



**IMPACT OF WORKING CAPITAL MANAGEMENT
ON PROFITABILITY OF MANUFACTURING SHARE
COMPANIES IN ETHIOPIA**

By:

Mifta Ahmed

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

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IN ETHIOPIA

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Mifta Ahmed

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Advisor: Dr. P. Laxmikantham

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

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Addis Ababa

STATEMENT OF DECLARATION

I, Mifta Ahmed declare that the research work reported in this thesis is my own work, except where otherwise indicated and acknowledged. It is submitted for the partial fulfilment of the requirement for the degree of Master of Science in Accounting and Finance in Addis Ababa University. This thesis has not, either in whole or in part, been submitted for a degree or diploma in this or any other universities.

Name: Mifta Ahmed

Signature: _____

Date: April, 2016

STATEMENT OF CERTIFICATION

This is to certify that the thesis entitled “Impact of working capital management on profitability of manufacturing share companies in Ethiopia” submitted by Mifta Ahmed to Addis Ababa University towards partial fulfillment of the requirements for the award of the degree of Master of Science in Accounting and Finance is carried out by him under my supervision and guidance.

Name: Dr. P. Laxmikantham

Signature: _____

Date: April, 2016

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Approved By Examining Board:

Examiner:

_____	_____	_____
Name	Signature	Date

Examiner:

_____	_____	_____
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Abstract

The purpose of this study is to examine the impact of working capital management on profitability of manufacturing share companies in Ethiopia with special reference to large tax payers. In light of this objective the study adopted quantitative approaches to test a series of research hypotheses. Financial statements of a sample of sixteen (16) manufacturing share companies is used for a period of seven years (2008-2014) with the total of 112 observations. Data was analyzed on quantitative basis using descriptive and regression analysis (Ordinary Least Square) method. Proportionate random stratified sample was used. It examined the components in working capitalsuch as accounts receivable period, inventory holding period, accounts payable period, and cash conversion cycle in relation to return on asset (ROA). In addition the study used current ratio, used as liquidity indicator; firm size, as measured by logarithm of sales; firm growth rate as measured by change in annual sales and financial leverage, as control variables. The key findings from the study are; Firstly, there exists a significant negative relationship between average collection period and profitability indicating that an increase in the number of days a firm receives payment from sales affects the profitability of the firm negatively; 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 found to be insignificant in affecting profitability of the firms. Thirdly, there exists a negative relationship between cash conversion cycle and profitability of the firm. Which indicates that as the cash conversion cycle decreases it leads to an increase in profitability of the firm, and managers can increase profitability of their firms by shortening the time lag between a firm's expenditure for purchases of raw materials and the collection of sales of finished goods. Finally, positive relationships between liquidity and profitability measures have also been observed. In general the study recommended that firms should minimize working capital management components in order to maximize profitability.

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List of acronyms

APP:	Accounts Payable Period
ARP:	Accounts Receivable Period
CCC:	Cash Conversion Cycle
COGS:	Cost of Goods Sold
CR:	Current Ratio
ERCA:	Ethiopian Revenues and Customs Authority
FL:	Firm leverage
FS:	Firm size
GOP:	Gross Operating Profit
GWC:	Gross Working Capital
IHP:	Inventory Holding Period
LTO:	Large Taxpayers Office
NPM:	Net Profit Margin
NWC:	Net Working Capital
OLS:	Ordinary Least Square
OPM:	Operating Profit Margin
QR:	Quick Ratio
ROA:	Return On Asset
ROE:	Return On Equity
ROI:	Return On Investment
SG:	Sales Growth
WC:	Working Capital
WCM:	Working Capital Management

CHAPTER ONE

INTRODUCTION

The first chapter of this thesis introduces the area of study, providing a background for the paper. This chapter is organized under different sections in which background of the study, statement of the problem, objectives of the study, research hypothesis significance of the study, delimitation and limitations of the study and finally structure of the paper was presented.

1.1 Background of the study

Corporate financial management primarily deals with three core areas that have a bearing on a firm's financial goals. As postulated by Firer et al (2008), the three core areas of corporate finance are (1) capital budgeting, which encapsulates the process of planning and managing firm's long-term investments; (2), capital structure, which outlines the specific mixture of long-term debt and equity maintained by a firm and (3) working capital management, which deals with management of firm's short-term assets and liabilities.

One of the most important factors for a firm to consider is the management of working capital, which is related to short term financing and investment decision of a firm. The function of obtaining efficient working capital management is to maintain current assets and current liabilities in respect to each other and to generate maximum returns.

Working Capital Management (WCM) is an important corporate financial decision since it directly affects the profitability of the firm. Working capital management efficiency is vital especially for manufacturing firms, where the major part of assets and liabilities are composed of current assets especially inventory and trade receivables, and current liabilities; trade payable. (Arunumar and Ramanan, 2013)

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).

Working capital management is a particular importance to the profitability growth of a business entity. This is because without a proper management of working capital, it is difficult for the firm to run its operations smoothly. That is why Brigham and Houston(2003) conclude 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 firm's smooth running and to meet its obligations.

In their respective studies of working capital management, Deloof (2003); Rahman and Nasr (2007) found that current assets of a typical manufacturing firm accounts for more than half of the total assets and that the high levels of current assets within a firm directly affects its profitability and liquidity.Efficient management of working capital plays an important role of overall corporate strategy to create shareholder value. The way of managing working capital can have a significant impact on both the liquidity and profitability of the company (Shin & Soenen, 1998). The main purpose of any firm is to maximize profit. Also, maintaining liquidity of the firm is an important objective. The problem is that increasing profits at the cost of liquidity can bring problems to the firm. Thus, there is a trade-off between these two objectives and disregarding liquidity may result in insolvency and bankruptcy. (Raheman and Nasr, 2007).

Every business requires working capital for its survival. Working capital is a vital part of business investment which is essential for continuous business operations. It is required by a firm to maintain its liquidity, solvency and profitability. (Lazaridis and Tryfonidis, 2006). Working capital management explicitly affects both the profitability and level of desired liquidity of a business. Hence, it has both negative and positive impact on firm's profitability, which in turn, affects the shareholders' wealth. (Rahman and Nasr, 2007).

It is therefore a critical issue to know and understand the effects of working capital management and its influence on firm's profitability. Indeed, a lot of research has been conducted in different countries to show the impacts of working capital components on firms Profitability. However, there are few studies with reference to Ethiopia on working capital management and firm profitability especially in the manufacturing sector. By looking on the importance of working capital management, the researcher needto assess the impacts of it on firms' performance. Accordingly, the general objective of the study is to examine the impact

of working capital management on the profitability of manufacturing share companies in Ethiopia.

1.2 Statement of the problem

A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. Liquidity is a precondition to ensure that firms are able to meet its short-term obligations and its continued flow can be guaranteed from a profitable venture.

Firms can maximize their value by having an optimal level of working capital (Deloof, 2003). On the balance sheet, firms have large inventory and generous trade credit policy which leads to higher sales. Larger inventory reduces the risk of stock-outs. Accounts receivables, which is a part of trade credit, stimulates sales because it allows customers to assess product quality before paying (Long, Malitz and Ravid, 1993; and Deloof and Jeger, 1996). The negative side of granting trade credit and keeping inventories is that money is locked up in working capital (Deloof, 2003). Another component of working capital is accounts payable, which keeps the trade credit not to extend but receiving it from a supplier. Receiving a trade credit from a supplier allows a firm to assess the quality of the products bought, and can be an inexpensive and flexible source of financing for the firm (Deloof, 2003; Raheman and Nasr, 2007). The flipside is that receiving such a trade credit can be expensive when firms offered a discount for the early payment. This is also the case with uncollected and extended trade credit, which can lead to cash inflow problems for the firm. (Gill et al., 2010).

Researchers have studied working capital management in many different ways. While some authors studied the impact of an optimal inventory management, others have studied the optimal way of managing accounts receivables that leads to profit maximization (Lazaridis and Tryfonidis, 2006; and Besley and Meyer, 1987). Other studies have focused on how reduction of working capital improves a firm's profitability (Jose et al., 1996; Shin and Soenen, 1998; Deloof, 2003; Padachi, 2006; Raheman and Nasr, 2007; Samiloglu and Demirgunes, 2008; Sharma and Kumar, 2011).

Much of the currently available empirical literature on working capital management is focussed on its impact on firms in developed countries. But, there are studies with reference to Ethiopia on working capital management and firm profitability; Tewodros (2010) studied its impact on profitability by taking 11 private limited manufacturing firms. He took ROA, OPM and ROE as a measure of profitability. The results show that longer accounts receivable and inventory holding periods are associated with lower profitability. There is also negative

relationship between accounts payable period and profitability measures; however, except for operating profit margin this relationship is not statistically significant. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms.

On the other hand, Tiringo (2013) examined the impact of WCM on profitability of micro and small enterprises in Ethiopia for the case of Bahirdar city administration. 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.

Also, Wubshet (2014) examined the impact of working capital management on firm's performance by using a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The performance was measured in terms of profitability by return on total assets, and return on investment capital as dependent financial performance (profitability) variables. The results shows that there is no significant relationship between cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on investment. On the other hand, findings show that a highly significant negative relationship between account receivable period, inventory conversion period and account payable period with return on asset.

According to the knowledge of the researcher, no study has been conducted on large tax payers manufacturing Share Company. Hence, the study is conducted to fill the gap on impact of working capital management on performance of large tax payers of manufacturing share companies in Ethiopia.

1.3 Objective of the study

The general and specific objectives of the study are set below.

1.3.1 General Objective

The general objective of this study isto examine the impact of working capital management on profitabilityof manufacturing share companies in Ethiopia.

1.3.2 Specific Objectives

The specific objectives of this study are:-

- i) To analyse the effect of accounts receivable period on performance of firms.
- ii) To evaluate the effect of inventory holding period on firms performance.

- iii) To ascertain the relationship between average payment period and profitability of the firm.
- iv) To examine the relationship between cash conversion cycle and profitability of the firm.

1.4 Research hypothesis

There are several statement of possibility can be made in view of the impacts of working capital management on firm's profitability. By considering the above research objective the following discussion shows the hypothesis (HP) that this study attempted to test.

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

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

HP₃: The account payable period of a firm are significant positively related to a firm's profitability.

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

1.5 Significance of the study

The purpose of this study is to research whether working capital management can affect firm's profitability in Ethiopian large tax payers manufacturing share companies. It is expected that the result of this study concerning working capital management in the manufacturing firms contributes to current knowledge on the performance of the firms.

Efficient financial management requires the existence of some objectives or goals. This is because judgment as to whether or not a financial decision is efficient must be made in light of an appropriate management of working capital while at the same time sustaining good returns to the shareholders. This study would greatly benefit financial managers and chief executive officers of large tax payers of manufacturing firms in Ethiopia. By understanding the relationship between working capital management policies and profitability, finance managers would be able to plan their working capital strategies based on working capital management policies that enhance profitability.

