and current liabilities (notes payable, accruals, and accounts payable) to achieve a balance between profitability and risk that contributes positively to the firm's value.

Firms are able to reduce financing costs or increase the funds available for expansion by minimizing the amount of funds tied up in working capital. Therefore, it should not be surprising

to learn that working capital is one of the financial manager's most important and time-consuming activities. A study of *Fortune* 1000 firms found that more than one-third of financial managers' time is spent managing current assets and about one-fourth of their time is spent managing current liabilities. (Lawrence, 2011)

The main objective of working capital management is to maintain an optimal balance between each of the working capital components. Business success heavily depends on the financial executives' ability to effectively manage receivables, inventory, and payables (Filbeck & Krueger, 2005). Firms can reduce their financing costs and/or increase the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Most of the financial managers' time and efforts are allocated towards bringing non-optimal levels of current assets and liabilities back to optimal levels (Lamberson, 1995). An optimal level of working capital would be the one in which a balance is achieved between risk and efficiency. It requires continuous monitoring to maintain proper level in various components of working capital, i.e., cash receivables, inventory and payables, etc.

To be effective, working capital management requires a clear specification of the objectives to be achieved. The two main objectives of working capital management are to increase the profitability of a company and to ensure that it has sufficient liquidity to meet short-term obligations as they fall due and so continue in business (Pass & Pike, 1984). Profitability is related to the goal of shareholder wealth maximization, so investment in current assets should be made only if an acceptable return is obtained. While liquidity is needed for a company to continue in business, a company may choose to hold more cash than is needed for operational or transaction needs, for example for precautionary or speculative reasons. The twin goals of profitability and liquidity will often conflict since liquid assets give the lowest returns. Cash kept in a safe will not generate a return, for example, while a six-month bank deposit will earn interest in exchange for loss of access for the period. (Denzil, 2007)

### **2.1.5 Working Capital Policies**

Because working capital management is so important, a company will need to formulate clear policies concerning the various components of working capital. Key policy areas relate to the

level of investment in working capital for a given level of operations and the extent to which working capital is financed from short-term funds such as bank overdrafts. A company should have working capital policies on the management of stock, debtors, cash and short-term investments in order to minimize the possibility of managers making decisions which are not in the best interests of the company. Examples of such suboptimal decisions are giving credit to customers who are unlikely to pay and ordering unnecessary stocks of raw materials. Sensible working capital policies will reflect corporate decisions on: the *total* investment needed in current assets, i.e. the overall level of investment; the amount of investment needed in each *type* of current asset, i.e. the mix of current assets; and the way in which current assets are to be financed.

Working capital policies need to consider the nature of the company's business since different businesses will have different working capital requirements. A manufacturing company will need to invest heavily in spare parts and components and might be owed large amounts of money by its customers. A food retailer will have large stocks of goods for resale but will have very few debtors. The manufacturing company clearly has a need for a carefully thought out policy on debtor management, whereas the food retailer may not grant credit at all. Working capital policies will also need to reflect the credit policies of a company's close competitors, since it would be foolish to lose business because of an unfavorable comparison of terms of trade. Any expected fluctuations in the supply of or demand for goods and services, for example due to seasonal variations in business, must also be considered, as must the impact of a company's manufacturing period on its current assets. (Eugene, 2009)

### **2.1.6 The Level of Working Capital**

An *aggressive* policy with regard to the level of investment in working capital means that a company chooses to operate with lower levels of stock, debtors and cash for a given level of activity or sales. An aggressive policy will increase profitability since less cash will be tied up in current assets, but it will also increase risk since the possibility of cash shortages or running out of stock (stockouts) is increased. (Eugene, 2009)

The aggressive strategy, meanwhile, assumes a relatively high share of short-term liabilities. A large share of these liabilities translates into lower costs of capital acquisition. Implementation of this strategy, however, lowers the level of financial liquidity. One can also distinguish the moderate strategy which constitutes the middle ground between the conservative and the aggressive one. (Janina, 2017)

A *conservative* and more flexible working capital policy for a given level of turnover would be associated with maintaining a larger cash balance, perhaps even investing in short-term securities, offering more generous credit terms to customers and holding higher levels of stock. Such a policy will give rise to a lower risk of financial problems or stock problems, but at the expense of reducing profitability. (Eugene, 2009)

The conservative management strategy for current assets is characterized by a high level of current assets and relatively long operating cycle. The conservative strategy signifies there is a low level of short-term funding sources in the company. This strategy increases the level of liquidity and consequently reduces the risk of current operations of the company. (Janina, 2017)

A *moderate* policy would tread a middle path between the aggressive and conservative approaches. It should be noted that the working capital policies of a company can be characterized as aggressive, moderate or conservative only by comparing them with the working capital policies of similar companies. There are no absolute benchmarks of what may be regarded as aggressive or otherwise, but these characterizations are useful for analyzing the ways in which individual companies approach the operational problem of working capital management. (Eugene, 2009)

### **2.1.7 Working Capital Management Components**

The basic focus in managing specific current assets should be to optimize the firm's investment in these assets. The main components of a firm's working capital include the following:

#### ***Cash and Marketable Securities***

When most of us use the term cash, we mean currency (paper money and coins) in addition to bank demand deposits. However, when corporate treasurers use the term, they often mean

currency and demand deposits in addition to very safe, highly liquid marketable securities that can be sold quickly at a predictable price and thus be converted to bank deposits. Therefore, “cash” as reported on balance sheets generally includes short-term securities, which are also called “cash equivalents. (Eugene, 2009)

### **Currency**

Fast-food operators, casinos, hotels, movie theaters, and a few other businesses hold substantial amounts of currency; but the importance of currency has decreased over time due to the rise of credit cards, debit cards, and other payment mechanisms. Companies such as McDonald’s need to hold enough currency to support operations; but if they held more, this would raise capital costs and tempt robbers. Each firm decides its own optimal level; but even for retailers, currency generally represents a small part of total cash holding.

### **Demand Deposits**

Demand (or checking) deposits are far more important than currency for most businesses. These deposits are used for transactions—paying for labor and raw materials, purchasing fixed assets, paying taxes, servicing debt, paying dividends, and so forth. However, commercial demand deposits typically earn no interest; so firms try to minimize their holdings while still ensuring that they are able to pay suppliers promptly, take trade discounts, and take advantage of bargain purchases. (Eugene, 2009)

### **Marketable securities**

Marketable securities are sometimes called near-cash items or bank- time deposits notes (Mao, 1969). The basic characteristic of near cash assets is that they can readily be converted into cash. Generally, when a firm has excess cash, it invests it in marketable securities. This kind of investment contributes some profit to the firm

Marketable securities held for operations are managed in conjunction with demand deposits—the management of one requires coordination with the other. Firms also purchase marketable securities as cash builds up from operations and then sell those securities when they need cash”

Note that a firm’s marketable security holdings can be divided into two categories:

- (1) Operating short-term securities, which are held primarily to provide liquidity and are bought and sold as needed to provide funds for operations, and
- (2) Other short-term securities, which are holdings in excess of the amount needed to support normal operations. Highly profitable firms such as Microsoft often hold far more securities than are needed for liquidity purposes. Those securities will eventually be liquidated; and the cash will be used for such things as paying a large one-time dividend, repurchasing stock, retiring debt, acquiring other firms, or financing major expansions. This breakdown is not reported on the balance sheet, but financial managers know how much of their securities will be needed for operating versus other purposes. (Eugene, 2009)

### **Inventories**

Inventories, which can include supplies, raw materials, work in process, and finished goods, are an essential part of virtually all business operations. Optimal inventory levels depend on sales, so sales must be forecasted before target inventories can be established. Moreover, because errors in setting inventory levels lead to lost sales or excessive carrying costs, inventory management is quite important. Therefore, firms use sophisticated computer systems to monitor their inventory holdings. (Eugene, 2009)

A firm's inventory may take different forms. For instance, a manufacturing firm's inventory is likely to consist of raw materials, which are inputs to the production process; work in progress, which are unfinished goods that are in the process of being produced at the time the balance sheets are closed; and finished goods, which are goods that the firm has produced and is ready to ship. Inventory management involves the setting of inventory levels so as to maximize the benefits while minimizing the costs of holding inventory. (Lorenzo,2010)

Financial managers are involved in several ways. First, it is expensive to install and maintain the computer systems used to track inventories; and the capital budgeting analysis used to determine which system is best. Second, if the firm decides to increase its inventory holdings, the financial manager must raise the capital needed to acquire the additional inventory. And third, the financial manager is responsible for identifying any area of weakness that affects the firm's

overall profitability, using ratios and other procedures for comparing the firm to its benchmark companies. (Eugene, 2009)

### **Accounts Receivables**

Firms usually sell their products on credit, rather than requiring immediate payment. Such a transaction generates a commercial credit (usually short term) for the seller and a commercial debt (usually short term) for the client. The general name given to commercial credit is trade credit. Likewise, the commercial credit provided is often referred to as trade receivables, whereas the commercial credit received is often referred to as trade payables. (Lorenzo, 2010)

Hendrikson (1992) underlines the importance of accounts receivables. A firm grants trade credit to protect its sales from the competitors and to attract the potential customers to buy its products at favorable terms. When the firm sell its products or services and does not receive cash for it immediately, the firm is said to have granted trade credit to customers.

Machiraju (2005) also argue that receivables arise out of delivery of goods or rendering of services on credit. Receivables represent claims against others for future receipt of money, goods or services whose value depends upon the volume of credit sales and the policy for collecting such credits. Joshi (2000) indicates that the primary objective of investment in trade debtor is to increase profit by expanding sales to attract new customers and retain old customers. By constantly increasing its sales and profit the business carves out a bigger niche in the market and elevates its status among competitors.

Although some sales are made for cash, today the vast majority of sales are on credit. Thus, in the typical situation, goods are shipped, inventories are reduced, and an account receivable is created. Eventually, the customer pays, the firm receives cash, and its receivables decline. (Eugene, 2009)

### ***Accounts payable***

Accounts payable are the major source of unsecured short-term financing for business firms. They result from transactions in which merchandise is purchased but no formal note is signed to

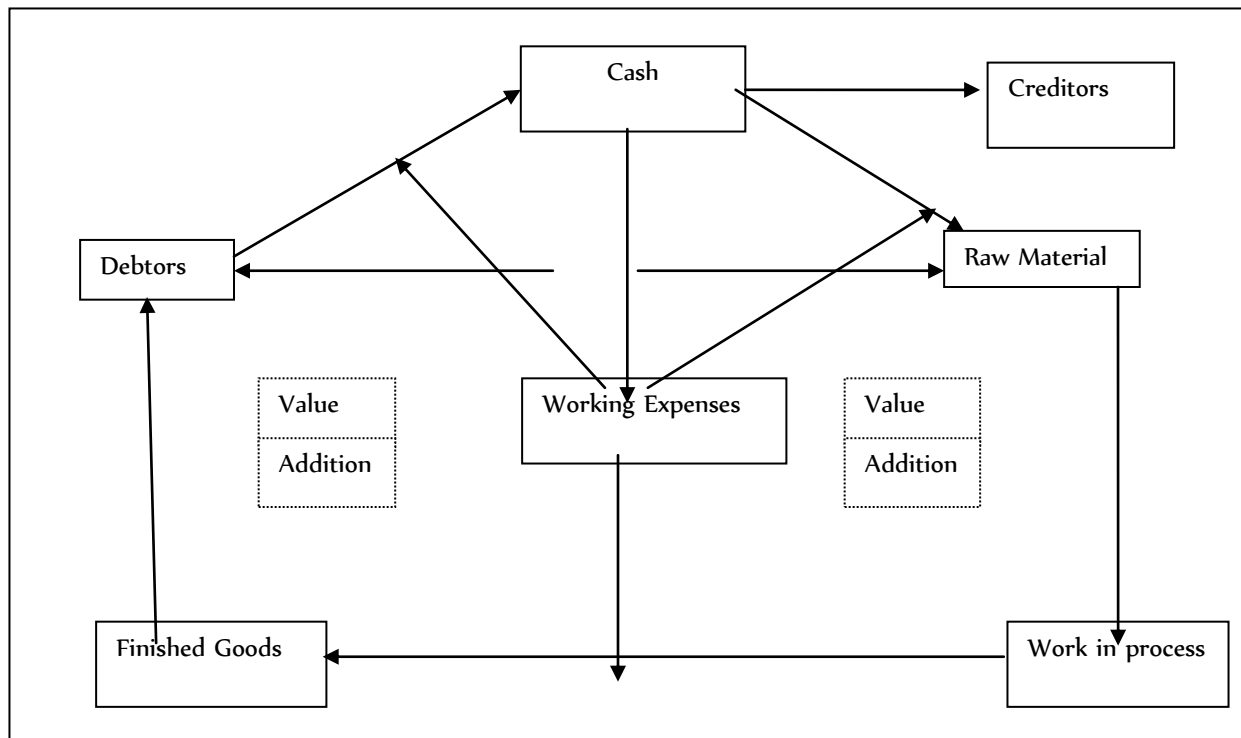
show the purchaser's liability to the seller. The purchaser in effect agrees to pay the supplier the amount required in accordance with credit terms normally stated on the supplier's invoice.