The study has an important resource document for academicians and future researchers who may wish to investigate the performance of firms in relation to working capital management and profitability.

1.6 Delimitation and limitations of the study

The study is delimited to the impacts of working capital management on the profitability of large tax payers of manufacturing share companies in Ethiopia. The total sample size of the study is sixteen large tax payers manufacturing share companies and the study took seven years data from year 2008 – 2014.

The study covers only share companies of large tax payers of manufacturing firms in Ethiopia. According to Ethiopian Revenue and Customs Authority (ERCA), large tax payer's registration, of the total manufacturing firms of 203, (ERCA, March 2015) this study focuses only on manufacturing share companies.

1.7 Structure of the paper

The paper is organised in five chapters;

Chapter one provides an introductory overview of the full study comprising the statement of the problem, objectives of the study, research hypothesis, relevance of the study, delimitation and limitation of the study, and how the study was organised also captured in this chapter.

The second chapter, literature review gives an extensive literature study on working capital and the managements of its different parts.

Chapter three presents the methodology used for the study and gives a detailed overview of the population, sampling technique, the research design, data source and collection procedures and data analysis procedures. It also provides the description of the relevant variables that was included in the model, model selection criteria and diagnostic test analysis on the model specification used for the study. Chapter four focuses on the research results and analysis. Chapter five summarises, concludes and offer recommendations for the study.

CHAPTER TWO

LITERATURE REVIEW

The purpose of this chapter is to introduce key principles around working capital and general theory around it. This chapter introduces drivers behind working capital, the theoretical review of working capital management and reviews of prior research made on working capital management.

2.1 An overview of working capital

Efficient working capital management is an integral component of the overall co-operate strategy to create shareholder wealth. The way in which working capital is managed can have a significant impact on both liquidity and profitability of the company. Research by Taggart(1977) first signalled the importance of trade – offs between dual goals of working capital management; that is liquidity and profitability. In other words, decisions that tend to maximize profitability tend not to maximize the chances of adequate liquidity. Conversely focusing entirely on liquidity tends to reduce the potential profitability of the company (Hendrickson, 1992).

Working capital management is concerned with making sure firm has exactly the right amount of cash and lines of credit available to the business at all times (Deloof, 2003). Cash is the lifeline of a company. If this lifeline deteriorates, so does the company's ability to fund operations, reinvest and meet capital requirement and payments. Understanding a company's cash flow health is essential to making investment decision. An individual company's investment in working capital has been related to the type of industry in which it operates and the essential working capital policy each individual company adopts (Nyakundi, 2003). The investment decisions concern how much of the firm's limited resources should be invested in working capital. It further observe that financing decisions relate to how the investment in working capital is to be funded.

2.1.1 Nature and importance of working capital

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).

While the performance levels of businesses have traditionally been attributed to general managerial factors such as manufacturing, marketing and operations, working capital management have a consequent impact on business survival and growth (Kargar and Blumenthal, 1994). The management of working capital is important to the financial health of businesses of all sizes. The amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient and effective way.

Assets of a business represent wealth of the firm, mostly firms does not want to hold many of the assets appearing on the balance sheet .In a perfect world, the production process takes very little time to convert the raw materials to finished products which gets sold immediately in cash when it completed the production process; and the input market is so perfect that any amount of raw material is available at any time at a fixed price.

However, this is an ideal situation difficult to have in the real world. Instead, the production process takes quite some time; the finished products are not sold so quickly which means a quantity of stocks remains in the warehouse. Moreover, the sales are not always in cash; some amount of credit has to be given and the input markets are so uncertain, so that, firms have to keep a certain amount of safety stock all the time. These ‘non-ideal’ conditions thus generate certain assets which are called current assets and the levels of these assets make a significant part of a firm’s investment in its total assets.

Since business is a continuous process, every cycle of operation generates the current assets which need to be funded for immediate financing of working expenses. This funding for working expenses is done by, what we popularly call, working capital.

2.1.2 The concept and definition of working capital

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) defines '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 the capital/funds required for day to day operations of the business. 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 different types and the classification based on the following views:

1. Balance sheet view
2. 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.

The following table shows as an example the part of the balance sheet that has an impact on working capital.

Table 2.1 Example of working capital in a balance sheet

Current Assets		Current Liabilities	
20xx		20xx	
Cash.....	xxx	Accounts payable	xxx
Marketable securities.....	xxx	Notes payable	xxx
Receivables.....	xxx	Accrued expenses	xxx
Inventory	xxx	Taxes payable	xxx
Prepays	xxx	Current mature of LT debt.....	xxx
Other current assets.....	<u>xxx</u>	Other current liabilities.....	<u>xxx</u>
Total Current Assets	xxxx	Total Current Liabilities	xxxx

Source: Striscek, 2001

The efficient management of these balance sheet items can decrease a company's NWC. As an example, by more aggressively collecting receivables, a company does not have to rely as

much on long-term financing (which may be costly¹) to finance its operations. Ideally, from a lenders point of view, the current liabilities should cover most of the financing for current assets, and the shareholders equity the rest. (Strischek, 2011).

Most importantly for this research, 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, prepaids 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. This research focuses solely on the operational net working capital. This can be defined as receivables plus inventories minus payables.

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 p. 679).

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

¹ The company has to take in to account the cost of equity and the cost of debt, or in other words, their Weighted Average Cost of Capital (WACC) to determine in case they should rely on long term financing. This, though, is beyond the scope of this thesis.

period (seasonal working capital). 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.

2.2 Working capital management

A significant number of studies have been done on working capital, although from different perspectives and in different situations and environments.

According to Mawhiraju (1999), working capital management involves administration of current assets and current liabilities which consists of optimizing the level of current assets in partial equilibrium context. Working capital management involves the relationship between a firm's short –term assets and its short- term liabilities.

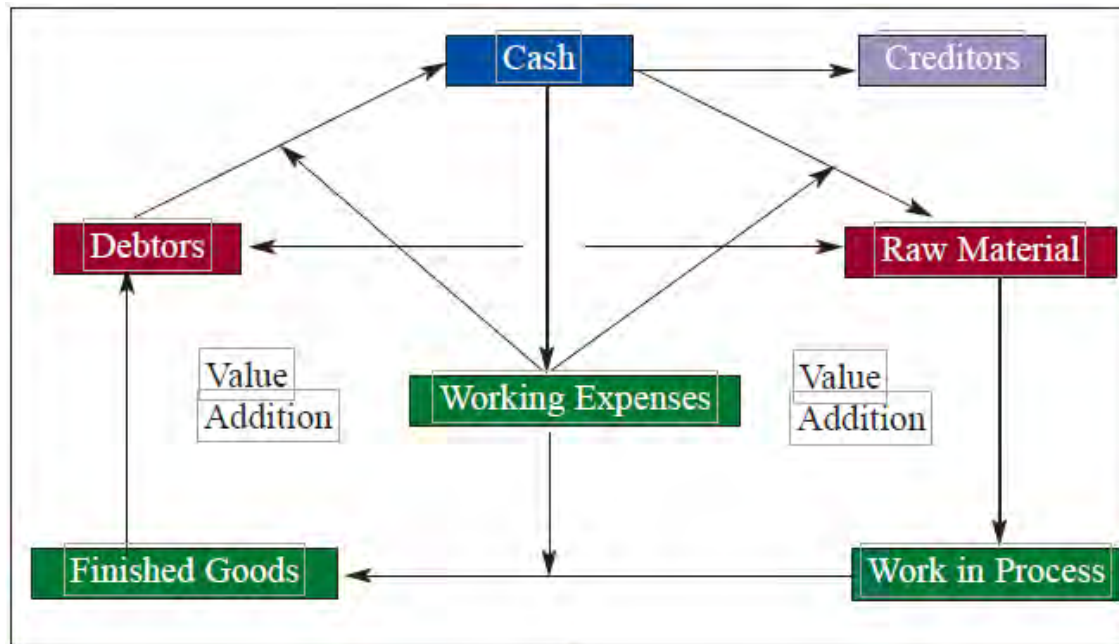
Khan and Jain (2007) also stress that working capital management is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the interrelationship that exists between them.

Working capital management also refers to the decisions relating to working capital and short term financing and it involves managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses. Working capital entails short-term decisions generally relating to the next one year period which are “reversible”. These decisions are therefore not taken on the same basis as Capital Investment Decision (CID) rather they has been based on cash flow and or profitability.

Every running business needs working capital. Even a business which is fully equipped with all types of fixed assets required is bound to collapse without (i) adequate supply of raw materials for processing; (ii) cash to pay for wages, power and other costs; (iii) creating a stock of finished goods to feed the market demand regularly; and, (iv) the ability to grant credit to its customers. All these require working capital. Working capital is thus like the lifeblood of a business. The business will not be able to carry on day-to-day activities without the availability of adequate working capital.

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 works.

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 cycle involves rotation of various constituents of the working capital.

Working capital cycle also known as operating cycle, with recent modification to cash conversion cycle. Richards and Laughlin (1980) 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 stated 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 organisations.

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.

2.2.1 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

A firm can be very profitable, but if this is not translated into cash from operations within the same operating cycle, the firm would need to borrow to support its continued working capital needs. Thus, the twin objectives of profitability and liquidity must be synchronized and one should not impinge on the other for long. Investments in current assets are inevitable to ensure delivery of goods or services to the ultimate customers and a proper management of same should give the desired impact on either profitability or liquidity. If resources are blocked at the different stage of the supply chain, this will prolong the cash operating cycle. Although this might increase profitability (due to increased sales), it may also adversely affect the profitability if the costs tied up in working capital exceed the benefits of holding more inventory and/or granting more trade credit to customers.

Cash is the most important current asset for the operation of the business. Cash is the basic input needed to keep the business running on a continuous basis; it is also the ultimate output expected to be realized by selling the service or product manufactured by the firm. Cash consists of currency, demand deposit and time deposits. (Copeland et al, 2005). The principal marketable security is commercial paper (short-term unsecured notes sold by other firms). The other security is the government treasury bills and bonds.

Good management of working capital will generate cash, help improve profits and reduce risks. The main sources of cash are accounts payable and equity. According to Donaldson (1961) accounts payable is money the firm owes to its suppliers. It is short – term source of finance. Pandey (1993) refers accounts payable as a trade credit that a customer gets from supplier of goods or services in the normal course of business. In practice, the buying firms have not to pay cash immediately the purchase is made. Equity represents owner's claim against the business entity. But the nature of the owners' claim is not as the claims of creditors. Creditors' claims are defined and have to be met within a specified period. The claim of owners' changes and the amount payable to them can be determined only when the firm is liquidated (Myers,1984). Cash shortage will disrupt the firm's manufacturing operation, while excessive cash will simply remain idle, without contributing

anything towards the firm's profitability. Thus, a major function of the financial manager is to maintain a sound cash position (Pandey, 1993).

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.