Firms generally make purchases from other firms on credit and record the debt as an account payable. Accounts payable, or trade credit, is the largest single category of short-term debt. Trade credit may be free, or it may be costly. If the seller does not offer discounts, the credit is free in the sense that there is no cost for using it. However, if discounts are available, a complication arises. (Eugene, 2009)

### 2.1.8 Working Capital Cycle

**Working capital cycle:** The working capital cycle measures the time between paying for goods being supplied to the buyer and the final receipt of cash from the sale of these goods. It is advantageous to keep the cycle as short as possible as it increases the effectiveness of working capital. The diagram below shows, how the cycle operates or work.

Figure 2.1 Working capital cycle



Source: Copeland, et al (2005)

Working capital cycle involves conversions and rotation of various constituents/components of the working capital. Initially 'cash' is converted into raw materials. Subsequently, with the usage

of fixed assets resulting in value additions, the raw materials get converted into work in process and then into finished goods. When sold on credit, the finished goods assume the form of debtors who give the business cash on due date. Thus 'cash' assumes its original form again at the end of one such working capital cycle but in the course, it passes through various other forms of current assets too. This is how various components of current assets keep on changing their forms due to value addition. As a result, they rotate and business operations continue. Thus, the working capital rotation of various constituents of the working capital.

Working capital cycle also known as operating cycle, with recent modification to cash conversion cycle. (Richards, 1998) reflects the net time interval between actual cash expenditure on a firm's purchase of production resources and the ultimate recovery of cash receipts from product sales. Khan and Jain (2007) also states that the operating cycle can be said to be the heart of the need for working capital. The continuing flow of cash to suppliers, to inventory, to accounts receivable and back into cash is what is called the operating cycle. They further stress that the operating cycle consists of three phases.

In phase one, cash gets converted into inventory which includes purchase of raw materials, conversion of raw materials into work-in-progress, finished goods and finally the transfer of goods to stock at the end of the manufacturing process. In the case of trading organizations, this phase is shorter as there would be no manufacturing activity and cash is directly converted into inventory. The phase is, of course, totally absent in the case of service organizations.

In phase two of the cycle, the inventory is converted into receivables as credit sales are made to customers. Firms which do not sell on credit obviously do not have phase two of the operating cycle. The last phase, phase three, represents the stage when receivables are collected. This phase completes the operating cycle and hence, the firms have to move from cash to inventory, to receivables and to cash again. (as shown in figure 2.1 above)

Moyer et al (1995) also added that a company's operating cycle typically consists of three primary activities that is, purchasing resources, producing the product, and distributing (Selling)

the product. These activities create funds flows that are both unsynchronized and uncertain. They are unsynchronized because cash disbursements (for example, payments for resource purchase) usually take place before cash receipts (for example, collection of receivables). They are uncertain because of future sales and costs, which generate the respective receipts and disbursement, cannot be forecasted with complete accuracy. If the firm is to maintain liquidity and function properly, it has to invest funds in various short-term assets (working capital) during this cycle. It has to maintain a cash balance to pay the bills as they come due. In addition, the company must invest in inventories to meet customer orders promptly. Finally, the company invests in accounts receivables to extend credit to its customers.

Mawhiraju (1999) also argued that conversion cycle captures the fact that different components of working capital have different life expectancies and are transformed to liquidity flows at different rates. The imbalance between cash inflows and outflows necessitates investment in current assets. The net cash conversion rate identified with the help of cash conversion cycle has to be financed by working capital.

### **2.1.9 Cash Conversion Cycle**

The **cash conversion cycle (CCC)** measures the length of time required for a company to convert cash invested in its operations to cash received as a result of its operations. (Lawrence, 2011)

Total delay between initial purchase of raw materials and ultimate payments from customers is the sum of the inventory and accounts receivable periods: first the raw materials must be purchased, processed, and sold, and then the bills must be collected. However, the net time that the company is out of cash is reduced by the time it takes to pay its own bills. The length of time between the firm's payment for its raw materials and the collection of payment from the customer is known as the firm's **cash conversion cycle**. To summarize,

**Cash conversion cycle = (inventory period + receivables period)– accounts payable period**

The longer the production process, the more cash the firm must keep tied up in inventories. Similarly, the longer it takes customers to pay their bills, the higher the value of accounts receivable. On the other hand, if a firm can delay paying for its own materials, it may reduce the amount of cash it needs. In other words, accounts payable reduce net working capital.

The delays in collecting cash are given by the inventory and receivables period. The delay in paying bills is given by the payables period. The net delay in collecting payments is the cash conversion cycle. We calculate these periods as follows:

$$\text{Inventory period} = \frac{\text{average inventory}}{\text{annual cost of goods sold}} \times 365$$

The denominator in this equation is the firm's daily output. The ratio of inventory to daily output measures the average number of days from the purchase of the inventories to the final sale. We can estimate the accounts receivable period and the accounts payable period in a similar way

$$\text{Receivables period} = \frac{\text{average accounts receivable}}{\text{annual sales}} \times 365$$

$$\text{Payables period} = \frac{\text{average accounts payable}}{\text{annual cost of goods sold}} \times 365$$

Because inventories are valued at cost, we divide inventory levels by cost of goods sold rather than sales revenue to obtain the inventory period. This way, both numerator and denominator are measured by cost. The same reasoning applies to the accounts payable period. On the other hand, because accounts receivable are valued at product price, we divide average receivables by daily sales revenue to find the receivables period. (Brealey)

Biger et al., (2010) proclaim that a popular measure of working capital management is the 'cash conversion cycle' which is calculated as 'days of sales in receivables', plus 'day's sales in inventory' minus 'day's payable outstanding'. This cycle essentially denotes the number of days a company's cash is tied up by its current operating cycle (Fried et al., 2003).

#### **2.1.10 Working Capital Management, Profitability and Liquidity**

Jose et al (1996) showed that day-to-day management of a firm's short term assets and liabilities plays an important role in the success of the firm. Firms with growing long term prospects and healthy bottom lines do not remain solvent without good liquidity management. Profitability is more important because profit can usually be turned into a liquid asset, and that liquidity is also important but does not mean that the company is profitable.

Gitman (1999), while acknowledging the relative importance of both, submits that liquidity is more important because it has to do with the immediate survival of the company. Profitability tells whether the business is sustainable while liquidity tells whether the business has enough cash to pay its obligations.

For Gitman (1999) in addition to profitability, liquidity management is vital for ongoing concern. Jose et al (1996) suggests optimum liquidity position, which is minimum level of liquidity necessary to support a given level of business activity. He says it is critical to deploy resources between working capital and capital investment, because the return on investment is usually less than the return on working capital investment. Therefore, deploying resources on working capital as much as to maintain optimum liquidity position is necessary. Then he sets up the relationship between conversion cycle and minimum liquidity required such that the cycle lengthens, the minimum liquidity required increases, and vice versa.

#### **2.1.11 Measurement of Liquidity and Profitability**

In every area of financial management, the finance manager is always faced with the dilemma of liquidity and profitability. He/she has to strike a balance between the two (Eljelly, 2004).

Liquidity means the firm has to have adequate cash to pay bills as and when they fall due, and it also have sufficient cash reserves to meet emergencies and unforeseen demands, in all time. On the other hand, Profitability goal requires that funds of a firm should be utilized as to yield the highest return. Hence, liquidity and profitability are conflicting decisions, when one increases the other decreases. More liquidity results in less profitability and vice versa. This conflict finance manager has to face as all the financial decisions involve both liquidity and profitability.

Creditors of the company always want the company to keep the level of short term assets higher than the level of short term liabilities; this is because they want to secure their money. When current assets are in excess to current liabilities then the creditors has been in a comfortable situation. On the other hand managers of the company don't think in the same way, obviously each and every manager want to pay the mature liabilities but they also know that excess of current assets were costly and idle resource which is not produce any return. For example,

having high level of inventory raises warehouse expense. So, rather than keeping excessive current assets (cash, inventory, account receivable) managers want to keep the optimal level of current assets, to a level which is enough to fulfill current liabilities. And also managers want to invest the excessive amount to earn some return. Hence, managers have to make a choice between two extreme positions; either they choose the long term investments, investments in noncurrent asset such as subsidiaries (equity), with high profitability i.e. high return and low liquidity. On the other hand, to choose short term investment with low profitability i.e. low return and high liquidity.

However, creditors of the company want managers to invest in short term assets because they are easy to liquidate but it reduces the profitability because of low interest rate. On the other hand, if the managers prefer the long-term investment to enhance the profitability then in case of default lenders or creditors have to wait longer and bear some expense to sell these assets because the liquidity of long-term investment is low. In reality, none of the managers choose any of these two extremes instead they want to have a balance between profitability and liquidity which fulfills their need of liquidity and gives required level of profitability (Arnold,2008).

Profitability ratio is a measure of profit generated from the business and is measured in percentage terms e.g. percentage of sales, percentage of investments, percentage of assets. High percentage of profitability plays a vital role to bring external finance in the business because creditors, investors and suppliers do not hesitate to invest their money in such accompany (Fabozzi and Peterson, 2003, p. 733). There are several measures of profitability which a company can use. Few measures of profitability are discussed here:

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

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

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

$$\text{NPM} = (\text{Earnings available for common stakeholder} / \text{Net sales}) * 100$$

**Return on asset (ROA):** 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 higher value of ROA shows the better performance and it is computed as follows:

$$\text{ROA} = (\text{Earnings available for common stockholders} / \text{total Asset}) * 100$$

On the other hand, liquidity ratio measures the short-term solvency of financial position of a firm. This ratio is calculated to comment upon the short-term paying capacity of a concern or the firm's ability to meet its current obligations Fabozzi & Peterson (2003,) and it is discussed as follows:

**Current ratio:** is defined as the relationship between current assets and current liabilities. It is a measure of general liquidity and it is the most widely used to make the analysis for short term financial position or liquidity of a firm (Fabozzi & Peterson, 2003). Current ratio is calculated by dividing the total current assets by total current liability.

$$\text{Current ratio} = \text{current asset} / \text{current liability}$$

On the other hand, **debt ratio** is one part of financial ratio which is used for debt management used by different company. Hence, it is ratio that indicates what proportion of debt a company has relative to its assets. The measure gives an idea to the leverage of the company a long with the potential risks the company faces in terms of its debt-load (Fabozzi & Peterson, 2003). It is calculated as dividing total debt by total asset.

## 2.2 Review of Empirical Studies

They are several empirical studies conducted on the impact of working capital management on firms' profitability in different countries. under here the studies are presented.

### **2.2.1 International Studies**

Under this section reviewed the previous studies on the impact of working capital management on firm's profitability.

Amarjit et al., (2010) studied the relationship between working capital management and profitability. a sample of 88 American firms listed on New York Stock Exchange for a period of 3 years from 2005 to 2007 was selected. They found statistically significant relationship between the cash conversion cycle and profitability, measured through gross operating profit. and they suggested that managers can create profits for their companies by handling correctly the cash conversion cycle and by keeping accounts receivables at an optimal level.

To test the relationship between working capital management and corporate profitability, Deloof (2003) used a sample of 1,009 large Belgian non-financial firms for a period of 1992-1996. By using correlation and regression tests, he found significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms. Based on the study results, he suggests that managers can increase corporate profitability by reducing the number of day's accounts receivable and inventories.

Mathuva (2010) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study were that: i) 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, ii) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and iii) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Samiloglu & Demirqunes (2008) found that working capital policies are the main determinants of a firm's profitability as far the working capital is concerned. Though they never say which

working capital policy guarantees a higher profitability, their studies only mention conservative policy with no reference to the remaining two - aggressive and moderate Policies. They carried out a study on a sample of fifty listed manufacturing firms at the Istanbul stock exchange, Turkey, for a period of ten years, which was from 1998 to 2007. Their dependent variable of the regression model was return on assets. Their empirical results show that for the mentioned sample and period, capital management policy significantly affects profitability of Turkish manufacturing firms. However, they hasten to add that cash conversion cycle, size of a firm and fixed financial assets have no statistically significant effects on the firm's profitability.

Falope & Ajilore (2009) used a sample of 50 Nigerian quoted non-financial firms for the period 1996 -2005. Their study utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigerian Stock Exchange.

Furthermore, they found no significant variations in the effects of working capital management between large and small firms.