Cash management is concerned with the managing of cash flows into and out of the firm, cash flows within the firm, and cash balances held by the firm at a point of time by financing deficit or investing surplus cash. Therefore, the main aim of cash management is to maintain adequate control over cash position to keep the firm sufficiently liquid and to use excess cash in some profitable way (Pandey, 1993). In order to resolve the uncertainty about cash flow prediction and lack of synchronization between cash receipts and payments, the firm should adopt appropriate working capital management policy strategy.

Accounts Receivables

Trade credit is the most prominent of the modern business. It is considered as an essential marketing tool, acting as a bridge for the movement of goods through production and distribution stages to customers finally. 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 sells its products or services and does not receive cash for it immediately, the firm is said to have granted trade credit to customers. Trade credit thus creates account receivable which the firm is expected to collect in the near future. The level of receivables arising out of credit is thus influenced by either a conservative, moderate or an aggressive policy of the working capital management a firm adopts Ross et al (2004) Receivables constitute a substantial portion of current assets of several firms. Copeland et al (2005) note that as substantial amounts are tied-up in trade debtors, it needs careful analysis and proper working capital management policy for a firm to achieve its financial objective and goals.

Inventories

The word 'inventory' has been defined in many ways. Ballon (2004) defines inventories as stockpiles of raw materials, supplies, components, work in process, and finished goods that appear at numerous points throughout a firm's production and logistics channel's.

Inventory is an important and valuable asset. It constitutes substantial portion of the total current assets of a business. Inventory covers a wide variety of items which are meant to be procured, 'used up' and sold in an ordinary course of business. It covers the whole range of items starting from input of material and ending with output of finished products.

According to Joshi (2000) the item forming inventory can be classified into three categories: (1) raw materials (RM), (2) work-in-process (WIP) and (3) Finished goods (FG). Raw material inventory represents the item of basic inputs which are yet to be processed into final product. Work-in-process covers all items which are at various stages of production processes. These items have ceased to be raw material but have not developed into final products and are at various stages of semi-finished levels. Finished goods inventory consists of the final products which are awaiting sale.

Joshi (2000) enumerates the objectives of inventory management as follows;

- To reduce cost of holding stock so that investment in stock outs (running out of stock) production cycle operates smoothly.
- To persuade the business to reduce the levels of inventory whereas one prompts it to increase the same.

Managing and optimizing inventory levels are tedious tasks which require balancing between sales and tied-up capital. In case the inventory levels are too low, the company might miss out on sales when demand arises or might not be able to deliver goods on time. On the other hand, too much inventory ties up capital that can be used elsewhere more effectively. The trend has been to lower inventory levels over the past decades (Brealey and Myers, 1996).

A concept that is often used for inventory management is just-in-time approach. The just-in-time approach is a strategy for effective inventory management and help keeping inventory levels on a lower level. The strategy aims to make the orders of material, produce and deliver just in time when it is required and not before (Brealey and Myers, 1996)

Accounts payable

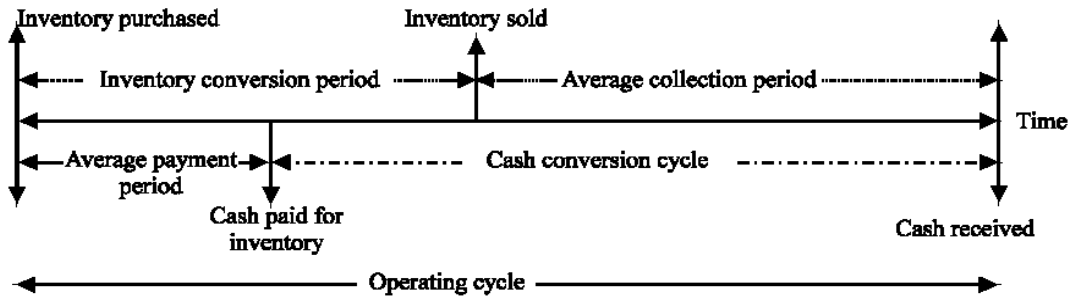
Another component of working capital is accounts payable, but it is different in the sense that it does not consume resources; instead it is often used as a short term source of finance. Thus it helps firms to reduce its cash operating cycle, but it has an implicit cost where discount is offered for early settlement of invoices. (Padachi, 2006).

2.2.2 The Cash conversion cycle

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).

The various interrelationships among working capital components are shown in figure below.

Figure 2.2 Operating and cash conversion cycles



Source: Jordan et al, 2003.

The cash conversion cycle depicted in figure 2.2 above captures the interrelationship of sales, cash collections, and trade credit in a manner that the individual numbers may not. To the extent a firm uses credit, the length of the cash (operating) cycle is reduced.

2.3 Working capital Theories

There are various theories that support the significance of working capital. Some of the most important theories pertinent to working capital management include the following:

Quantity Theory of Money

According to the ‘quantity theory’ money is held only for purpose of making payments for current transactions (Keynes, 1973). This theory was proposed by Irving Fisher in 1911. Fisher’s version of the quantity theory can be explained in terms of the equation of exchange model.

$$MV = PT \dots\dots\dots (i)$$

Where M is the nominal stock of money in circulation, V is the transaction velocity of circulation of money, that is, the average number of times the given quantity of money changes hand in transactions, P is the average price of all transactions and T is the number of transactions that take place during the time period. Both MV and PT measure the total value of transactions during the time period and so must be identical. Thus, ‘the equation’ is really

an identity which must always be true; it tells us only that the total amount of money handed over in transactions equal to the value of what is sold.

Keynesian Theory of Money

Keynes (1973) in his great work: “The General Theory of Employment, Interest and Money” identified three reasons why liquidity is important; the *speculative motive*, the *precautionary motive* and the *transaction motive*.

The speculative motive is the need to hold cash to be able to take advantage of, for example, bargain purchase, and favorable exchange rate fluctuations in the case of international firms. For most firms, reserve borrowing ability and marketable securities can be used to satisfy speculative motives.

The precautionary motive is the need for a safety supply to act as financial reserve. Once again, there is probably a precautionary motive for liquidity. However, given that the value of money market instruments is relatively certain and that instruments such as T – bills are extremely liquid, there is no real need to hold substantial amount of cash for precautionary purpose.

Cash is needed to satisfy the transaction motive, the need to have cash on hand to pay bills. Transaction related needs come from collection activities of the firm. The disbursement of cash includes the payment of wages and salaries, trade debts, taxes and dividends.

Baumol Inventory Model

Baumol (1952) developed the inventory development model. The Baumol model is based on the Economic Order Quality (EOQ). The objective is to determine the optimal target cash balance. Baumol made the following assumptions in his model. The firm is able to forecast its cash requirements with certainty and receive a specific amount at regular intervals, the firm’s cash payments occur uniformly over a period of time, that is, a steady rate of cash outflows; the opportunity cost of holding cash is known and does not change over time. Cash holdings incur an opportunity cost in the form of opportunity forgone and the firm will incur the same transactions cost whenever it converts securities to cash. Each transaction incurs a fixed and variable cost. Below is the equation representation in Baumol model of cash management:

Holding cost = $K(C/2)$ Total cost = $K(C/2) + c (T/C)$ and Transaction Cost = $c (T/C)$

Limitations of the Baumol model are: it assumes no cash receipts during the projected period, obviously cash is coming in and out on a frequent basis and, no safety stock is allowed for reason being it only takes a short amount of time to sell marketable securities.

The Modern Quantity Theory

Milton Friedman restated the quantity theory of money in 1956 as a theory of demand for money and this modern quantity theory has become the basis of news put forward by monetarists (Copeland et al, 2005). In this theory, money is seen as just one of a number of ways in which wealth can be held, along with all kinds of financial asset consumer durables, property and human wealth. According to Friedman, money has a convenience yield in the sense that its holding saves time and effort in carrying transactions.

2.4 Types of Working capital management policies

An individual company's investment in working capital is related to the type of industry in which it operates and the essential working capital policy the company adopts. Working capital investment decisions concern how much of the firm's limited resources should be invested in working capital. Financing decisions relate to how the investment in working capital is to be funded. What may be considered an acceptable level of working capital for one industry or line of business may be unacceptable (i.e. too low or too high) in another due to different operating or business characteristics across industries. Working capital requirements are also likely to change over time in response to the nature of a company's operations, for example, as firm progresses from growth to a maturity stage in its life cycle (Collins et al, 1996).

Pandey (1993) underlines three distinct types of working capital policies which a company can pursue; *aggressive policy*, *moderate policy* and *conservative policy*. The type of policy adopted relates to the firm's general approach to the investing and financing of its working capital needs. Aggressive and conservative policies tend to represent the opposite ends of a spectrum of working capital policy options. The policies differ in other attitudes to both the investment in and the financing of current assets. The more conservative in attitude the policy is, the greater the level of investment in current assets and the greater the firm's reliance on long term capital (in the form of debt or equity) to finance the investment in current assets.

Conversely, the more aggressive the working capital policy the lower the level of investment in current assets and the less is the firm's reliance on long term capital to finance current assets.

2.4.1 Conservative working capital policy

A conservative policy implies relatively high investment in current assets in relation to sales, the current assets to sales ratio is comparatively high and asset turns over ratios were low. In a conservative approach, stock and cash levels generally be kept high to avoid stock-out and illiquidity costs. There is also likely to be a sizeable investment in short-term bank deposits and other short term liquid investment. (Copeland, et al, 2005).

The investment in current asset is divided into permanent current assets and temporary current assets. The investment in permanent current assets represents the core, or minimum level of investment in current assets required on a continual basis. In addition to permanent current assets, the business needs to invest in temporary assets, to accommodate fluctuations in its business (Brealey & Myers, 1996).

Weston and Brigham (1977) further observe that as the conservative policy relies on long-term financing, this also makes it a more expensive policy to follow than one which follows short-term financing. However, they say it is also the low risk working capital policy as the company is not dependent upon access to short term funds and is not therefore exposed to the volatility of short-term interest rates or to unexpected changes in general economic conditions.

2.4.2 Aggressive working capital policy

An aggressive capital policy relies on minimum investment in current assets and is highly dependent on access to short-term financing. With an aggressive policy total investment in current assets is kept to a minimum. The current asset to sales ratio is much higher and the current turnover rates much higher in comparison to a conservative policy.

In terms of financing, McMenamin (1999) says that a company following an aggressive working capital policy uses long-term finance to fund its investment in permanent fixed assets and also a substantial part of its permanent current assets. Short term financing is used to fund temporary current assets needs and also part of the permanent current assets requirements.

Compared with conservative and moderate policies, an aggressive working capital policy achieve higher returns but also carry high risk due to its higher dependency on short term finance (McMenamin, 1999).

2.4.3 Moderate working capital policy

A moderate or balanced working capital policy falls midway between the aggressive and conservative working capital policies. With a moderate policy, the level of investment in current assets is neither lean nor excessive. Following a moderate policy, long-term funds are used to finance the investment in fixed asset and permanent components of current assets investments. Temporary or seasonal current assets are financed by short term sources of finance.

2.5 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. He cited the examples of two computer companies, Gateway and Dell. According to him, gateway survived years of losses because it was very liquid. Despite years of losses, it functioned because it had enough "liquid" to survive. Dell survived for many years because it was profitable even though it had billions of dollars in debt. Therefore, he submits that both are important, and that neither measure alone can give a true picture of any company's ability to continue. However, he states that at some point, if a company does not gain profitability, it will fail.

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.

2.5.1 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 fulfil 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 choice 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 fulfils 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 a company (Fabozzi and Peterson, 2003, p. 733). There are several measures of profitability which a company can use. Few measures of profitability are discussed here:

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

$$\text{Gross Operating Profit} = (\text{Sales} - \text{COGS}) / (\text{Total asset} - \text{financial asset})$$

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, P. 101). 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 and Peterson (2003, p.729) 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 and Peterson, 2003 p. 733). 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 along with the potential risks the company faces in terms of its debt-load (Fabozzi and Peterson, 2003 p. 586). It is calculated as dividing total debt by total asset.

2.6 Review of empirical studies

The subject of working capital management has been extensively explored in the discipline of finance. Many researchers have studied working capital from different views and in different environments. This section reviewed the previous studies on the impact of working capital management on firm's profitability.

Deloof (2003) investigated the relationship between working capital management and firm profitability of Belgian firms, where he studied 1009 large Belgian non-financial firms for the period of 1992 to 1996. Using correlation and regression tests he found a significant negative relationship between gross operating income and the number of days accounts receivables, inventories and accounts payable of Belgian firms. On the basis of these results he suggested that managers could create value for their shareholders by reducing the number of day's accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Lazaridis and Tryfonidis (2006) investigated the relationship that is statistically significant between corporate profitability, the cash conversion cycle and its components. They used a sample of 131 companies listed in the Athens Stock Exchange for the period of 2001-2004. The independent variables used were fixed financial assets, the natural logarithm of sales, financial debt ratio, cash conversion cycle and its components – day's inventory, days receivable and day's payable. The dependent variable is profitability measured by gross operating profit. The research findings showed negative relationship between cash conversion cycle, financial debt and profitability, while fixed financial assets have a positive coefficient. The authors conclude that companies can create more profit by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

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.

Afza and Nazir (2007) studied 208 public limited companies listed at Karachi Stock Exchange (KSE) for a period of 1998 to 2005. Through cross-sectional regression models on working capital policies, profitability and risk of the firms; they found a negative relationship between the profitability measures of firms and degree of aggressiveness on working capital investment and financing policies. Their result indicates that, the firms yield negative returns followed on an aggressive working capital policy by investigating the relative relationship between the aggressive or conservative working capital policies for.

In a similar study but based on working capital management and profitability in Pakistani firms Raheman and Nasr (2007) studied the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability.

They selected a sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of six years from 1999 - 2004 and found a strong negative relationship between variables of working capital management and profitability of the firm. They found that as the cash conversion cycle increases, it leads to decreasing profitability of the firm and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level.

Samiloglu and 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 and 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.

Mathuva (2009) 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:

- 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,
- there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and
- there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and Profitability.

A.K. Sharma and Satish Kumar (2011) examined the effect of working capital on profitability of Indian firms. They collected data of a sample of 263 non-financial BSE 500 firms listed at the Bombay Stock (BSE) from 2000 to 2008 and evaluated the data using OLS multiple regression. The finding of their study was significantly departed from the various international studies conducted in different markets. The results reveal that working capital management and profitability is positively correlated in Indian companies. The study further reveals that inventory of number of days and number of days accounts payable is negatively correlated with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibit a positive relationship with corporate profitability.

Waweru (2011) carried out a study on the relationship between working capital management and the value of companies quoted at the NSE (Nairobi stock exchange). The study used

secondary data obtained from annual reports and audited financial statements of companies listed on the NSE. A sample of 22 companies listed on the NSE for a period of seven years from 2003 to 2009 was studied. The average stock price was used to measure the value of the firm. The regression models indicated that there was some relationship between working capital management and the firm's value while the result of the Pearson correlation indicated a negative relationship between average cash collection period, inventory turnover in days, cash conversion cycle and the value of the firm.

Makori and Jagongo (2013) in their paper they analysed the effect of working capital management on firm's profitability in Kenya for the period 2003 to 2012. For this purpose, balanced panel data of five manufacturing and construction firms each which are listed on the Nairobi Securities Exchange (NSE) was used. The dependent variable, firm's profitability, was measured by return on asset. With regard to independent variables, average collection period, inventory conversion period, average payment period and cash conversion cycle were used to measure working capital management. Pearson's correlation and ordinary least squares regression models were used to establish the relationship between working capital management and firm's profitability. The study found a 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.

Yadav and 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.

Lawal, Abiola, and Oyewole (2015) Studied by taking six selected companies in Nigeria covering the period between 2006 and 2013 was used for the study. Purposive sampling technique was adopted and data collected was analysed using panel data least square method of regression. The study found a significant negative relationship between the components of

working capital (ARP, APP and IHP) and profitability (ROI) it concluded that working capital management has significant impact on profitability of manufacturing companies.

There are studies with reference to Ethiopia on working capital management and firm profitability, especially in the manufacturing sector.

Tewodros (2010), studied the effect of management of working capital policies on firm's profitability a sample of 11 manufacturing private limited companies in Tigray region, Ethiopia for the period of 2005-2009. The finding of descriptive statistics shows that, on average cash conversion cycle takes 313days and with minimum and maximum days of -315 and 2264 respectively. It also took an average 314days to sell inventory. Firms wait an average 120days to pay their purchases and receive payment against sales on an average of 118days. The results show that longer accounts receivable and inventory holding periods are associated with lower profitability. There is also negative relationship between accounts payable period and profitability measures; however, except for operating profit margin this relationship is not statistically significant. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms. No significant relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand, findings show that a highly significant positive relationship between current liabilities to total assets ratio and profitability. Finally, negative relationships between liquidity and profitability measures have also been observed.

Mulualem (2011) studied impact of working capital management on firm's profitability on a sample of 13 manufacturing companies for the period of five years (2005-2009). The study was employed stratified sampling design based on nature and turnover of companies. The finding of descriptive statistics shows that, on average cash conversion cycle takes 129days and with minimum and maximum days of -25 and 343 respectively. It also took an average 97days to sell inventory. Firms wait an average 104days to pay their purchases and receive payment against sales on an average of 58days. The results showed that there is statistical significance negative relationship between profitability and working capital management. Moreover the study found that there is strongly significant positive relationship between size and firm profitability and there is no statistically significance negative relationship between debt and firms profitability.

Ephrem (2011) examined the impact of working capital management on profitability of the selected small and medium enterprises which are found in Addis Ababa. He took sample of

30 small micro enterprises were selected from the two sub cities of Addis Ababa namely Nifas-Silk-Lafto and Kirkos and analysis was done for five years from 2005-2009. He also 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 a cross 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.

Wubshet (2014) examined the impact of working capital management on firm's performance by using a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The performance was measured in terms of profitability by return on total assets, and return on investment capital as dependent financial performance (profitability) variables. Results indicate that longer accounts receivable and inventory holding periods are associated with lower profitability. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms. No significant relationship between cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on investment capital has been observed. On the other hand, findings show that a highly significant negative relationship between account receivable period, inventory conversion period and account payable period with return on asset. The results conclude that cash conversion cycle has significant negative relationship with return on asset.

To conclude the empirical studies, a review of prior literature reveals that there exists a significant negative relationship between profitability and working capital management by using different working capital variables selection for analysis as well by using different measurement of profitability like ROA, ROI, ROE and GOP.

The major variables used by the authors are: number of days accounts receivables, inventories and accounts payables. The following table summarizes the various author results between the major variables of working capital management and a firm's profitability. As can be seen in the following table, that almost all authors have found a negative effect of the variables on firm's profitability.

TABLE 2.2 Summary of prior research authors on the effect of the major components of WCM on firms' profitability

<i>Effect → Variables ↓</i>	<i>Significant negative relation on a firm's profitability</i>	<i>Significant positive relation on a firm's profitability</i>
<i>Number of days Accounts Receivables</i>	Deloof(2003) Laziridis and Tryfonidis(2006) Padachi (2006) Afza and Nazir (2007) Raheman & Nasr (2007) Samiloglu and Demirgunes(2008) Falope and Ajilore(2009) Mathuva(2009) Tewodros Abera (2010) Muluaem Mekonnen (2011) Waweru (2011) Makkori and Jagongo(2013) Yadav and Kumar (2014) Lawal, Abiola and Oyewolde(2015)	Sharma and Kumar(2011)
<i>Number of days Accounts Payables</i>	Deloof(2003) Laziridis and Tryfonidis(2006) Padachi (2006) Afza and Nazir (2007) Raheman and Nasr(2007) Samiloglu and Demirgunes(2008) Falope and Ajilore(2009) Tewodros Abera (2010) Muluaem Mekonnen (2011) Sharma and Kumar(2011) Waweru (2011) Yadav and Kumar (2014) Lawal, Abiola and Oyewolde(2015)	Mathuva(2009) Makkori and Jagongo(2013)
<i>Number of days Inventories</i>	Deloof(2003) Laziridis and Tryfonidis(2006) Afza and Nazir (2007) Raheman and Nasr (2007) Samiloglu and Demirgunes(2008) Falope and Ajilore(2009) Tewodros Abera (2010) Muluaem Mekonnen (2011) Sharma and Kumar(2011) Waweru (2011) Yadav and Kumar (2014) Lawal, Abiola and Oyewolde(2015)	Padachi (2006) Mathuva(2009) Makkori and Jagongo(2013)

Source: Authors construct

2.7 Summary of the chapter and knowledge gap

This chapter started with an overview of working capital in which its nature and importance of working capital, concept and definition of working capital and types of working capital. Working capital management (WCM) and different components of WCM which are cash and marketable securities, accounts receivable, inventory, accounts payable and cash conversion cycle are mentioned. Also, working capital theories are discussed. Afterwards the different WCM policies in which a firm can pursue are discussed. Then the WCM, profitability and liquidity with its measurement was described. Finally, Prior research in the field was described.

Generally, the literature review indicates that working capital management has impacts on profitability, liquidity and performance of a firm. Even if, the literature review indicated that working capital management has impact on the profitability, liquidity and performance of firms but there still is vagueness regarding the appropriate variables, hypotheses and effect size measures that might serve as proxies for working capital management as a whole.