Yadav & Kumar (2014) studied the relationship between working capital management determinants on profitability. Profitability is a dependent variable whereas determinants of working capital are independent variables such as average collection period, inventory turnover in days, average payment period, cash conversion cycle, and net trading cycle were used to assess working capital management, and return on total assets. The study has considered sample of the size of ten large scale steel manufacturing companies in India over a ten year period from 2003 to 2013. The analysis was done by using OLS regression, shows whether there is a significant relationship between these variables. From the study, though it is evident that working capital management does not have a significant impact on Profitability.

Melita, Pertos & Halim (2012) had investigated on the relationship between working capital management and firm's profitability for an emerging Asian country by focusing on 718 firms

listed on the Indonesia stock exchange for 13 years period, 1998-2010. Based on multivariate regression analysis, their findings revealed that CCC and net trade cycle (NTC) have positive relationship with the firm's profitability, while debt ratio measuring firm's riskiness was found to have negative relationship with firm's profitability, which is determined by Return on Assets (ROA).

Nor Edi & Noriza (2010) had studied on the working capital management and its impact to the performance of 172 listed firms in Main Board of Bursa Malaysia randomly selected from Bursa Malaysia main board for five years period from 2003 to 2007. By using the Statistical Package of Science Social (SPSS) programs, the relation between the variables had been examined by making use the Correlation and Multiple Regression analysis.

The result revealed that there are significant negative relationships between working capital segments such as cash conversion cycles, current ratio, current asset to total asset ratio, current liabilities to total asset ratio and debt to asset ratio with firm's performance in terms of firm's value that is measured by Tobin Q and profitability measured via return on asset and return on invested capital. Hence, in order to ensure effectiveness of business operation, firm manager need to take consideration on the significant contribution attributed by working capital management towards the enhancement of firm's market value and profitability.

Padachi (2006) examined the trends in working capital management and its impact on firm's performance. The results proved that a high investment in inventories and receivables is associated with lower profitability. Further, he showed that inventory days and cash conversion cycle had positive relation with profitability. On the other hand, account receivables days and accounts payable days correlated negatively with profitability. A study on value added, productivity and performance of few selected companies in Sri Lanka with the sample of 15 financial companies listed under the Colombo Stock Exchange (CSE) reveals that, profit before tax per employee and value added per rupee of fixed asset is positively correlated and labor cost to sales and gross profit is also positively correlated.

### **2.2.2 County Specific Studies**

Ephrem (2011) studied the impact of working capital management on profitability of the selected small and medium enterprises which are found in Addis Ababa. He carried out on the sample of 30 small micro enterprises and they study covered for the period five years from 2005-2009. He used Pearson correlation, regression analysis and pooled ordinary least squares for data analysis. The results indicated that cash conversion cycle and average collection period has negative impact on net operating profitability of a firm. Finally, he concluded that a good working capital management practices can boost the profitability of small businesses.

Tiringo (2013) examined impact of working capital management on profitability of micro and small enterprises in Ethiopia for the case of Bahir Dar City Administration. The study had taken a sample of 67 micro and small enterprises. Data for this study was collected from the financial statements of the enterprises listed on Bahir Dar city micro and small enterprises agency for the year 2011. The study applied Pearson's correlation and OLS regression with across sectional analysis. The result showed that there is a strong positive relationship between number of day's accounts payable and enterprises profitability. However, number of days accounts receivable, number of days inventory and cash conversion cycle have a significant negative impact on profitability.

Niman (2015) had studied the impact of working capital management on firms' profitability evidence from selected manufacturing companies in Somali Regional State, Ethiopia with the aims to examine the statistical significance between component of working capital management and firm's profitability. In light of this objective the study adopted quantitative method of research approaches to test a series research hypothesis. Stratified sampling design was employed based on purposively of companies. Then companies were selected based on purposively from each stratum to avoid biases and selected a sample of twenty-five companies for the period of six years (2009-2014) with the total of 150 observations. Data was analyzed on quantitative basis using Pearson's correlation and pooled panel data regression models of cross-sectional and time series data were used for analysis. The results showed that there is statistical significance negative relationship between profitability and working capital management. It

means that, companies' managers can create profits or value for their companies and shareholders by handling correctly the cash conversion cycle and keeping each different component of working capital to a possible optimum level.

Mifta Ahmed (2016) studied on the purpose of to examine the impact of working capital management on profitability of manufacturing share companies in Ethiopia with special reference to large tax payers. The researcher was used Proportionate random stratified sample and selected a sample of sixteen (16) manufacturing share companies is used for a period of seven years (2008-2014) with the total of 112 observations. he analyzed data on quantitative basis using descriptive and regression analysis (Ordinary Least Square) method. In light of this objective the study adopted quantitative approaches to test a series of research hypotheses. It examined the components in working capital such as accounts receivable period, inventory holding period, accounts payable period, and cash conversion cycle in relation to return on asset (ROA). The study found first, there exists a significant negative relationship between average collection period and profitability secondly, there exists a negative relationship between inventory holding period with profitability and positive relationship between accounts payable period and profitability. But, both inventory holding period and accounts payable period was

## **2.7 Summary of the Chapter and Knowledge Gap**

The below table summarizes the prior researchers finding regarding the impact of working capital management (components of working capital) on firms' profitability.

Table 2.1 Summary of empirical findings

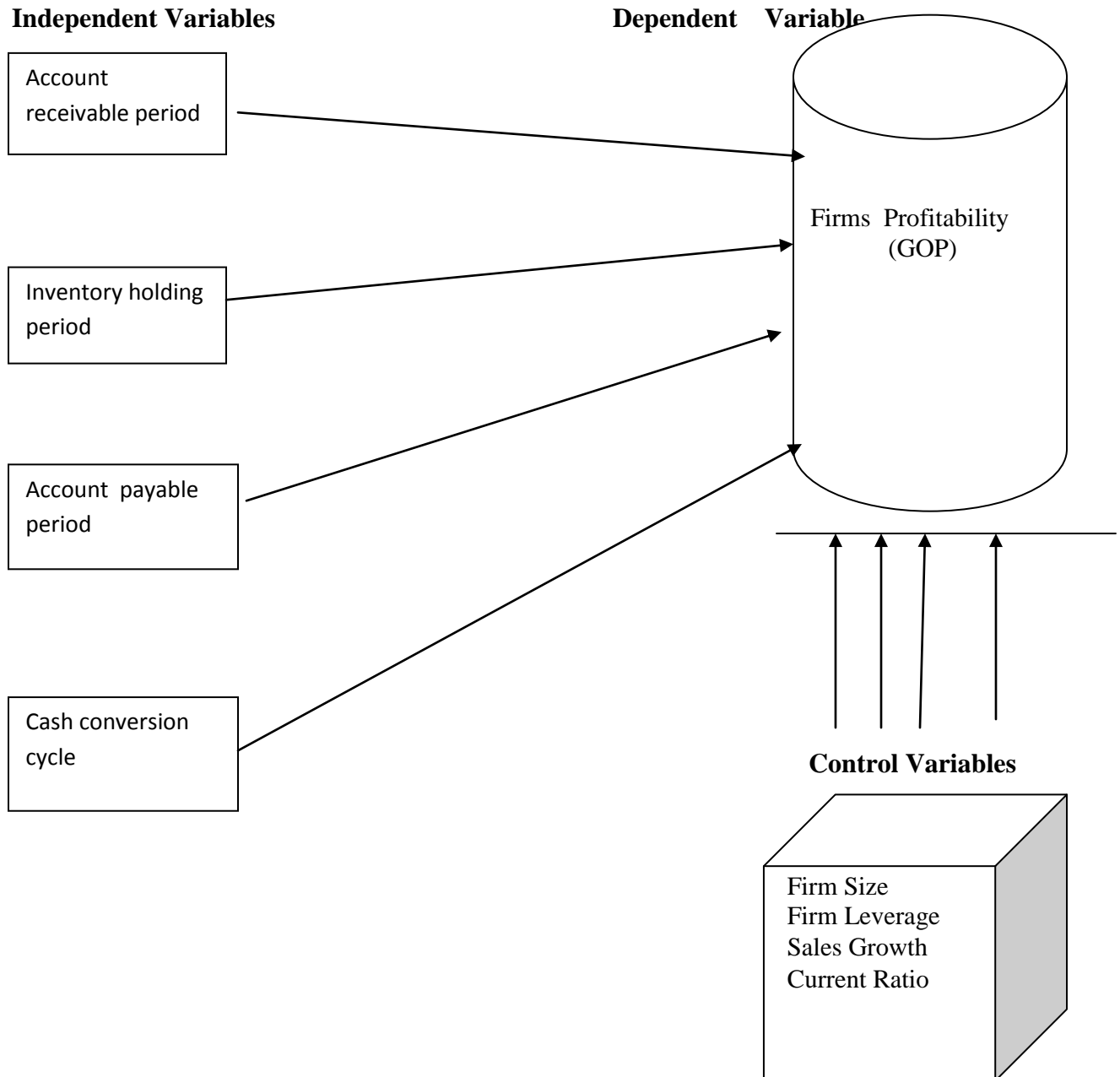
<b>S.no</b>	<b>Author</b>	<b>Result</b>
<b>1</b>	<b>Amarjit et al.</b>	Statistically significant relationship between the cash conversion cycle and profitability, measured through gross operating profit.
<b>2</b>	Deloof	Significant negative relationship between gross operating income and the number of days accounts receivable, inventories, and accounts payable of Belgian firms.
<b>3</b>	Mathuva	Highly significant negative relationship between (accounts collection period) and profitability, highly significant positive relationship between the period taken to convert inventories into sales, average payment period and profitability
<b>4</b>	Samiloglu & Demirqunes	Capital management policy significantly affects profitability of Turkish manufacturing firms.
<b>5</b>	Falope & Ajilore	Significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle.
<b>6</b>	Yadav & Kumar	Working capital management does not have a significant impact on profitability
<b>7</b>	Melita.C, Pertos.L and Halim.B	CCC and net trade cycle have positive relationship with the firm's profitability
<b>8</b>	Nor Edi & Noriza	significant negative relationships between working capital segments such as cash conversion cycles, current ratio, current asset to total asset ratio, current liabilities to total asset ratio and debt to asset ratio with firm's performance in terms of firm's value
<b>9</b>	Padachi	Inventory days and cash conversion cycle had positive relation with profitability. account receivables days and accounts payable days correlated negatively with profitability.
<b>10</b>	Makori & Jagongo	negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of day's payable
<b>11</b>	Ephrem	Cash conversion cycle and average collection period has negative impact on net operating profitability of a firm
<b>12</b>	Tiringo	A strong positive relationship between number of day's accounts payable and enterprises profitability
<b>13</b>	Niman	Statistical significance negative relationship between profitability and working capital management
<b>14</b>	Mifta	A significant negative relationship between average collection period and profitability , a negative relationship between inventory holding period with profitability and positive relationship between accounts payable period and profitability, a negative relationship between cash conversion cycle and profitability of the firm.

In summary, the literature review indicates that working capital management impacts or effects on the profitability of the firm but there still is ambiguity regarding the common effect of working capital management on firms' profitability that might serve as proxies of the effect of working capital management on firms' profitability and on the knowledge of the researcher identified there is no studied has done on the effect of working capital management on firms profitability on steel manufacturing company in Addis Ababa. Moreover, there is no empirical evidence to understand the effect of working capital management on firms' profitability on steel manufacturing firms and there is no study to be a literature for the field, it implies that there is knowledge gap on the above subject matter specifically on steel manufacturing firm in Addis Ababa. Due to the aforementioned reason and to fill the knowledge gap, the present study investigates the relationship between a set of such variables and the profitability of a sample of steel manufacturing firms under the research title the effect of working capital management on firm's profitability on steel company in Addis Ababa.

### 2.3 Conceptual Framework

The following figure presents schematic conceptual framework of the relationship between working capital management measures and profitability of firms.

Figure 2.2 Schematic conceptual frameworks



Source: Authors Design based on theoretical literature and empirical review

## **CHAPTER THREE**

### **3. RESEARCH METHODOLOGY**

This Chapter focuses on the research design and applicable methodology used for this research. The main purpose of this study is to examine the effect of Working Capital Components on firm's profitability of Steel Manufacturing firms' in Addis Ababa.

#### **3.1 Research Approach**

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. (Kthari,2004)

The concept of the research guides the researcher to know which type of research approach will be employed; qualitative, quantitative or mixed method. If research problem is to identifying the factors that influence an outcome then the quantitative approach is best (Creswell, 2002). This study was analyzed the selected steel manufacturing firms' financial statement to examined the effect of Working Capital Management on firm's profitability. Therefore, in order to achieve the objective stated in the preceding section, by considering the nature of the problem and the research perspective this study used quantitative method.