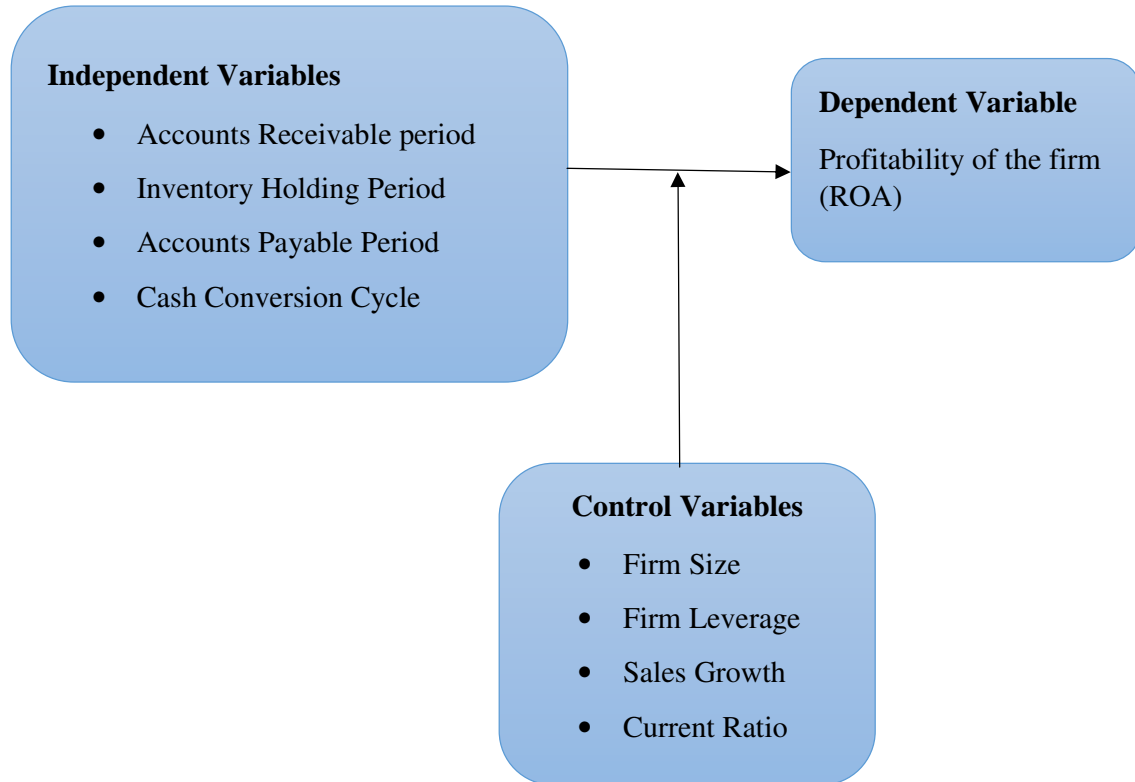
From the empirical study listed above it could be depicted that working capital have impact on profitability. Mathuva (2009) found out that shortening days in collection period would result in increase on profitability and further noted that companies with shorter accounts payable period are less profitable and quick turn of inventory would increase profitability. In another way, Sharma and Kumar (2011) found that WCM and profitability is positively correlated. Their study reveals that ARP and CCC exhibit a positive relationship with profitability as well days account payable and inventory of number of days are negatively correlated with firms profitability. Tewodros (2010) also suggested that reduction of CCC and quick turnover of inventory would increase profitability. Tiringo (2013) also suggested that firms with shorter account payable period are less profitable.

It is clear from the empirical evidence, there is no common results on the impact of WC on profitability. This may be due to lack of not incorporating all relevant and most important variables used to measure both WC and profitability. Therefore, this study included the major important variables and provides useful support for better understanding of the impact of management of working capital on profitability of manufacturing share companies in Ethiopia with special reference to large tax payers. Finally the study adopted a stratified method to incorporate the heterogeneity of the population and brought the generalizability on all manufacturing share companies to be robust.

2.8 Conceptual framework

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

Figure 2.3 Schematic conceptual framework



Source: Authors Design

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter described a theoretical and works related to working capital management by different authors. This chapter however moves a step further by showing the ways in which the relevant data and its collection methods have helped prove that indeed working capital management is necessary for manufacturing firms. It covers research designs, data source and collection methods, population and sample size, description of variables, method of data analysis, model specifications and diagnostic tests.

3.2 Research design

Research design is the plan and structure of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research. The main purpose of this research is to determine the impact of working capital management on the performance of manufacturing share companies in Ethiopia for the period of year 2008 to year 2014. The study adopted an explanatory research that used a quantitative research design through the use of secondary data.

Schindler and Cooper (2001) discussed that explanatory studies unlike descriptive studies, go beyond observing and describing the condition and tries to explain the reasons of the phenomenon. According to Grover(2003) explanatory research is devoted to finding causal relationships among dependent and independent variables. It does so from theory-based expectations on how and why variables should be related. Hypotheses could be basic (i.e., relationships exist) or could be directional (i.e., positive or negative). The quantitative data gathering methods are useful especially when a study needs to measure the cause and effect relationships evident between pre-selected and discrete variables (Addisu, 2011).

The justification for this method is that it is expected to assist the researcher in explaining the impact of working capital management on the performance of manufacturing share companies in Ethiopia. Furthermore as the research design goes beyond description of the phenomena it enables the researcher to use theory based expectations on how and why the variables associate.

3.3 Data source and collection procedure

The research study employed the use of secondary source of data. The secondary data was derived from financial statements of selected large tax payers manufacturing share companies. These data include audited balance sheet and profit and loss accounts showing annual financial statements of the sampled companies. The data was collected for a period of seven years.² The period of the data collection was from the years 2008 to 2014. The specific data collected covering these seven year period considering the variables used in the study have been collected.

3.4. Population and sample size

3.4.1 Target Population

A population is the total collection of elements about which the researcher makes some inferences. The collection of all possible observations of a specified characteristic of interest is called a population while a collection of observations representing only a portion of the population is called a sample. In this study, the target population is manufacturing firms who are large tax payers in the country. The population inference is made due to the availability of the data necessary for the study and also most of the manufacturing firms reside in large tax payers' branch office.

The Ethiopian revenues and customs authority (ERCA) has revised the entry point into the large taxpayer category to start from companies who have an annual sales turnover greater than 27 million Birr. The new revision had been effective as of August 7, 2013. In which it has an increase from the previous 15 million Birr annual sales cut-off point (which was held in July 2010) between medium and large taxpayers. Prior to July 2010, those with annual sales above 3.8 million birr were classified as large taxpayers. When the new revision was implemented as of august 7, 2013 number of large taxpayers increased from 870 to 1,002.

According to Ethiopian revenue and customs authority (ERCA) large tax payers office(LTO), from 1002 large tax payers organizations in Ethiopia, construction companies are 112, financial institutions are 38, wholesale and other traders are 649 and manufacturing companies encompasses 203 in number as of 31 march 2015 (ERCA, 2015). This study focuses on manufacturing share firms. Therefore, according to Ethiopian revenue and customs authority (ERCA) large tax payer's office, large tax payers manufacturing share companies as of 31 March 2015 were 34. Therefore, the total number of population eligible

² "The researcher has to do the study by having a 10 year data from 2005-2014, but due to unavailability of selected sample companies data, it brought to make the study for 7 years"

and used for the study has been 34 large tax payers manufacturing share companies found in Ethiopia. The sample has been drawn from the population registered in ERCA.

3.4.2 Sample and sampling technique

The total population of the study is delimited to all large tax payers manufacturing share companies in Ethiopia. The sampling method used was made based on the following requirements in order to be included in the sample.

The first criterion used in selecting sample units to be included in the study is that the status of “share companies”. In this case based on the data from Ethiopian revenue and customs authority (ERCA) large tax payers’ office, 34 large tax payers manufacturing share companies were running businesses in Ethiopia as of March 31, 2015. (See Appendix 1)

The researcher then made the second level sample restriction in selecting sample units to be included in the study is holding a complete seven years financial statement data for the study period of 2008-2014. Hence those companies whose data were not available for the entire study period or whose financial years were not in uniform exclude from the sample selection.

The sampling procedure employed in this study was stratified sampling technique. Stratified sampling method has the following advantage which leads the researcher to use it. First, it improves the accuracy of the sample, i.e. it ensures that any differences between the strata are controlled by making sure that each stratum is proportionately represented. Second, Stratified sampling is one tool to reduce selection bias. However, if from stratum’s one group is either overrepresented or underrepresented in a sample, selection bias has occurred and the sample will not accurately reflect the larger population.

Accordingly, Six (6) types of manufacturing companies are chosen for this study based on their nature. (See Appendix 2).

The researcher tried to make the sample representative of the population manufacturing share companies of large tax payers in Ethiopia. Proportionate stratified sampling design was used. The sampling fraction was based on the number of population for each of the six strata that formed the sample size of sixteen. (47% of the target population). This ensured that all the activity types or manufacture sectors were represented in the sample size in the proportions in which they occurred in the total population. Since the total population was thirty four and the sample size is sixteen elements, the uniform sampling fraction for all activity type was $16/34$ or 47%.

Thus, the proportionate stratified sample size was as designed in the table below.

Table 3.1 Proportionate stratified sampling design

Activity type	Population		Sample	
	Number	Proportion in Percent	Number	Percentage
Manufacture of food products	4	12%	2	12%
Manufacture of Beverages, Mineral water and soft drinks	9	26%	4	29%
Manufacture of textiles, leather and related products	4	12%	2	12%
Manufacture of chemicals, Pharmaceuticals, pesticide, paint, soap and detergent	5	15%	2	12%
Manufacture of Basic metals and metal components	4	12%	2	12%
Manufacture of other products which was not categorized under the above strata like glass, plastics, Furniture, clay and other manufacturing products	8	23%	4	23%
Total	34	100%	16	100%

Source: Authors design

Accordingly, after stratifying the population using the nature of operations, the study selects a total sample of 16 companies (47%) of the target population from all sectors which deployed financial statement available to this study.(see appendix 3)

3.5 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 variable used in this study is 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.

3.5.1 Dependent variables

Dependent variables are variables that are used to measure the profitability of firms. In order to analyse the impact of working capital components on the profitability of manufacturing firms in Ethiopia, profitability is measured by return on assets (ROA).

ROA is a widely used financial tool to determine the level and intensity of returns that a firm has generated by employing its total assets. Firms are usually considered well off when they generate returns that can attract further investors and lenders, and in trouble if they need to raise the finance required for growth or capital needs, or if their ROA does not convince financiers. ROA reflects the earnings generated by the capital invested, and is calculated as follows:

$$\text{ROA} = \text{Net income}/\text{total assets}$$

In this study, ROA is used as dependent variable. ROA has been used by (Samiloglu and Demirgunes, 2008; Sharma and Kumar, 2011; Mogaka and Jagongo, 2013). The return on assets determines the management efficiency to use assets generates earnings. It is a better measure since it relates the profitability of the company to asset base (Padachi, 2006).

3.5.2 Independent variables

The explanatory variables to be used as proxies of working capital management are (1) Cash conversion cycle, (2) Accounts receivable period, (3) Inventory holding period, and (4) Accounts payable Period.