#### **3.2. Research Design**

A research design is a master plan that specifies the methods and procedures for collecting and analyzing needed information Zikmund et al. (2009). It is a plan that specifies the sources and types of information relevant to the research problem and also it is a strategy specifying which approach will be used for gathering and analyzing the data. Kothari (2004)

The choice of the research design is based on the objective of the study: the objective of the study was examining the effect of working capital management on steel manufacturing firms' in Addis Ababa. To achieve this objective the researcher used a type of explanatory research because its aim at explaining social relations or events, advancing knowledge about the structure, process and nature of social events, linking factors and elements of issues into general statements and building, testing or revising a theory. Adams et al., (2007)

The study employed quantitative research approach because the study examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures.

The design enables the researcher to identify the relationship that existed between the independent variables and the dependent variable. Examining data for the study required panel data analysis. Panel data (also known as cross-sectional and time-series data) is a dataset in which the behavior of entities is observed across time. In addition, Statistical E - views8 software used to process and analyze the data collected.

### **3.3 Target Population**

The total population of the research encompasses large tax payers steel manufacturing firms in Addis Ababa. Ministry of Revenues as declare the entry point into the large taxpayer category to start from companies who have an annual sales turnover greater than 27 million Birr accordingly there are 1242. In addition, According to Ministry of Revenues large tax payers' office (LTO), from 1242 large tax payers' organizations in Ethiopia, Manufacturing firms encompasses 323 in number as of 2017. This study was focused only on large tax payers steel manufacturing firms located in Addis Ababa. Therefore, target population of large tax payers steel manufacturing firms were 74. The reason chosen selected steel manufacturing firms is the selected sector took a lion share of contribution to economy growth to the county and also, they are large in number relatively from others manufacturing firms. The firms' location chosen due to there is a lot of firms found in city than other part of the country.

### **3.4. Research Sample Selection and Sample Size**

To select sample firms, the researcher was employed convenience and purposive sampling techniques. Convenience sampling involves drawing samples that are both easily accessible and willing to participate in a study. Purposive sampling techniques have also been referred to as non-probability sampling or purposeful sampling or "qualitative sampling." As noted above,

purposive sampling techniques involve selecting certain units or cases “based on a specific purpose rather than randomly” (Tashakkori & Teddlie, 2003).

The researcher involves such sampling, because of the following requirements. The first criterion that is used to select sample units and to be included in the study is the researcher considers steel manufacturing companies those are voluntary for study and can access their financial statement from third party. Secondly, the data for the study period of five years from 2013 – 2017 collected from secondary sources i.e. audited Annual reports of the companies, the period choose because of the intention to take latest data. As a result, continuity and homogeneity in the available data is a prerequisite for studying the effect of working capital management on profitability, hence those firms whose data are not available for the entire study period excluded from sample selection and those firms not willing to study and couldn't access from third party also excluded from sample and the last prerequisite to select as a sample is firms those have more than one hundred million turn over per annum.

The researcher, therefore, by considering the above-mentioned criteria selected and collected financial statements of sixteen steel manufacturing firms located in Addis Ababa covered for the fiscal period from 2013 to 2017.

Generalization is the ability of a statistical model to say something beyond the set of observations. If a model generalizes it is assumed that predictions from that model can be applied not just to the sample on which it is based, but to a wider population from which the sample is selected (Field, 2009). Therefore, based on the samples selected, researcher can generalize the finding to the population if the statistical models that used in the study are valid.

### **3.5. Type and Source of Data**

The data for the study were collected from secondary sources of the selected steel manufacturing firm financial statements. The required data obtained directly from the respective firms and from ministry of revenue large tax payers branch office. Copies of audited financial statements in the

form of income statement and statement of financial position over the period of five years from 2013 to 2017 has been reviewed and utilized during the study.

### **3.6. Data Analysis**

The research was applied econometrics model by using *E - views software*. Econometrics model may be defined as the quantitative model which analysis of actual economic phenomena based on the concurrent development of theory and observation, related by appropriate methods of inference (Gujarati 2004). Econometric model was used because it provides us numerical measure of the relationship between the dependent and independent(s) variables; hence it will show us the effect of working capital on steel firms profitability.

The selected secondary data was analyzed using descriptive statistics, and multiple regression analysis to ascertain the relationship between the independent variables of working capital components viz., ARP, IHP, APP and CCC and the dependent variable (Gross Operating Profit). The descriptive statistics enables us to describe (and compare) variables numerically by focusing on the central tendency and dispersion of the variables (Saunders et al., 2009). Accordingly, the descriptive statistics in terms of maximum, minimum, mean and standard deviation of the dependent, independent and control variables were computed and presented in a table.

To test the proposed hypotheses, statistical analyses carried out and the E – views 8 software was employed to analyze financial data. E – views 8 software multiple regression result has been determined to measure the relation of independent variables and dependent variable in terms of degree or magnitude association, direction of relation and whether the relation significant or not. Moreover, multiple regression analysis provides a tool that can quantify relationships between a dependent and one or more independent variable while at the same time it provides statistical control (Aaker et al., 2007). According to Kothari (2004), regression analysis is concerned with the study of how one or more variables affect changes in another variable. in addition, Ordinary least square regression method also was conducted in order to test the assumptions of classical linear regression model.

### **3.6 Description of Variables**

In this study, the choice of explanatory variables has been based on alternative theories related to working capital management and profitability and additional variables that were used in previous studies. The variables used in this study are based on the line as applied in previous research regarding the relationship between working capital management and Profitability. These variables are categorized as dependent, independent and control variables.

#### **3.6.1 Dependent Variables**

##### **Gross Operating Profit (GOP)**

However financial profitability can be measured by Return on Asset (ROA), Return on Equity and Gross operation profit but, in this study firms profitability measured by Gross operation profit.

Gross operating profit (GOP) that is a measure of profitability of firm is used as dependent variable. It is defined as sales minus cost of goods sold, and divided by total assets minus financial assets. The reason for using this variable is to associate operating “success” or “failure” with an operating ratio and relate this variable with other operating variables (e.g., cash conversion cycle). Furthermore, to exclude the participation of any financial activity from operating activity that might affect overall profitability. Therefore, we subtracted financial assets from total asset.

The reason not used Return on Asset and Return on Equity as a measure of firms’ profitability are, ROA is taking in to account the profit of other investments income such as income from investment in subsidiaries company as firms’ profit and the income included while calculating return on asset. ROE affected by the company choice of structure mean that the choice of using debt versus equity to fund operation.

Hence, in this study, the general form of the multiple regression model given below has been used (Aaker et al., 2007):

$$\mathbf{GOP}_{it} = \beta_0 + \sum_{i=1}^n \beta_1 \mathbf{X}_{it} + \varepsilon$$

**Where,**

**GOP<sub>it</sub>**= Gross operating profit of a firm *i* at time *t*; *i* = 1, 2, 3..., 13 firms.

**B<sub>0</sub>**= the intercept of equation

**X<sub>it</sub>**= the different independent variables (ARP, IHP, APP & CCC) for WCM of firm *i* at time *t*.

*t* = time from 1, 2..., 5 years and

**ε** = error term

### **3.6.2. Independent Variables and their Measurements**

The working capital components include: Account receivable period (ARP), Inventory holding period (IHP), Account payable period (APP), and Cash Conversion Cycle (CCC). As a result, Cash Conversion Cycle is measured the source of three parts; Number of Days Sales Outstanding, Inventory Conversion Period and Number of Days Payable Outstanding. All these parts of CCC help to examine the gathering, inventory conversion and policy of the payment on sectorised basis.

#### **Account Receivable Period (ARP)**

The Account receivable period calculation, also called Days Sales Outstanding or days' sales in receivables, measures the number of days it takes a company to collect cash from its credit sales. This calculation shows the liquidity and efficiency of a company's collections department. In other words, it shows how well a company can collect cash from its customers. The sooner cash can be collected, the sooner this cash can be used for other operations. Both liquidity and cash flows increase with a lower day's sales outstanding measurement. To Calculate:

$$\text{Account Receivable Period (ARP)} = \frac{\text{Account receivable}}{\text{Sales}} \times 365$$

#### ***Inventory Holding Period (IHP)***

Inventory holding period measures the number of days inventory is held by the company before it is sold. It is average number of days to convert raw materials into finished products and then selling them to customers. Inventory period is calculated by dividing average inventory by average sales per day. The smaller number of days sales in inventory indicates that inventory does not remain in warehouses or on shelves but rather turns over rapidly from the time of acquisition to sale (Fried *et al*, 2003). This ratio is measured as follows:

$$\text{Inventory Holding Period (IHP)} = \left( \frac{\text{Inventory}}{\text{Cost of goods sold}} \right) \times 365 \text{days}$$

### Account Payable Period (APP)

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

To calculate APP

$$\text{Account Payable Period (APP)} = \left( \frac{\text{Accounts Payable}}{\text{Cost of goods sold}} \right) \times 365$$

### Cash Conversion Cycle (CCC)

The Cash Conversion Cycle (CCC) used as a comprehensive measure of working capital management is another independent variable, and is measured by deducting Average Payment Period from Average Collection Period. To calculate CCC the researcher uses the following formula:

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

Therefore, to test the hypotheses of the study, the following 4 models were used to analyze the relationship between the above variables:

**The First Model:** the first hypothesis test model; the relation between The Account receivable period (ARP) and profitability:

$$Y_{it} = a + \beta_1(\text{ARP})_{it} + \beta_2(\text{FS})_{it} + \beta_3(\text{FL})_{it} + \beta_4(\text{SG})_{it} + \beta_5(\text{CR})_{it} + e$$

**The Second Model:** the second hypothesis test model; the relation between Inventory holding period (IHP) and profitability

$$Y_{it} = a + \beta_1(\text{IHP})_{it} + \beta_2(\text{FS})_{it} + \beta_3(\text{FL})_{it} + \beta_4(\text{SG})_{it} + \beta_5(\text{CR})_{it} + e$$

**The Third Model:** the third hypothesis test model; the relation between Account payable period inventory conversion period (ICP) and profitability:

$$Y_{it} = a + \beta_1(\text{APP})_{it} + \beta_2(\text{FS})_{it} + \beta_3(\text{FL})_{it} + \beta_4(\text{SG})_{it} + \beta_5(\text{CR})_{it} + e$$

**The Fourth Model:** the fourth hypothesis test model; the relation between Cash Conversion Cycle (CCC) and profitability:

$$Y_{it} = a + \beta_1(CCC)_{it} + \beta_2(FS)_{it} + \beta_3(FL)_{it} + \beta_4(SG)_{it} + \beta_5(CR)_{it} + e$$

**Where:**

Y= Gross Operating Profit (Profitability)

a = Constant term for the independent variables

ARP = Account Receivable Period

IHP = Inventory Holding Period

APP = Account Payable Period

CCC = Cash Conversion Cycle

FS= Firm Size

FL= Firm Leverage

SG= Sales Growth

CR=Current Ratio

e = the error term

$\beta$  = Regression model coefficient

### **3.6.3. Control Variables**

There are other factors which may affect firms' financial profitability but, these variables which do not directly related to the researcher questions or hypothesis are called control variable. (Zenay ,2018)

In order to enhance the validity of the model and to have a reliable analysis of the effect of working capital management on profitability of the firms, the study used some control variables which have effect on firm's profitability. The control variables used in the study are:

#### ***Firm size (FS):***

The companies which have more sales naturally have more profitability too. So, the company size variable will be used to control the effect of this. Firm size as measured by natural logarithm of sales, the main reason the researcher uses natural logarithm of sales are the original value of total sales may disturb the analysis and sales differ from company to company, and making the

numbers more comparable. (Fabozzi and Peterson, 2003). Firm size will be used as one of the control variables for the study.

**Firm Leverage (FL):**

As measured by debt ratio which is calculated by total debt to total asset Fabozzi and Peterson (2003) to keep debt utilization effect constant, firm leverage was used as control variable.

**Sales Growth (SG):**

The sale growth is a part of control variable and it's measured by [(current year sales-last year sales) /last year sales] will used as control variables. This control variable is consistent with the like of (Deloof, 2003); (Afzaand Nazir, 2007).

**Current Ratio (CR):**

The companies with more Liquidity have more profitability, so Liquidity variable was used as control variable in order to make its effect on profitability neutral. Current ratio was used as Liquidity criterion.

$$\text{CR} = \frac{\text{Current Asset}}{\text{Current Liability}}$$

**3.7 Summary of the Chapter**

This chapter described the methodological approaches to address the study problems. The chapter started by describing how the design of the research was made. Then, the source and procedure of the data collection was described. Next, the population of the study area as and the techniques used to draw a sample are mentioned. After then, the method of data analysis and the variables used in the study was described. The study further made the model specifications used to analyses the effect of working capital management on profitability.

## **CHAPTER FOUR**

### **4. DATA ANALYSIS, RESULTS AND DISCUSSION**

This chapter presents and discusses the empirical results of the effect of working capital management on firm's profitability. The study provided two types of data analysis; namely descriptive analysis and inferential analysis. First, the results of descriptive statistics which shows the relevant phenomena of variables such as maximum, minimum, mean and standard deviation of variables used in the study were presented. For the inferential analysis, a regression result which outlines an in-depth examination of the relationship between profitability and the various variables under consideration were discussed and attempts to test the hypothesis.

#### **4.1 Descriptive Statistics for the Study Variables**

In this section the results from descriptive statistics was discussed. Table 4.1 below presented descriptive statistics of the dependent and independent variables of the study. It shows the mean and standard deviation of the variables used in the study. In addition, it shows the minimum and maximum values of each respective variable which essentially gives an indication of how wide ranging each respective variable can be.

#### 4.1.1 Summary of Descriptive Statistics

The descriptive statistics parameters: Mean, median, minimum, maximum and standard deviations are used to summarize and interpret some properties of the dependent and independent variables.

Table 4.1: Descriptive statistics

	GOP	ARP	IHP	APP	CCC	FS	FL	SG	CR
Mean	0.193278	62.38235	122.7678	94.87561	90.27453	19.17073	0.441524	0.214243	3.559303
Maximum	0.615623	227.0431	267.2667	325.2364	273.4885	20.86272	0.946776	1.269186	15.18486
Minimum	-0.064635	5.503810	10.34926	12.47427	16.31758	17.58655	0.036342	-0.375858	0.716814
Std. Dev.	0.136151	49.45935	60.62448	56.20386	58.19474	0.859760	0.210628	0.315723	2.787373
Observations	80	80	80	80	80	80	80	80	80

Table 4.1 presents descriptive statistics for 16 steel manufacturing firms' in Addis Ababa for a period of five years from 2013 to 2017. The study has used nine variables for the analysis purpose which was classified into eight independent variables and one dependent variable.

The dependent variable which measures the profitability of the firm is gross operating income. Out of eight independent variables, four are (accounts receivable period, inventory holding period, accounts payable period and cash conversion cycle) proxies for profitability of the sample firms. The remaining four independent control variables used are firm size as measured by natural logarithm of sales, leverage of the firms, sales growth rate measured by the relative change in sales as compared to previous year and current ratio which measures liquidity.

As it is shown in table 4.1, the mean value of gross operating profit around 19.32 percent and standard deviation is 13.61 percent. It means that value of profitability can deviate from mean to both sides by 13.61percent. The minimum value of gross operating profit is -6.46 percent while the maximum is 61.56 percent.

Firms under the study receive payment on sales on average of 62 days and it can vary by 49 days to both sides of the mean value. The minimum and maximum account receivable period for the sampled firms is 6 and 227 days respectively.

The descriptive statistics show that it takes on average of 123 days to sell inventory. The standard deviation of inventory holding period is 61 days with 10 and 267 days as minimum and maximum values respectively. On average, firms wait 95 days to pay for their purchases. Its standard deviation for the firms under study is 56 days which deviates from both sides of the mean value. The accounts payable period ranges from 12 to 325 days to pay their credit purchases.

The cash conversion cycle, used as a comprehensive measure of working capital management has an average 90 days and the standard deviation of 58 days. The minimum value of the cash conversion cycle shows 16days and on the other way, the maximum time for the cash conversion period is 273days.

Table 4.1 also includes the descriptive statistics of control variables used in the study. Firm size, as measured by the natural logarithm of annual sales, is 19.17 on average and standard deviation

is 0.86. The minimum and maximum values of firm size for the firm measured by natural logarithm of annual sales are 17.58 and 20.86 respectively.

The results of descriptive statistics show that the average leverage ratio for the steel manufacturing firms is 44 percent with a standard deviation of 21 percent. The maximum debt financing used by the firm is 94.67 percent and its minimum level is 3.63 percent. This shows that there is a firm that uses extreme high debt and extreme little debt in its operation. The other control variable, the firm sales growth measured by changes in annual sales has an average of 21.42% and there is a deviation of 31.57 percent from mean value of sales growth to both directions. The sales growth among the study firms is ranged from -37.58 percent to 126.91 percent.

Lastly, A traditional measure of liquidity (current ratio) shows that on average steel manufacturing firms keep current assets at 3.55 times current liabilities with a standard deviation of 2.78. The highest current ratio for a firm in the study period is 15.18, with the lowest at 0.71.

#### **4.4 Model Selection Criteria (Random vs. Fixed Effect Model)**

There are broadly two classes of panel estimator approaches that can be employed in financial research: fixed effects models and random effects models. The simplest types of fixed effects models allow the intercept in the regression model to differ cross-sectionally but not over time, while all of the slope estimates are fixed both cross-sectionally and over time. In this research the method used in the model is selected based on the Correlated Random Effects-Hausman Test. The Hausman test that examines whether the unobservable heterogeneity term is correlated with explanatory variables, while continuing to assume that repressors are uncorrelated with the disturbance term in each period. The pooled regression assumes that the intercepts are the same for each firm. This may be an inappropriate assumption; (Brooks, 2014) recommended that we could instead estimate a model with firm fixed effects, which will allow for latent firm specific heterogeneity. The p-value for the test is less than 1%, the random effects model is not appropriate and that the fixed effects specification is to be preferred, Brooks (2014).

The below table 4.2 shown that all models p-value for the test of random effects model are less than 1%, it indicating that the random effects model is inappropriate so that the fixed effects

specification is to be preferred. According to the results presented below the study adopt fixed effects model is appropriate.

Table 4.2 Redundant fixed effect test

**Model 1: GOP C ARP FS FL SG CR**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.894036	5	0.0008

**Model 2: GOP C IHP FS FL SG CR**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

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Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	24.889068	5	0.0001

**Model 3: GOP C APP FS FL SG CR**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	21.363173	5	0.0007

**Model 4: GOP C CCC FS FL SG CR**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	30.465913	5	0.0000

## 4.5 Diagnostic Tests

Diagnostic tests are robust statistical tests carried out to verify if the data used have met the assumptions underlying the ordinary least squares regression and where possible to remove problems associated with panel data. The diagnostic tests carried out in the study are detailed below.

### 4.5.1 Mean Value of the Error is Zero, $E(u_t)=0$

The first assumption asserts that the average value of the error/disturbance must be zero. As per Brooks (2014) if a constant term is included, this assumption will never be violated. Accordingly, the constant term is included in models, so as to ensure validity of the estimation result of the OLS. This is basically meant to avoid the biasedness that might be created by the model where it can explain more variation in the explained variable than the explanatory variables and the potentially biases in the coefficient of estimates of the variables.

### 4.5.2 Test of Homoscedasticity, $\text{var}(u_t) = \sigma^2 < \infty$

It is also assumed that the variance of the errors is constant,  $\sigma^2$ , this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, they are said to be heteroskedasticity. Therefore, the assumption is verified whether it is valid in the regressed model or not. The study used the popular standard tests of heteroskedasticity which is the White 's test.

H0: The model is Homoscedastic

H1: The model is Heteroskedastic

Decision Rule: Reject H0 if p-value less than significance level. Otherwise, do not reject H0.

### Table 4.3 White Test for Heteroskedasticity

#### Model 1: GOP C ARP FS FL SG CR

Heteroskedasticity Test: White

F-statistic	1.503594	Prob. F(5,74)	0.1991
Obs*R-squared	7.377974	Prob. Chi-Square(5)	0.1940
Scaled explained SS	6.890254	Prob. Chi-Square(5)	0.2289

### Model 2: GOP C IHP FS FL SG CR

Heteroskedasticity Test: White

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F-statistic	0.652576	Prob. F(5,74)	0.6604
Obs*R-squared	3.378470	Prob. Chi-Square(5)	0.6419
Scaled explained SS	2.697991	Prob. Chi-Square(5)	0.7464

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### Model 3 :GOP C APP FS FL SG CR

Heteroskedasticity Test: White

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F-statistic	1.206099	Prob. F(5,74)	0.3148
Obs*R-squared	6.028198	Prob. Chi-Square(5)	0.3035
Scaled explained SS	4.335730	Prob. Chi-Square(5)	0.5022

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### Model 4 :GOP C CCC FS FL SG CR

Heteroskedasticity Test: White

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F-statistic	0.884849	Prob. F(5,74)	
Obs*R-squared	4.513141	Prob. Chi-Square(5)	
Scaled explained SS	4.285264	Prob. Chi-Square(5)	

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According to Brooks (2014) the three types of test (F- version,  $\chi^2$  and scaled explained SS) can give the information to determine this assumption violated or not. The p-value for the three tests should be greater than 0.05 in order to conclude that heteroscedasticity problem does not exist. Thus by refereeing the above results do not reject the null hypothesis it means that there is no significance evidence for existence of correlation between explanatory variables and disturbance term.

#### 4.5.3 Test of Autocorrelation: $cov(u_i, u_j)=0$

The covariance between the error terms over time (or cross-sectionally, for that type of data) is zero. In other words, it is assumed that the errors are uncorrelated with one another. If the errors

are not uncorrelated with one another, it would be stated that they are ‘autocorrelated’ or that they are ‘serially correlated’. A test of this assumption is therefore required. (Brooks,2014).The study employed the DW test and BG test to assure autocorrelation assumption is violated or not.

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 (2014), 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 repressors (excluding the constant this time) you had in the model.

The study used the dL and dU values for 80 observations. As per the DW table in the appendix 5, for 80 observations with 5 explanatory variables at 1% level of significance, the dL and dU values are 1.364 and 1.624 respectively. The DW of the regression is summarized as follow.

Table 4.4: No Auto correlation test

Model	DW	dL	Du	No autocorrelation region (dU to 4-dU)
I	2.06	1.364	1.624	1.624-2.376
II	1.88	1.364	1.624	1.624-2.376
III	2.05	1.364	1.624	1.624-2.376
IV	1.93	1.364	1.624	1.624-2.376

DW is a test only of whether consecutive errors are related to one another and it couldn't test the second and above autocorrelation of the residual. Therefore, it is desirable to examine a joint test for autocorrelation that will allow examination of the relationship between  $\hat{u}_t$  and several of its

lagged values at the same time. The Breusch–Godfrey test is a more general test for autocorrelation up to the  $r^{\text{th}}$  order. (Brooks,2014)

The study also tested the second order and above autocorrelation among error terms through the Breush-Godfrey series correlation LM test and the result as follows.

The null hypothesis: The values of all the relation coefficients are simultaneously zero.

### **Model 1: GOP C ARP FS FL SG CR**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.666183	Prob. F(5,68)	0.1546
Obs*R-squared	8.622225	Prob. Chi-Square(5)	0.1251

### **Model 2: GOP C IHP FS FL SG CR**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.295826	Prob. F(5,68)	0.0547
Obs*R-squared	11.40993	Prob. Chi-Square(5)	0.0438

### **Model 3: GOP C APP FS FL SG CR**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.677797	Prob. F(5,68)	0.1518
Obs*R-squared	8.675726	Prob. Chi-Square(5)	0.1227

### **Model 4: GOP C CCC FS FL SG CR**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.331662	Prob. F(5,68)	0.0515
Obs*R-squared	11.56196	Prob. Chi-Square(5)	0.0413

As revealed the above table DW value in all models leaved in the no auto correlation region and BG serial autocorrelation LM test result presented the p values of f statistic are above 5% so, the null hypothesis do not reject that the current error is not related to any of its r previous values,

The conclusion from DW test result and BG serial autocorrelation LM test is the null hypothesis of no autocorrelation do not reject it means that there is no significant evidence for the existence of the relation among the error terms.

Hence all the models used in this study have no Auto correlation.

#### 4.5.4. Test of Multicollinearity $cov(x_i, x_j)=0$

Explanatory variables in regression should not be very highly correlated with each other when these variables highly correlated each other this is a problem which is known as multicollinearity. According to Jeeshim and Kucc(2002) Multicollinearity is a high degree of correlation (linear dependency) among several independent variables. It is commonly occurred when large numbers of independent variables are incorporate in a regression model. It is because some of them may measure the same concepts or phenomena. Brooks (2014) the correlation between explanatory variables will be non-zero, although this will generally be relatively benign in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. To test a multicollinearity problem among the independent variable's correlation matrix constructed using E-Views was used. (Kennedy, 2008) suggested that any correlation coefficient above 0.8 could cause a serious multicollinearity problem. As it appears in the correlation matrix in the below tables all the matrix of correlations are less than the stated value. Thus, there is no high correlation among independent variables.