While this study explores the impact of the aforementioned four variables on profitability, it is noted that this list of the selected variables is not exhaustive as there are a number of working capital components that can affect profitability. The choice of explanatory variables is based on the following factors: 1) alternative theories related to working capital management (for example, one theory stating that a longer cash conversion cycle increases firm profitability given that it leads to higher sales, and the opposing theory stating that corporate profitability decreases as cash conversion cycle elongates, particularly if the costs of higher investment in working capital rise faster than the benefits of holding more inventory and/or granting more trade credit to customers and 2) working capital management variables used in previous studies conducted in other geographic jurisdictions has been used to calculate the relationship between working capital management and profitability.

The description of how the variables are measured and computed is explained below.

Cash Conversion Cycle

The cash conversion cycle measures the *net time interval* between actual cash expenditures on a firm's purchase of productive resources and the ultimate recovery of cash receipts from product sales (Richards and Laughlin, 1980). It is measured as follows:

$$\text{Cash Conversion Cycle (CCC)} = \text{Accounts Receivable Period (ARP)} + \text{Inventory Holding Period (IHP)} - \text{Accounts payable Period (APP)}$$

The three components of Cash conversion cycle are specified below.

Accounts Receivable Period

Accounts receivable period measures the number of days it takes to collect cash from debtors. (Fried *et al*, 2003) state that days sales in receivables measure the effectiveness of the firm's credit policy. It indicates the level of investment in receivables needed to maintain the firm's sales level and is measured as follows:

$$\text{Accounts Receivable Period (ARP)} = (\text{Accounts Receivables} / \text{Sales}) \times 365 \text{days}$$

Inventory Holding Period

Inventory holding period measures the number of days inventory is held by the company before it is sold. The less 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:

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

Accounts Payable Period

Accounts Payable Period (APP) measure the number of days a firm takes to pay its suppliers. Thus, this ratio represents an important source of financing for operating activities. The ratio is measured as follows:

$$\text{Account Payable Period (APP)} = (\text{Accounts Payable} / \text{Cost of goods sold}) \times 365 \text{ days}$$

3.5.3 Control Variables

In order to have a reliable analysis of the impact of working capital management on profitability of the firms, it is common in working capital literature to use some control variables which brought impacts on firm's profitability. The control variables used in the study are:

Current Ratio: Liquidity is one of the objectives of working capital management. In this study, the researcher has tried to examine the relationship between the two objectives of Working capital management policies: liquidity and profitability. Liquidity refers to the ability to meet current liabilities from available current assets. In this study the measures of liquidity: Current Ratio (CR) was used as one of the control variable for the study.

The ratio is measured as follows:

$$\text{Current Ratio (CR)} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Firm size (FS): as measured by natural logarithm of sales, as 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). FS was used as one of the control variable 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): measured by [(current year sales - last year sales) / last year sales] was used as control variables. This control variable is consistent with the like of (Deloof, 2003); (Afza and Nazir, 2007).

3.6 Data analysis

First, this study collects the needed data from each stratum of the manufacturing firms who agree to provide their financial statement to the study. After that, collected data are rearranged, edited and calculated in order to become complete data that is needed for this study. Next, these collected data are analysed by using E-views. The last step is interpreting the result of E-view version 9's output.

3.6.1 Ordinary least square

According to (Brooks, 2008), ordinary least squares (OLS) or linear least square is a method to estimate the slope and intercept in a linear regression model. This study uses an ordinary least squares (OLS) regression to estimate the equation.

According to Brooks (2008), the assumptions of ordinary least squares are:

- 1) The errors have zero mean.
- 2) The variance of the errors is constant and finite over all values.
- 3) The errors are linearly independent of one another.

- 4) There is no relationship between the error and corresponding x variate.

3.6.2 Diagnostic Analysis

Diagnostic test is conducted to examine whether the sample is consistent with these assumptions:

- 1) The model is correctly specified
- 2) There is no relationship between independent variables (No multicollinearity).
- 3) There is no relationship among the error term at the period t and the error term at period before t (No Serial correlation problem)
- 4) The error term is constant across the number of observations (Homoscedasticity).
- 5) The error term is normally distributed.

If all the above assumptions are consistent with the sample, E-view result will be accurate and reliable.

3.6.3 Model selection criteria (Random vs. Fixed effect model)

In this research the method used in each 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 regressors are uncorrelated with the disturbance term in each period. The null hypothesis for this test is that unobservable heterogeneity term is not correlated or random effect model is appropriate, with the independent variables. If the null hypothesis is rejected then we employ Fixed Effects method. (Padachi ,2006).

The pooled regression assumes that the intercepts are the same for each firm. This may be an inappropriate assumption; (Brooks, 2008) recommended that we could instead estimate a model with firm fixed effects, which will allow for latent firm specific heterogeneity. The simplest types of fixed effects models allow the intercept in the regression model to differ cross-sectionally. To determine whether the fixed effects are necessary or not, this study run a redundant fixed effects test as recommended by (Brooks, 2008) and others using Hausman Test

H_0 : Random Effects model is appropriate

H_1 : Fixed Effects model is appropriate

Decision Rule: Reject H_0 if p-value less than significance level 5%. Otherwise, do not reject

H_0 . According to the results presented below the study adopt fixed effects model

Table 3.2 Redundant fixed effect test

Model 1: ROA C ARP CR LVG SG FS

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	45.731206	5	0.0000

Model 2: ROA C IHP CR LVG SG FS

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	45.262203	5	0.0000

Model 3: ROA C APP CR LVG SG FS

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	41.289647	5	0.0000

Model 4: ROA C CCC CR LVG SG FS

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	39.038495	5	0.0000

Source: E-Views output results and author's computation 2008-2014

3.7 Model specifications

To analyse the impact of working capital management on profitability, the study used the following methods: (i) descriptive statistical analysis wherein a description of features of the data in the study such as mean and standard deviation of each variable is presented. (ii)

regression analysis is used to gauge the extent to which a unit change in each respective explanatory variable has on profitability. Pooled ordinary least squares method was used in regression analysis, wherein time series and cross-sectional observations is combined in determining the causal relationship between profitability variable and the independent variables used in the study.

3.7.1 General regression model

To examine the impact of working capital management on profitability of manufacturing share companies in Ethiopia, the model used by (Samiloglu &Demirgunes, 2008) has been adopted and adapted. Generally, this model is specified as:

$$ROA_{it} = \beta_0 + \sum \beta_i X_{it} + \varepsilon_{it}$$

Source: Samiloglu &Demirgunes, 2008

Where:

ROA_{it} are Return On Assets of firm i at time t; i= 1,2,3,4..... 16 firms

β₀ is the intercept of the equation

β_i are coefficients of X_{it} variables

X_{it} are independent variables at time t

t = time= 1,2.....7 years (from year 2008 to 2014)

ε_i is the error term

3.7.2 Specific regression model

Pooled OLS regressions are simply a linear regression applied to the whole data set. One of the biggest advantages of OLS method is that it relaxes the restriction of an enough large data set and simplicity. (Deloof, 2003; Garcia-Teruel &Martinez-Solano, 2006; Padachi, 2006) used OLS to investigate the impact of WCM on corporate profitability.

Four regression models were run in which one for all the variables based on selected sample companies. When the above general model is converted to the specified variables of this study the following regression equations was run to obtain the impact of working capital management on the performance of manufacturing firms.

i) Model Specification (I) regressed for accounts receivable period

$$\text{Model 1: } ROA_{it} = \beta_0 + \beta_1(AR_{Pit}) + \beta_2(CR_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \beta_5(FS_{it}) + \varepsilon_{it}$$

ii) Model Specification (II) regressed for inventory holding period

$$\text{Model 2: ROA}_{it} = \beta_0 + \beta_1(\text{IHP}_{it}) + \beta_2(\text{CR}_{it}) + \beta_3(\text{SG}_{it}) + \beta_4(\text{DR}_{it}) + \beta_5(\text{FS}_{it}) + \epsilon_{it}$$

iii) Model Specification (III) regressed for accounts payable period

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

iv) Model Specification (IV) regressed for cash conversion cycle

$$\text{Model 4: ROA}_{it} = \beta_0 + \beta_1(\text{CCC}_{it}) + \beta_2(\text{CR}_{it}) + \beta_3(\text{SG}_{it}) + \beta_4(\text{DR}_{it}) + \beta_5(\text{FS}_{it}) + \epsilon_{it}$$

Where: β_0 = intercept of the regression,

$\beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 = coefficients on each respective explanatory variables,

ROA_{it} = Return on asset – for firm i at corresponding time t .

ARP_{it} = Account receivable Period – for firm i at corresponding time t .

IHP_{it} = Inventory holding period - for firm i at corresponding time t .

APP_{it} = Account payable period - for firm i at corresponding time t .

CCC_{it} = cash conversion cycle - for firm i at corresponding time t .

CR_{it} = Current ratio - for firm i at corresponding time t .

SG_{it} = Sales growth for firm i at corresponding time t .

DR_{it} = Debt ratio for firm i at corresponding time t .

FS_{it} = Size of firm i at corresponding time t .

t = time = 1, 2, ..., 7 (from year 2008 to 2014), and

ϵ_{it} = is the error term of the regression – for firm i at time t

In the first regression model, the ARP has been regressed against the ROA. In the second regression model, the IHP has been regressed against the ROA. The third regression model involves a regression of the APP against the ROA. In the fourth regression model, the CCC is regressed against the ROA.

3.8 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.

3.8.1 Testing for normality

Normality is a condition in which the variables to be used in the model follow the standard normal distribution. The Jarque-Bera statistics was used to test the normality of the variable under different conditions and under the hypotheses;

H₀: The series is normally distributed

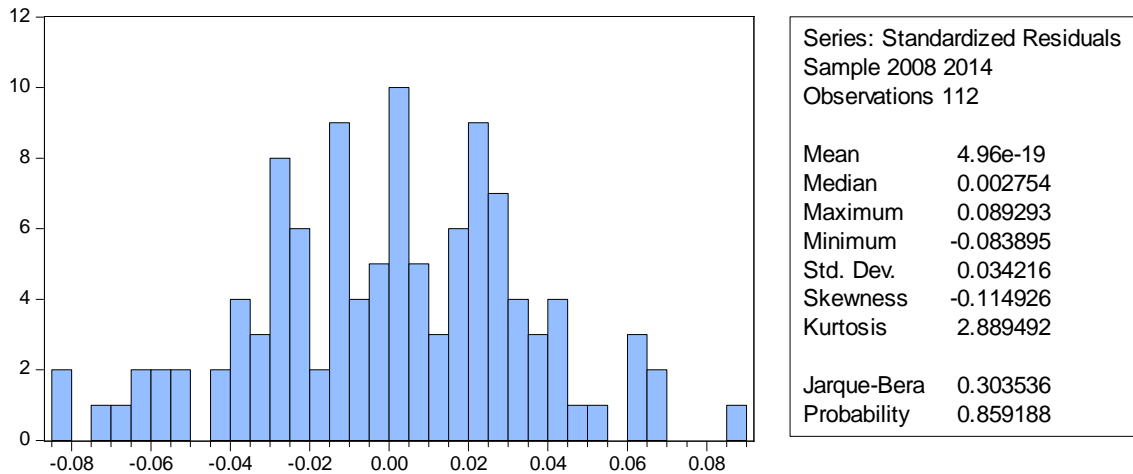
H₁: The series is not normally distributed

If the series are normally distributed, the histogram should be bell shaped and the Jarque-Bera statistic insignificant. It thus follows that series will be normally distributed at 5% level of significance if the probability of J_B statistic is greater than 0.05.