Table 4.5: Multicollinearity Test Result (ARP FS FL SG CR)

	ARP	FS	FL	SG	CR
ARP	1.000000	-0.213379	-0.094899	0.157519	0.070094
FS	-0.213379	1.000000	0.293544	0.177133	-0.158289
FL	-0.094899	0.293544	1.000000	-0.255549	-0.331798
SG	0.157519	0.177133	-0.255549	1.000000	0.047817
CR	0.070094	-0.158289	-0.331798	0.047817	1.000000

Table 4.6: Multicollinearity Test Result (IHP FS FL SG CR)

	IHP	FS	FL	SG	CR
IHP	1.000000	-0.207698	0.215803	-0.090438	-0.253606

FS	-0.207698	1.000000	0.293544	0.177133	-0.158289
FL	0.215803	0.293544	1.000000	-0.255549	-0.331798
SG	-0.090438	0.177133	-0.255549	1.000000	0.047817
CR	-0.253606	-0.158289	-0.331798	0.047817	1.000000

Table 4.7: Multicollinearity Test Result (APP FS FL SG CR)

	APP	FS	FL	SG	CR
APP	1.000000	-0.077707	0.250192	-0.122213	-0.233142
FS	-0.077707	1.000000	0.293544	0.177133	-0.158289
FL	0.250192	0.293544	1.000000	-0.255549	-0.331798
SG	-0.122213	0.177133	-0.255549	1.000000	0.047817
CR	-0.233142	-0.158289	-0.331798	0.047817	1.000000

Table 4.8: Multicollinearity Test Result (CCC FS FL SG CR)

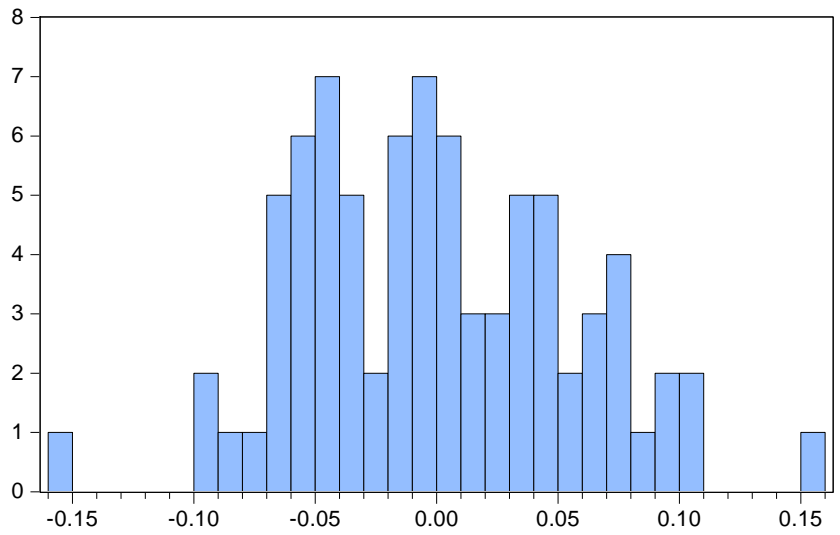
	CCC	FS	FL	SG	CR
CCC	1.000000	-0.322220	-0.097765	0.157768	0.020927
FS	-0.322220	1.000000	0.293544	0.177133	-0.158289
FL	-0.097765	0.293544	1.000000	-0.255549	-0.331798
SG	0.157768	0.177133	-0.255549	1.000000	0.047817
CR	0.020927	-0.158289	-0.331798	0.047817	1.000000

#### 4.5.5: Normality Test: $ut \sim N(0, \sigma^2)$

Normality test conducted to find out whether the errors are normally distributed or not. Normally distributed residual has bell-shaped histogram. The Bera-Jarque test in E-view was used to identify the residual normality distributed or not. The test result p-value stated at the bottom of the table should not be significant i.e. it should be larger than 0.05 to not reject that the null hypothesis state residuals are normally distributed.

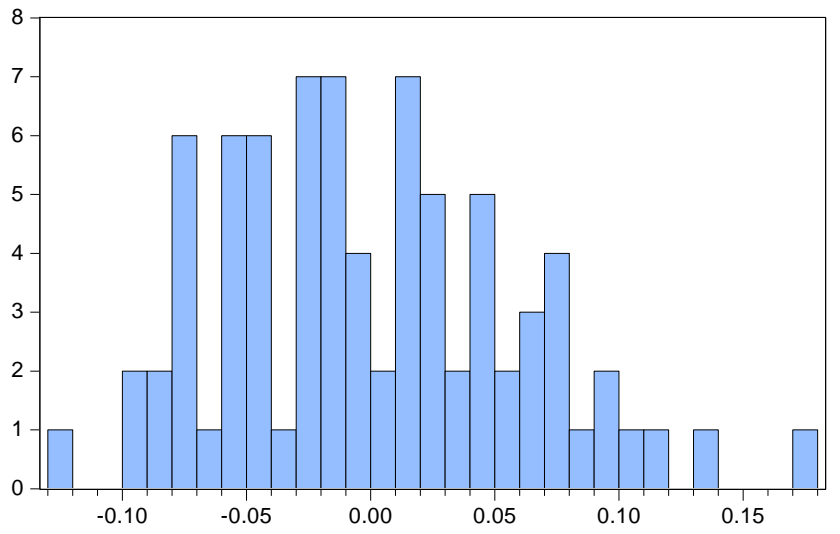
Table 4.9 Normality Test

#### Model 1: GOP C ARP FS FL SG CR



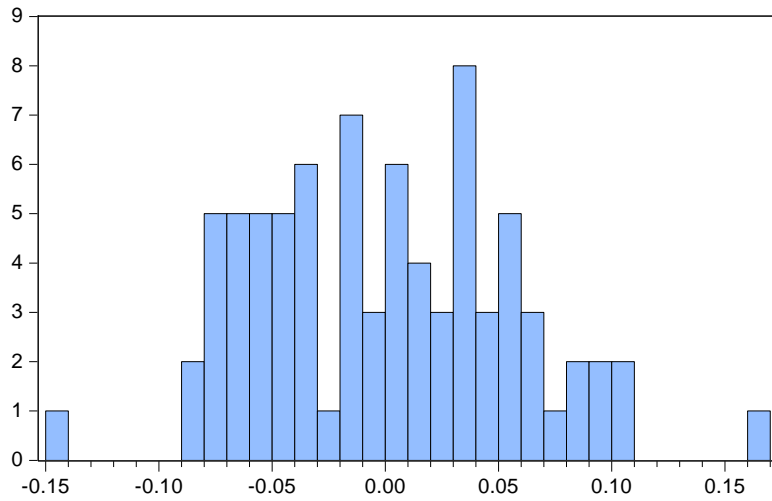
Series: Standardized Residuals	
Sample 2013 2017	
Observations 80	
Mean	3.47e-18
Median	-0.004104
Maximum	0.155544
Minimum	-0.157279
Std. Dev.	0.056711
Skewness	0.172571
Kurtosis	2.934611
Jarque-Bera	0.411327
Probability	0.814107

**Model 2: GOP C IHP FS FL SG CR**



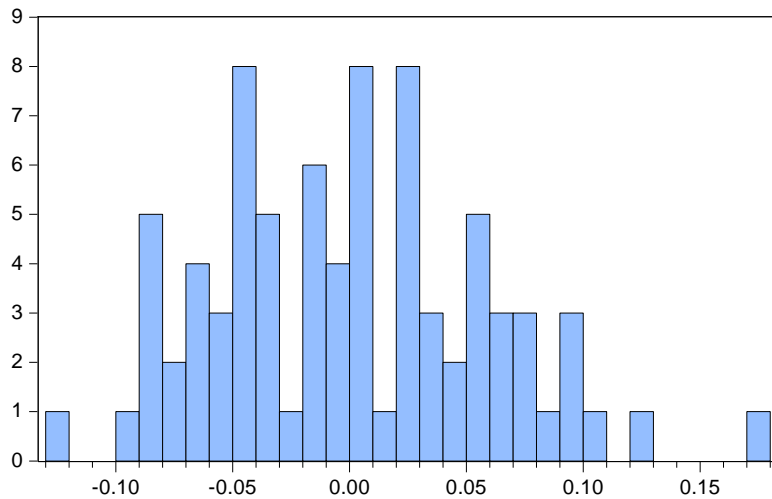
Series: Standardized Residuals	
Sample 2013 2017	
Observations 80	
Mean	1.21e-17
Median	-0.007993
Maximum	0.176146
Minimum	-0.129950
Std. Dev.	0.059437
Skewness	0.405820
Kurtosis	2.873056
Jarque-Bera	2.249578
Probability	0.324721

**Model 3: ROP C APP FS FL SG CR**



Series: Standardized Residuals	
Sample 2013 2017	
Observations 80	
Mean	1.39e-17
Median	7.06e-05
Maximum	0.163029
Minimum	-0.145252
Std. Dev.	0.056770
Skewness	0.216242
Kurtosis	2.801623
Jarque-Bera	0.754652
Probability	0.685693

**Model 4: GOP C CCC FS FL SG CR**



Series: Standardized Residuals	
Sample 2013 2017	
Observations 80	
Mean	2.26e-17
Median	-0.000129
Maximum	0.178423
Minimum	-0.122973
Std. Dev.	0.058822
Skewness	0.406928
Kurtosis	2.867176
Jarque-Bera	2.266681
Probability	0.321956

As reveal the above result, in all normality test result the p-value of Jargue-Bera is above significant level 5%. Thus, do not reject that the null hypothesis state residuals are normally distributed.

## 4.6 Regression Results

Descriptive statistics and diagnostic tests presented in the previous sections, here the regression results and analysis of the effect of working capital management components on steel manufacturing firm profitability are presented.

The study examines the variable which is profitability, measured by gross operating profit against the four independent variables and four control variables. Consistent with Garcia-Teruel and Martinez-Solano (2006) and Mathuva (2010), the study estimates determinants of firm's profitability using ordinary least squares in which four regression models have been run in order to investigate the effect of management of working capital on firm's profitability

### 4.6.1 Regression Result of Model Specification I

Model specification I regressed effect of accounts receivable period on GOP.

$$\text{Model 1: } \text{GOPit} = \beta_0 + \beta_1(\text{AR Pit}) + \beta_2(\text{FSit}) + \beta_3(\text{FLit}) + \beta_4(\text{SGit}) + \beta_5(\text{CRit}) + \epsilon_{it}$$

**Table 4.10 Regression results of profitability measures and ARP**

Dependent Variable: GOP

Method: Panel Least Squares

Date: 01/14/19 Time: 11:19

Sample: 2013 2017

Periods included: 5

Cross-sections included: 16

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.763818	0.514157	-1.485573	0.1427
ARP	-0.001061	0.000395	-2.688205	0.0093
FS	0.049379	0.026555	1.859533	0.0679
FL	0.170371	0.075862	2.245799	0.0285
SG	0.018202	0.032636	0.557725	0.5791
CR	-0.000694	0.000853	-0.812941	0.4195

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.781384	Mean dependent var	0.191011
Adjusted R-squared	0.707277	S.D. dependent var	0.138128
S.E. of regression	0.074733	Akaike info criterion	-2.129285
Sum squared resid	0.329514	Schwarz criterion	-1.504003
Log likelihood	106.1714	Hannan-Quinn criter.	-1.878592
F-statistic	10.54399	Durbin-Watson stat	2.063742
Prob(F-statistic)	0.000000		

Source: E-views output results and author's computation 2013-2017

Table 4.2 reveals the summary statistics of regression specification 1. The explanatory power of the model as can be seen is that the adjusted R squared values are equal to 70 percent. This implies that 70 percent of the variation in the gross operating profit can be explained by the change of explanatory variables used in the model. Adjusted  $R^2$  is desirable to have some measure of how well the regression model actually fits the data. (Brooks,2014).

The Adjusted R-squared values in this study are found to be sufficient enough to infer that the regression model actually fits the data. The p- value of F statistic indicate that all variables simultaneously have statically significant effect on gross operating profit and the relation is significant at 1% level since the F-statistic p-value is 0.000.

The regression results in table 4.2 indicate that the coefficient of the intercept is -0.76 std error is 0.51 and p-value is 0.14, it refers that if all variables which are used in the model are zero, the GOL will be by 0.76 percent but amount will vary by 0.51 percent up and down and its insignificant at 5% of significant level.

HP1: Account receivable period have significant negatively related to a firm's profitability.

The regression results for the ARP implies holding other variables constant every one day change (increase or decrease) in days sales receivable will change by 0.001 percent in gross operating profit in the opposite direction and the GOP will vary by 0.00039 percent and statistically significant at 1% .The finding is in line with findings of Deloof

(2003) ,Mathuva(2010),Fabozzi and Peterson (2003),Falope and Ajilore(2009),Nor Edi and Noriza (2010),Padachi (2006) and Mifta (2016) and empirical results of this study show a significant negative relationship between accounts receivable period and steel firms profitability. This negative relationship indicates that slow collection of accounts receivables is correlated with low profitability. The above analysis is similarly with Fabozzi and Peterson (2003) who mentioned that increase in accounts receivable brought bad debt while increasing sales. Therefore, whenever collection period increases bad debt increases and hence profitability will full down and vice versa.

The size of a company shows a positive relationship with profitability which is holding the others variables constant if the firm size increase by one percent the firm profitability will be increased by 0.049 percent but insignificant at 5 % level.

On the other hand, firm leverage indicates a one percent increase in leverage associated with a increase in gross operating profitability of 0.17 percent and it is statistically significant at 5 % significant level. Likewise, other variables remain constant when sales growth increase by one percent gross operation profit of steel manufacturing firms will increase by 0.018 percent but the relation is statically insignificant at 5 %.

The regression result for current ratio (CR) which is a traditional measure of liquidity implies a percent increase in current ratio is associated with an increase in 0.069 percent but statistically insignificant.

The results from regression model specification I are used to determined hypothesis stated in chapter one as shown in 1.4 section. The first research hypothesis was that account receivable period have significant negatively related to a firm's profitability. In conformity with hypothesis, the finding of the study shown account receivable period has significant negative effect on gross operating profit, which is a measurement of profitability and a relation is statically significant at 5% level. Therefore, the null hypothesis is consistent with study finding and can be conclude that hypothesis one is not reject.

#### **4.6.2 Regression Result of Model Specification II**

Model specification II regressed effect of inventory holding period on GOP.

$$\text{Model 2: } \text{GOPit} = \beta_0 + \beta_1(\text{IHPit}) + \beta_2(\text{FSit}) + \beta_3(\text{FLit}) + \beta_4(\text{SGit}) + \beta_5(\text{CRit}) + \epsilon_{it}$$

Table 4.11 Regression results of profitability measures and IHP

Dependent Variable: GOP

Method: Panel Least Squares

Date: 01/14/19 Time: 11:28

Sample: 2013 2017

Periods included: 5

Cross-sections included: 16

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.060255	0.565964	-1.873362	0.0660
IHP	4.37E-05	0.000240	0.182238	0.8560
FS	0.060961	0.029052	2.098315	0.0402
FL	0.170536	0.080671	2.113986	0.0388
SG	0.019512	0.035178	0.554681	0.5812
CR	-0.000180	0.000958	-0.188256	0.8513

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.754746	Mean dependent var	0.191011
Adjusted R-squared	0.671609	S.D. dependent var	0.138128
S.E. of regression	0.079155	Akaike info criterion	-2.014305
Sum squared resid	0.369666	Schwarz criterion	-1.389023
Log likelihood	101.5722	Hannan-Quinn criter.	-1.763612
F-statistic	9.078328	Durbin-Watson stat	1.885194
Prob(F-statistic)	0.000000		

Source: E-views output results and authors' computation 2013-2017

Table 4.11 reveals the summary statistics of regression specification II. The explanatory power of the model as can be seen is that the adjusted R squared values are equal to 67.16 percent. This implies that 67.16 % of gross operating profit variability is explained by the change of explanatory variables. The Adjusted R-squared values in this study are found to be sufficient enough to infer that the fitted regression line is very close to the data. I assured that the model containing the explanatory variables can explain variations in the dependent variable.

Prob(F-Statistic) indicate that all explanatory variables are jointly have significant effect on gross operating profit and the relationship is statically significant at 1% level as P (F-stat) value is zero.

The regression results in table 4.2 indicate that the coefficient of the intercept is -1.06, std error is 0.56 and p-value is 0.06, it refers that if all variables which are used in the model are zero, the GOL will be by 1.06 percent but amount will vary by 0.56 percent up and down and its insignificant at 5% of significant level.

HP2: Inventory holding period of a firm is significant negatively related to a firm's profitability.

The regression results for inventory holding period in table 4.11 implies keeping other things constant, a everyone-day change (increase or decrease) on inventory holding period will change in gross operating profit by 0.000043 percent in the same direction with a possibility of the amount deviation of 0.00024 up and down but statistically insignificant at 5% significant level. However The results of the study are statistically insignificant, it is consistent with the results of

the studies conducted by Mathuva(2009), Padachi (2006), Makori & Jagongo(2006) Tirgo. (2013), on the other side some of the researchers such as Deloof(2006),Falope & Ajilore(2003)and Mifta (2016) in their respective analysis found contradiction result which is negative relationship between profitability and number of days of inventory..

The size of a company shows a positive relationship with profitability which is holding the others variables constant if the firm size change (increase or decrease) by one percent the firm profitability will be change by 0.06 percent in the same direction but significant at 5 % level.

On the other hand, firm leverage indicates a one percent change in leverage associated with a change in gross operating profitability in the same direction by 0.17 percent and it is statistically significant at 5 % significant level. Likewise, other variables remain constant when sales growth change by one percent the gross operation profit of steel manufacturing firms will change by 0.00018 percent in same direction but the relation is statically insignificant at 5 %.

The results from regression model specification II are used to determined hypothesis stated in chapter one as shown in 1.4 section. The second research hypothesis was that inventory holding period have significant negatively related to a firm's profitability. To confirm the finding with hypothesis, the finding of the study shown inventory holding period has positive effect on gross operating profit, which is a measurement of profitability but the relation is statically insignificant at 5% level. Therefore, the null hypothesis is inconsistent not confirmed with study finding and can be conclude that hypothesis two is reject.

#### **4.6.3 Regression Result of Model Specification III**

Model specification III regressed effect of accounts payable period on GOP.

$$\text{Model 3: } \text{GOP}_{it} = \beta_0 + \beta_1(\text{APP}_{it}) + \beta_2(\text{FS}_{it}) + \beta_3(\text{FL}_{it}) + \beta_4(\text{SG}_{it}) + \beta_5(\text{CR}_{it}) + \varepsilon_{it}$$

#### **Table 4.12 Regression results of profitability measures and APP**

Dependent Variable: GOP

Method: Panel Least Squares

Date: 01/14/19 Time: 11:33

Sample: 2013 2017

Periods included: 5

Cross-sections included: 16

Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.890371	0.512365	-1.737766	0.0875
APP	-0.000495	0.000201	-2.458056	0.0169
FS	0.054598	0.026601	2.052521	0.0446
FL	0.189865	0.076898	2.469067	0.0165
SG	0.013177	0.033061	0.398557	0.6917
CR	-0.000715	0.000866	-0.825558	0.4124

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.777403	Mean dependent var	0.191011
Adjusted R-squared	0.701947	S.D. dependent var	0.138128
S.E. of regression	0.075410	Akaike info criterion	-2.111239
Sum squared resid	0.335515	Schwarz criterion	-1.485957
Log likelihood	105.4496	Hannan-Quinn criter.	-1.860545
F-statistic	10.30266	Durbin-Watson stat	2.053468
Prob(F-statistic)	0.000000		

Source: E-views output results and author's computation 2013-2017

Table 4.12 reveals the summary statistics of regression specification III. The explanatory power of the model as can be seen is that the adjusted R squared values are equal to 70 percent. This implies that 70 percent of the variation in the gross operating expense can be explained by the change of explanatory variables used in the model. Adjusted  $R^2$  is desirable to have some measure of how well the regression model actually fits the data. (Brooks,2014). The Adjusted R-squared values in this study are found to be sufficient enough to infer that the regression model actually fits the data. The p- value of F statistic indicate that all variables simultaneously have statically significant effect on gross operating profit and the relation is significant at 1% level since the F-statistic p-value is 0.000.

The regression results in table 4.12 indicate that the coefficient of the intercept is -0.89 std error is 0.51 and p-value is 0.087, it implies that if all variables which are used in the model are zero, the GOL will be by 0.89 percent but amount will vary by 0.51 percent up and down and its insignificant at 5% of significant level.

HP3: Account payable period of a firm is significant positively related to a firm's profitability.

The regression results for the APP implies holding other variables constant every one-day change (increase or decrease) in days account payables will change by 0.0005 percent in gross operating profit in the opposite direction and the GOP will vary by 0.0002 percent and statistically significant at 5%.

The result of this study consistent with the finding of Deloof (2003), Falope and Ajilore(2009),Padachi.K(2006) which is strong negative relation between account payables period and firms profitability it mean that the firms pay their credit early will support to make more profit and firms tend to delay payments of their account payables lead less profit.

In the contrast of the study Mathuva(2010),Makori and Jagongo,(2006),Tirngo.D(2013) and Mifta Ahmed(2016) found strong positive relation between account payables period and firms profitability. They justify strong positive relation that firms withhold their payment to suppliers so as to take advantage of the cash available for their working capital needs.

The size of a company shows holding other factors constant, a positive relationship with profitability which is holding the others variables constant if the firm size change (increase or decrease) by one percent the firm profitability will be change by 0.055 percent in the same direction and its relation is statically significant at 5 % level.

Firm leverage indicates holding other factors constant, a one percent increase in leverage associated with a increase in gross operating profitability of 0.19 percent and it is statistically significant at 5 % significant level. Likewise, other variables remain constant when sales growth increase by one percent, the gross operation profit of steel manufacturing firms will increase by 0.013 percent but the relation is statically insignificant at 5 % level.

The regression result for current ratio (CR) which is a traditional measure of liquidity implies a percent increase in current ratio is associated with a decrease in 0.0007 percent but statistically insignificant at 5% level.

The results from regression model specification III are used to determined hypothesis stated in chapter one as shown in 1.4 section. The third research hypothesis was that accounts payable period have significant positively related to a firm’s profitability. To confirm the finding with the hypothesis, the finding of the study shown accounts payable period has significant negative effect on gross operating profit, which is a measurement of profitability and a relation is statically significant at 5% level. Therefore, the null hypothesis is inconsistent with study finding and can be conclude that hypothesis three is reject.

#### 4.6.4 Regression Result of Model Specification IV

Model specification IV regressed effect of cash conversion cycle on GOP.

$$\text{Model 2: } \text{GOPit} = \beta_0 + \beta_1(\text{CCCit}) + \beta_2(\text{FSit}) + \beta_3(\text{FLit}) + \beta_4(\text{SGit}) + \beta_5(\text{CRit}) + \epsilon_{it}$$

Table 4.13 Regression results of profitability measures and CCC

Dependent Variable: GOP  
 Method: Panel Least Squares  
 Date: 01/14/19 Time: 11:36  
 Sample: 2013 2017  
 Periods included: 5  
 Cross-sections included: 16  
 Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.232409	0.551602	-2.234235	0.0293
CCC	0.000276	0.000216	1.278603	0.2060
FS	0.068901	0.028451	2.421718	0.0185
FL	0.174000	0.079298	2.194239	0.0322
SG	0.009573	0.035190	0.272041	0.7865

CR	2.64E-05	0.000900	0.029349	0.9767
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Effects Specification

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Cross-section fixed (dummy variables)

R-squared	0.761224	Mean dependent var	0.191011
Adjusted R-squared	0.680283	S.D. dependent var	0.138128
S.E. of regression	0.078103	Akaike info criterion	-2.041074
Sum squared resid	0.359901	Schwarz criterion	-1.415792
Log likelihood	102.6430	Hannan-Quinn criter.	-1.790381
F-statistic	9.404666	Durbin-Watson stat	1.932435
Prob(F-statistic)	0.000000		

Table 4.13 reveals the summary statistics of regression specification IV. The explanatory power of the model as can be seen is that the adjusted  $R^2$  values are equal to 68 percent. This implies that 68 percent of the variation in the gross operating expense can be explained by the change of explanatory variables used in the model. Adjusted  $R^2$  is desirable to have some measure of how well the regression model actually fits the data. (Brooks,2014). The adjusted R-squared values in this study are found to be sufficient enough to infer that the regression model actually fits the data. The p- value of F statistic indicate that all variables simultaneously have statically significant effect on gross operating profit and the relation is significant at 1% level since the F-statistic p-value is 0.000.

The regression results in table 4.13 indicate that the coefficient of the intercept is-1.23 std error is 0.55 and p-value is 0.029, it implies that if all variables which are used in the model are zero, the GOL will be 1.23 percent but amount will vary by 0.55 percent up and down and its significant at 5% of significant level.

HP4: Cash conversion cycle of a firm is significant negatively related to a firm's profitability.

The regression results for the CCC implies holding other variables constant every one-day change (increase or decrease) in cash conversion cycle will change the in 0.0003 percent in gross operating profit in the same direction and the GOP will vary by 0.0002 percent and statistically insignificant at 5%.

Even though this finding shows insignificant relationship between cash conversion cycle and profitability, it is consistent with various previous research findings like, Melita.C, Pertos.L and Halim.B(2012) ,Padachi.Kare (2006) some of them. In the contrast of the study finding Falope and Ajilore(2009),NorEdi and Noriza (2010),Markori and Jagongo(2006),Ephrem(2010),Mifta Ahmed(2016) have find out cash conversion cycle has negative effect on firms profitability.