Hence, the four models regressed found to be normally distributed as presented below

Model 1: ROA C ARP CR LVG SG FS

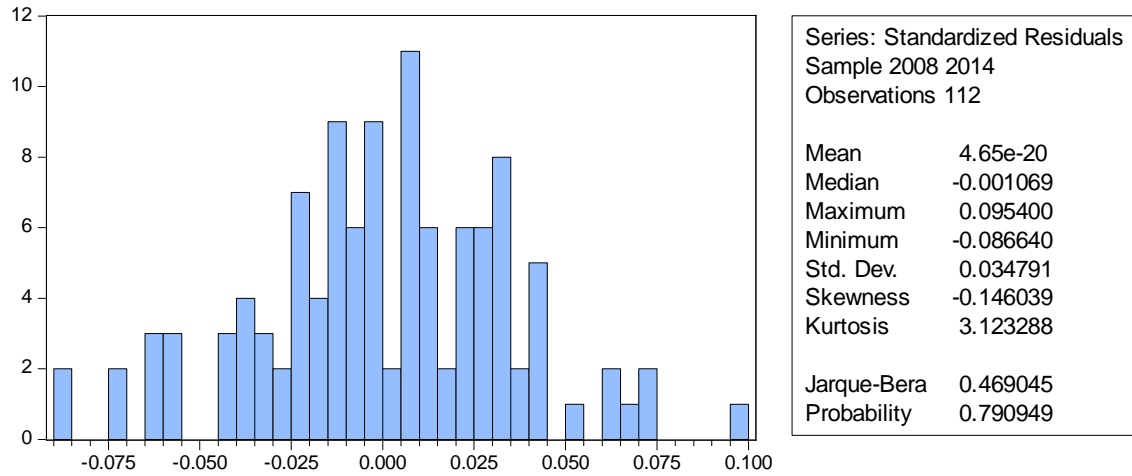
Figure 3.1: Normality test for the model effect of ARP on ROA



Source: E-Views output results and author's computation 2008-2014

Model 2: ROA C IHP CR LVG SG FS

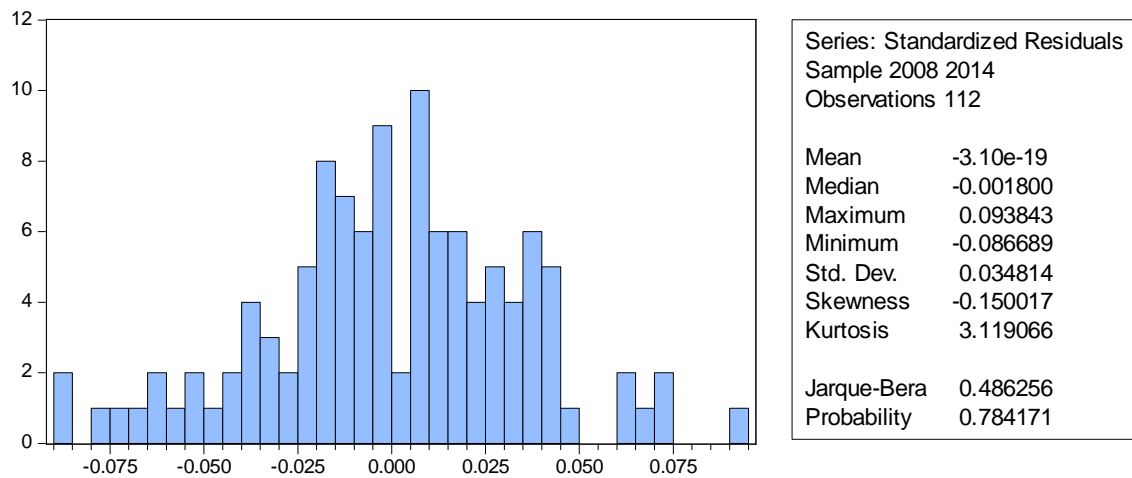
Figure 3.2: Normality test for the model effect of IHP on ROA



Source: E-Views output results and author's computation 2008-2014

Model 3: ROA C APP CR LVG SG FS

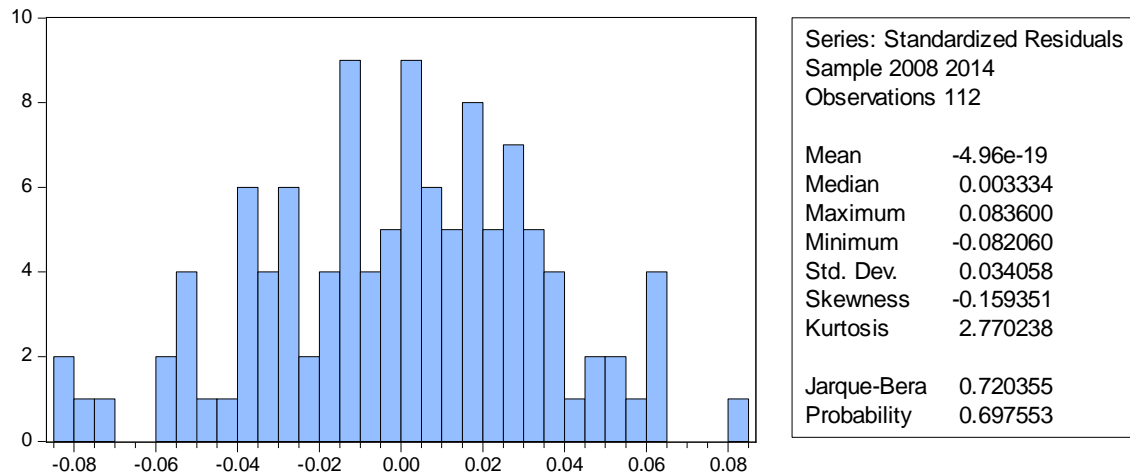
Figure 3.3 Normality test for the model effect of APP on ROA



Source: E-Views output results and author's computation 2008-2014

Model 4: ROA C CCC CR LVG SG FS

Figure 3.4 Normality test for the model effect of CCC on ROA



Source: E-Views output results and author's computation 2008-2014

3.8.2 Testing for serial correlation

Serial correlation is usually a result of model mis-specification or genuine autocorrelation of the model error term. In the presence of such a phenomenon, ordinary least squares are no longer BLUE (Best Linear Unbiased estimators). In such cases R-squared may be over-estimated. There was thus every need to test for serial correlation in the residuals.

According to Brooks (2008) when the error term for any observation is related to the error term of other observation, it indicate that autocorrelation problem exist in this model. In the case of autocorrelation problem, the estimated parameters can still remain unbiased and consistent, but it is inefficient. The result of T-test, F-test or the confidence interval will become invalid due to the variances of estimators tend to be underestimated or overestimated. Due to the invalid hypothesis testing, it may lead to misleading results on the significance of parameters in the model. Breusch-Godfrey Serial Correlation LM Test was used to detect autocorrelation problem.

Ho: $\rho=0$, i.e. no serial correlation

H1: $\rho=1$ i.e. presence of serial correlation

Decision Rule: Reject H_0 if p-value less than significance level. Otherwise, do not reject H_0 .

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

Table 3.3 Breusch-Godfrey serial correlation LM Test

Model 1: ROA C ARP CR LVG SG FS

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.163038	Prob. F(2,119)	0.1195
Obs*R-squared	4.454952	Prob. Chi-Square(2)	0.1078

Model 2: ROA C IHP CR LVG SG FS

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.324388	Prob. F(2,119)	0.2699
Obs*R-squared	2.765294	Prob. Chi-Square(2)	0.2509

Model 3: ROA C APP CR LVG SG FS

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.785360	Prob. F(2,119)	0.1722
Obs*R-squared	3.699753	Prob. Chi-Square(2)	0.1573

Model 4: ROA C CCC CR LVG SG FS

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.995810	Prob. F(2,119)	0.1404
Obs*R-squared	4.121709	Prob. Chi-Square(2)	0.1273

Source: E-Views output results and author's computation 2008-2014

3.8.3. Heteroscedasticity

According to (Brooks, 2008), Heteroscedasticity means that error terms do not have a constant variance. If heteroscedasticity occur, the estimators of the ordinary least square method are inefficient and hypothesis testing is no longer reliable or valid as it will underestimate the variances and standard errors. There are several tests to detect the Heteroscedasticity problem, which are Park Test, Glesjer Test, Breusch-Pagan-Godfrey Test, White's Test and Autoregressive Conditional Heteroscedasticity (ARCH) test. This study used Breusch-Pagan-Godfrey Test to detect the presence of Heteroscedasticity.

H_0 : The model is Heteroscedastic

H_1 : The model is Homoskedastic

Decision Rule: Reject H_0 if p-value greater than significance level. Otherwise, do not reject H_0 .

Table 3.4 Breusch-Pagan Godfrey Test for Heteroskedasticity

Model 1: ROA C ARP CR LVG SG FS

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.860698	Prob. F(5,121)	0.5097
Obs*R-squared	4.361754	Prob. Chi-Square(5)	0.4986
Scaled explained SS	6.600071	Prob. Chi-Square(5)	0.2521

Model 2 : ROA C IHP CR LVG SG FS

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.958263	Prob. F(5,121)	0.4463
Obs*R-squared	4.837351	Prob. Chi-Square(5)	0.4361
Scaled explained SS	6.064617	Prob. Chi-Square(5)	0.3000

Model 3: ROA C APP CR LVG SG FS

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.488367	Prob. F(5,121)	0.7844
Obs*R-squared	2.512222	Prob. Chi-Square(5)	0.7747
Scaled explained SS	3.482017	Prob. Chi-Square(5)	0.6261

Model 4: ROA C CCC CR LVG SG FS

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.359696	Prob. F(5,121)	0.8751
Obs*R-squared	1.860013	Prob. Chi-Square(5)	0.8682
Scaled explained SS	2.277131	Prob. Chi-Square(5)	0.8096

Source: E-Views output results and author's computation 2008-2014

3.8.4. Test for Multicollinearity

Multicollinearity is an assumption of a linear relationship between explanatory variables that creates biased regression model. This problem occurs when the explanatory variables are very highly correlated with each other (Brook, 2008). According to (Hair et al., 2006) multicollinearity problem exists when the correlation coefficient among the variables are greater than 0.90. However, (Kennedy, 2008) suggested that any correlation coefficient above

0.7 could cause a serious multicollinearity problem as it appears in the correlation matrix in the below tables all the modes are less than the stated value.