The size of a firm result shows holding other factors constant, a positive relationship with profitability which is holding the others variables constant if the firm size change (increase or decrease) by one percent the firm profitability will be change by 0.17 percent in the same direction and its relation is statically significant at 5 % level.

Firm leverage indicates holding other factors constant, a one percent increase in leverage associated with a increase in gross operating profitability of 0.0095 percent and it is statistically insignificant at 5 % significant level. Likewise, other variables remain constant when sales growth increase by one percent, the gross operation profit of steel manufacturing firms will increase by 0.00026 percent but the relation is statically insignificant at 5 % level.

The regression result for current ratio (CR) which is a traditional measure of liquidity implies a percent increase in current ratio is associated with a decrease in 0.0007 percent but statistically insignificant at 5% level.

The results from regression model specification IV are used to determined hypothesis stated in chapter one as shown in 1.4 section. The fourth research hypothesis was that cash conversion cycle have significant negatively related to a firm's profitability. To confirm the finding with the hypothesis, the finding of the study shown cash conversion cycle has significant positive effect on gross operating profit, which is a measurement of profitability and a relation is statically insignificant at 5% level. Therefore, the null hypothesis is inconsistent with study finding and can be conclude that hypothesis four is reject.

**Table 4.5.14 Summary of Regression Result and Analysis**

Explanatory Variables	Expected effect	Result effect
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Account Receivable Period	Negative significant	Negative significant
Inventory Holding Period	Negative significant	Positive insignificant
Account Payable Period	Positive significant	Negative significant
Cash Conversion Cycle	Negative significant	Positive insignificant

## **CHAPTER FIVE**

### **5. CONCLUSION AND RECOMMENDATIONS**

The previous chapter presented the results and finding of the study while this chapter discusses about conclusions and recommendations based on the results and findings. Accordingly, this chapter is organized into two sub-sections. Section 5.1 presents the conclusions and section 5.2 presents the recommendations.

#### **5.1 Conclusion**

The main Objective of this study was to examine of the effect of working capital management on profitability of steel manufacturing in Addis Ababa. To achieve the intended objectives the study used quantitative approaches panel data analysis methodology. The panel data were collected from audited financial statements particularly balance sheets and income statements of a sampled

sixteen steel manufacturing firms over the time period from 2013 - 2017. The collected data were analyzed through a fixed effect model using statistical package 'eview 8.0'.

In order to conduct the empirical analysis, one dependent variable, four independent variables and four control variables were selected from prominent previous research works on the effect of Working capital management on profitability. Gross Operating Profit as a measure of profitability of steel Manufacturing firms were dependent variable, while the independent variables were Account Receivable Period, Inventory Holding Period, Account Payable and Cash Conversion Cycle and Control Variables are Firm Size measured by log of sales, Firm Leverage, Sales Growth and Current Ratio.

Descriptive statistics were used to examine the trend of the chosen variables among the sample's firms. The mean value of the 16 firms included in the study firms Profitability as measured by Gross Operation Profit was 19.32 percent and it deviates from the mean to both sides by 13.61 percent. Its minimum value is -6.46 percent while the maximum is 61.56 percent. The firms receive cash collection from their customer on average at 62 days, it deviates from the mean to both sides by 49 days. Its minimum value is 6 days while the maximum is 227 days. Inventory holding Period, the firms takes an average 123 days to convert inventories into sales, it varies from then mean by 60 days in both sides. Its minimum value is 10 percent while the maximum is 267 percent. On the other side, account payables period of steel manufacturing firms of the study on average takes 95 days, it varies from then mean by 56 days in both sides its minimum value is 12 days while the maximum is 325 days. On the other side, cash conversion cycle as a comprehensive measure of working capital management of steel manufacturing firms of the study on average takes 90days and it deviates from the mean to both sides by 58 days. Its minimum value is 16 days while the maximum is 273 days.

The study has made a Classical linear regression model assumption diagnostics tests which are the mean values of error is zero, variance of the errors is constant, the covariance between the error terms over time is zero, there is no relationship between independent variables and the error terms should be normally distribute. The regressed model was satisfied in the all of the assumption.

The regression analyses of the number of day's accounts receivables indicate that there is a strong significant negative relation at 5 percent level between these days and firm's profitability. This means that the shorter the firm's accounts receivable period associate with the higher the profitability and vice versa. Therefore, firms can increase their profitability by reducing the accounts receivable period as much as possible because firms collect receivables quickly, the fund will be ready for next purchase of raw material and they can produce and sale more products and it leads a firm profit enhanced.

The regression analyses of inventory holding period indicate that there is no strong relation between inventory holding period and steel manufacturing firm's profitability at 5 % significant level.

The regression analyses of account payable period indicate that there is a strong negative relation between these days and firm's profitability and statically significant at 5 % level. This means that the shorter the firm's accounts payable period related the higher the profitability and vice versa. Firms settle their credit bill early can increases profitability. If firms paid their credit on short period of time, they may entitle for early payment discount and might waive interest expense.

In another way, the regression analyses of cash conversion cycle indicate that there is no relation between cash conversion cycle and firm's profitability at 5% significant level.

## **5.2 Recommendations**

The recommendations of the research forwarded on the ground of the conclusions from the results and discussion. The study has shown a clear understanding of working capital components and its effect on profitability of steel manufacturing firms. In order to improve firms' performance, management of working capital components is necessary. Therefore, based on the findings obtained from the result of the study, the researcher forwards valuable recommendations as follows.

There is negative relationship between accounts receivable period and steel manufacturing firms' profitability. It indicates that a deceasing a time of accounts receivable period increases firms' profitability. Whenever collection period increases, the account receivables go to bad debt account and its adversely affect firms' profitability. Therefore, the researcher suggests to the

managers of the firm collect their account receivables early as soon as possible. The researcher also recommended that firms should engage in relationship with those customers whose paid their credit in short period, by considering not to lose potential customers whose delay payments.

The study also found negative relationship between accounts payable period and firms' profitability. It indicates that whenever firms paid their account payables shortly, increases profitability. Firms settle early their credit it creates a good business relation and its strength long term supplier customer relation. Therefore, the researcher recommended that firms should consider the terms of APP to be longer to have inverse effect on firms' profitability. In this regard the researcher recommended that the higher managements should make a trade credit policy which is allow to paid their account payable too soon in order to maximize their profit.

### **5.2.1 For Future Researchers**

Based on the best the researcher knowledge, no study conducted on the effect of working capital management on steel manufacturing firms' profitability in Addis Ababa by using only Account payable period, Account payable period, Inventory holding payable period and Cash conversion cycle as independent variable and gross operating profit measured by gross operating profit as dependent variable So, the researcher recommends for future researchers to work on this sector more by considering additional explanatory such as cash, prepaid expense and including other measurements of firms' profitability like Return on Asset and Return on Equity.

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**Appendixes**  
**Appendix .1**

**Steel Manufacturing firms**

- 1.AARTI STEEL PLC
- 2.ABYSSINIA INTEGRATED STEEL PRIVATE LIMITED COMPANY
3. ALEMGENET TRADE & INDUSTRY PLC
- 4.ALEM STEEL PRIVATE LIMITED COMPANY
- 5.C & E BROTHERS STEEL FACTORY PLC
6. D.H. GEDA G.I SHEET FACTORY PRIVATE LIMITED COMPANY
- 7.ETHIOPIAN STEEL PRIVATE LIMITED COMPANY
- 8.HABESHA STEEL MILLS PRIVATE LIMITED COMPANY
9. KALITI METAL PRODUCTS FACTORY
10. HH STEEL SECTIONS PRIVATE LIMITED COMPANY
- 11.MAME STEEL MILL PLC
12. SUNNY STEEL PIPE MANUFACTURING PLC
13. STEELY R.M.I PRIVATE LIMITED COMPANY
14. YESU PRIVATE LIMITED COMPANY
15. WALIA STEEL INDUSTRY PLC
16. ZAMIL STEEL INDUSTRIES

## Appendix 2

### DURBIN-WATSON SIGNIFICANCE TABLES Durbin-Watson Statistic:

1 Per Cent Significance Points of dL and dU \*k'' is the number of regressors excluding the intercept

k'=1 k'=2 k'=3 k'=4 k'=5 k'=6 k'=7 k'=8 k'=9 k'=10 N

	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU
6	0.390	1.142																		
7	0.435	1.036	0.294	1.676																
8	0.497	1.003	0.345	1.489	0.229	2.102														
9	0.554	0.998	0.408	1.389	0.279	1.875	0.183	2.433												
10	0.604	1.001	0.466	1.333	0.340	1.733	0.230	2.193	0.150	2.690										
11	0.653	1.010	0.519	1.297	0.396	1.640	0.286	2.030	0.193	2.453	0.124	2.892								
12	0.697	1.023	0.569	1.274	0.449	1.575	0.339	1.913	0.244	2.280	0.164	2.665	0.105	3.053						
13	0.738	1.038	0.616	1.261	0.499	1.526	0.391	1.826	0.294	2.150	0.211	2.490	0.140	2.838	0.090	3.182				
14	0.776	1.054	0.660	1.254	0.547	1.490	0.441	1.757	0.343	2.049	0.257	2.354	0.183	2.667	0.122	2.981	0.078	3.287		
15	0.811	1.070	0.700	1.252	0.591	1.465	0.487	1.705	0.390	1.967	0.303	2.244	0.226	2.530	0.161	2.817	0.107	3.101	0.068	3.374
16	0.844	1.086	0.738	1.253	0.633	1.447	0.532	1.664	0.437	1.901	0.349	2.153	0.269	2.416	0.200	2.681	0.142	2.944	0.094	3.201
17	0.873	1.102	0.773	1.255	0.672	1.432	0.574	1.631	0.481	1.847	0.393	2.078	0.313	2.319	0.241	2.566	0.179	2.811	0.127	3.053
18	0.902	1.118	0.805	1.259	0.708	1.422	0.614	1.604	0.522	1.803	0.435	2.015	0.355	2.238	0.282	2.467	0.216	2.697	0.160	2.925
19	0.928	1.133	0.835	1.264	0.742	1.416	0.650	1.583	0.561	1.767	0.476	1.963	0.396	2.169	0.322	2.381	0.255	2.597	0.196	2.813
20	0.952	1.147	0.862	1.270	0.774	1.410	0.684	1.567	0.598	1.736	0.515	1.918	0.436	2.110	0.362	2.308	0.294	2.510	0.232	2.174
21	0.975	1.161	0.889	1.276	0.803	1.408	0.718	1.554	0.634	1.712	0.552	1.881	0.474	2.059	0.400	2.244	0.331	2.434	0.268	2.625
22	0.997	1.174	0.915	1.284	0.832	1.407	0.748	1.543	0.666	1.691	0.587	1.849	0.510	2.015	0.437	2.188	0.368	2.367	0.304	2.548
23	1.017	1.186	0.938	1.290	0.858	1.407	0.777	1.535	0.699	1.674	0.620	1.821	0.545	1.977	0.473	2.140	0.404	2.308	0.340	2.479
24	1.037	1.199	0.959	1.298	0.881	1.407	0.805	1.527	0.728	1.659	0.652	1.797	0.578	1.944	0.507	2.097	0.439	2.255	0.375	2.417
25	1.055	1.210	0.981	1.305	0.906	1.408	0.832	1.521	0.756	1.645	0.682	1.776	0.610	1.915	0.540	2.059	0.473	2.209	0.409	2.362

26 1.072 1.222 1.000 1.311 0.928 1.410 0.855 1.517 0.782 1.635 0.711 1.759 0.640 1.889 0.572 2.026 0.505 2.168 0.441 2.313  
27 1.088 1.232 1.019 1.318 0.948 1.413 0.878 1.514 0.808 1.625 0.738 1.743 0.669 1.867 0.602 1.997 0.536 2.131 0.473 2.269  
28 1.104 1.244 1.036 1.325 0.969 1.414 0.901 1.512 0.832 1.618 0.764 1.729 0.696 1.847 0.630 1.970 0.566 2.098 0.504 2.229  
29 1.119 1.254 1.053 1.332 0.988 1.418 0.921 1.511 0.855 1.611 0.788 1.718 0.723 1.830 0.658 1.947 0.595 2.068 0.533 2.193  
30 1.134 1.264 1.070 1.339 1.006 1.421 0.941 1.510 0.877 1.606 0.812 1.707 0.748 1.814 0.684 1.925 0.622 2.041 0.562 2.160  
31 1.147 1.274 1.085 1.345 1.022 1.425 0.960 1.509 0.897 1.601 0.834 1.698 0.772 1.800 0.710 1.906 0.649 2.017 0.589 2.131  
32 1.160 1.283 1.100 1.351 1.039 1.428 0.978 1.509 0.917 1.597 0.856 1.690 0.794 1.788 0.734 1.889 0.674 1.995 0.615 2.104  
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  
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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  
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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  
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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