Table 3.5: Correlation matrix between explanatory variables

	ARP	INV	APP	CCC	SG	FS	LVG	CR
ARP	1.000000	0.43571	-0.56022	0.36072	-0.328953	0.555588	-0.161132	-0.410567
INV	0.43571	1.000000	-0.52131	-0.47301	-0.383411	0.683006	-0.103698	-0.269983
APP	-0.56022	-0.52131	1.000000	0.39532	-0.262408	0.538801	-0.084049	-0.202991
CCC	0.36072	-0.47301	0.39532	1.000000	-0.398666	0.652508	-0.144473	-0.379408
SG	-0.328953	-0.383411	-0.262408	-0.398666	1.000000	-0.405788	-0.171374	0.380283
FS	0.555588	0.683006	0.538801	0.652508	-0.405788	1.000000	0.010150	-0.382438
LVG	-0.161132	-0.103698	-0.084049	-0.144473	-0.171374	0.010150	1.000000	-0.009462
CR	-0.410567	-0.269983	-0.202991	-0.379408	0.380283	-0.382438	-0.009462	1.000000

Source: E-Views output results and author's computation 2008-2014

3.9 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 well 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 analyse the impact of working capital management on profitability. Finally, diagnostic tests (normality, serial correlation, Heteroskedasticity and multicollinearity) was made before adopting them in various models for practical analysis.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents and discusses the empirical results on the impact 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.

4.2 Descriptive statistics for the study variables

In this section the results from descriptive statistics was discussed. Table 4.1 below presents 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.

Table 4.1 Descriptive statistics

	CCC	CR	LVG	FS	SG	ARP	APP	INV	ROA
Mean	250.9375	3.396964	0.424929	8.092500	0.164107	116.6429	114.0893	248.3839	0.141786
Max	317.0000	6.240000	0.830000	8.190000	0.390000	160.0000	188.0000	309.0000	0.280000
Min	187.0000	1.030000	0.032000	7.970000	-0.270000	84.00000	86.00000	189.0000	-0.040000
Std.D	24.47660	1.279106	0.232542	0.039100	0.102241	14.86810	13.44897	21.89872	0.068881
Obs.	112	112	112	112	112	112	112	112	112

Source: E-Views output results and author's computation 2008-2014

Table 4.1 presents descriptive statistics for 16 manufacturing share companies in Ethiopia for a period of seven years from 2008 to 2014. The study has used nine variables for the analysis purpose which was classified in to eight independent variables and one dependent variable. The dependent variable which measures the profitability of the firm is return on asset. 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 return on assets is around 14.18 percent and standard deviation is 6.9 percent. It means that value of profitability can deviate from mean to both sides by 6.9percent. The minimum value of return on asset is -4 percent while the maximum is 28percent.

Firms under the study receive payment on sales on average of 117 days and it can vary by 15days to both sides of the mean value. The minimum and maximum account receivable period for the sampled firms is 84 and 160 days respectively.

The descriptive statistics show that it takes on average of 248 days to sell inventory. The standard deviation of inventory holding period is 22 days with 189 and 309 days as minimum and maximum values respectively.

On average, firms wait 114days to pay for their purchases. Its standard deviation for the firms under study is 13 days which deviates from both sides of the mean value. The accounts payable period ranges from 86 to 188 days to pay their credit purchases.

The cash conversion cycle, used as a comprehensive measure of working capital management has an average 251 daysand the standard deviation of 24 days. The minimum value ofthe cash conversion cycle shows 187days and on the other way, the maximum time for the cash conversion period is 317days.

Table 4.1 also includes the descriptive statistics of control variables used in the study. A traditional measure of liquidity (current ratio) shows that on average manufacturing share companies keep current assets at 3.4 times current liabilities with a standard deviation of 1.28. The highest current ratio for a firm in the study period is 6.24, with the lowest at 1.03.

The results of descriptive statistics show that the average leverage ratio for the manufacturing share companies is 42percent with a standard deviation of 23 percent. The maximum debt financing used by the firm is 83percent and its minimum level is 3.2 percent. This shows that there is a firm that uses little debt in its operation.

The other control variable, firm size, as measured by the natural logarithm of annual sales, is 8.09 on average and standard deviation is 0.039. The minimum and maximum values of firm size for the firm measured by natural logarithm of annual sales are 7.97 and 8.19 respectively.

Lastly, the firm sales growth measured by changes in annual sales has an average of 16% and there is a deviation of 10.2 percent from mean value of sales growth to both directions. The sales growth among the study firms is ranged from -27 percent to 39 percent.

4.3 Regression results

Following descriptive statistics and diagnostic tests presented in sections 4.2 and 3.8 respectively, the regression analysis in this section is used to shed more light on the impact of working capital management components on firm profitability.

Following model specifications shown in section 3.7.2, the study examines the variable which is profitability, measured by return on asset against the eight explanatory 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 (4) regression models have been run in order to investigate the impact of management of working capital on firm's profitability.

4.3.1 Regression result of model specification I

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

$$\text{Model 1: ROA}_{it} = \beta_0 + \beta_1(\text{AR}_{Pit}) + \beta_2(\text{CR}_{it}) + \beta_3(\text{SG}_{it}) + \beta_4(\text{DR}_{it}) + \beta_5(\text{FS}_{it}) + \varepsilon_{it}$$

Table 4.2 Regression results of profitability measures and ARP

Dependent Variable: ROA
 Method: Panel Least Squares
 Sample: 2008 2014
 Periods included: 7
 Cross-sections included: 16
 Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ARP	-0.006976	0.002964	-2.353178	0.0208
CR	0.004808	0.006952	0.691700	0.4909
LVG	-0.008623	0.035266	-0.244516	0.8074
SG	0.050572	0.047883	1.056169	0.2937
FS	2.807327	1.064044	2.638356	0.0098
C	-21.78381	8.268675	-2.634498	0.0099

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.836848	Mean dependent var	0.141786
Adjusted R-squared	0.800991	S.D. dependent var	0.068881
S.E. of regression	0.030728	Akaike info criterion	-3.959929
Sum squared resid	0.085923	Schwarz criterion	-3.450211
Log likelihood	242.7560	Hannan-Quinn criter.	-3.753120
F-statistic	23.33815	Durbin-Watson stat	2.075010
Prob(F-statistic)	0.000000		

Source: E-views output results and author's computation 2008-2014

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 80 percent. This implies that 80 percent of the variation in the return on assets can be explained by the variables used in the model. 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 all of the data points taken together (has more explanatory power). The F statistic is used to test the model specification. From the table 4.2 the result of one can see that the model is fit with F-statistics 23.34 at p-value of 0.0000.

The regression results in table 4.2 indicate that holding other things constant a day increase in days sales receivable is associated with a decrease in 0.6976 percent in profitability and statistically significant at 5%. The finding is in line with findings of Deloof (2003),

Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), Tewodros (2010), Muluaem (2011) and Yadav and kumar (2014) and empirical results of this study show a significant negative relationship between accounts receivable period and 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 regression result for current ratio (CR) which is a traditional measure of liquidity implies a unit increase in current ratio is associated with an increase in 0.4808 percent but statistically insignificant.

On the other hand, leverage indicate a unit increase in leverage associated with a decrease in profitability of 0.8623 percent but statistically insignificant. Likewise, a unit increase in sales growth is associated with an increase in profitability of 0.0572 percent but statistically insignificant. The size of a company shows a significant positive relationship with profitability which means that bigger size firms have more profitability compared to firms of smaller size. The regression coefficient of 2.807327 is signifying that size of the company is playing greater role for firms' profitability in which an increase in size would lead to an increase in profitability.

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 accounts receivable period have significant negatively related to a firm's profitability. In conformity with hypothesis, the indicator of profitability, return on assets is negatively and significantly related with accounts receivable period at 5% level. Therefore, the null hypothesis is confirmed and can be conclude that hypothesis one is true.

4.3.2 Regression result of model specification II

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

$$\text{Model 2: ROA}_{it} = \beta_0 + \beta_1(\text{IHP}_{it}) + \beta_2(\text{CR}_{it}) + \beta_3(\text{SG}_{it}) + \beta_4(\text{DR}_{it}) + \beta_5(\text{FS}_{it}) + \epsilon_{it}$$

Table 4.3 Regression results of profitability measures and IHP

Dependent Variable: ROA
Method: Panel Least Squares
Sample : 2008 2014
Periods included: 7
Cross-sections included: 16
Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV	-0.000491	0.001334	-0.367925	0.7137
CR	0.045130	0.003376	13.36825	0.0000
LVG	-0.019642	0.017486	-1.123315	0.2640
SG	0.016146	0.042284	0.381851	0.7034
FS	0.190644	0.751938	0.253537	0.8004
C	-1.426732	5.757894	-0.247787	0.8048

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.744883	Mean dependent var	0.141786
Adjusted R-squared	0.716820	S.D. dependent var	0.068881
S.E. of regression	0.036655	Akaike info criterion	-3.673602
Sum squared resid	0.134355	Schwarz criterion	-3.382335
Log likelihood	217.7217	Hannan-Quinn criter.	-3.555426
F-statistic	26.54338	Durbin-Watson stat	2.272307
Prob(F-statistic)	0.000000		

Source: E-views output results and authors' computation 2008-2014

Table 4.3 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 71.7 percent. This implies that 71.7 percent of the variation in the return on assets can be explained by the variables used in the model. 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 all of the data points taken together (has more explanatory power). The F statistic is used to test the model specification, from the table 4.3 result of one can see that the model is fit with F- statistics 26.54 at p-value of 0.0000.

The regression result for inventory holding period in table 4.3 implies a day increase in inventory holding period is associated with a decrease in profitability by 0.0491 percent but statistically insignificant.

This implies that the firm's profitability can be increased by reducing the number of days of inventory held in the firm. The results of the study are consistent with the results of the studies conducted by DeLoof (2003), Lazaridis and Tryfonidis (2006), Yadav & Kumar (2014), Tewodros (2010) and Raheman and Nasr (2007) in their respective analysis of the relationship between profitability and number of days of inventory. Mathura (2009) found contradicting positive evidence in Kenya. He argued that firms keep higher levels of inventory to minimize the risk of possible production stoppages or when a firm has temporarily no access to raw materials. Makori and Jagongo (2013) also found a positive relationship between the inventory conversion period and profitability. They concluded that maintaining high inventory levels reduces the cost of possible interruptions in the production process and the loss of business due to scarcity of products.

Another important observation that can be made from table 4.3 is that the conventional measure of liquidity, i.e., current ratio, is significant positively related with the return on assets, and the results are consistent with earlier studies of (Zariyawati et al., 2009). The regression result for current ratio (CR) which is a traditional measure of liquidity implies a unit increase in current ratio is associated with an increase in 4.513 percent and statistically significant. The possible reason of positive association of current ratio with profitability of the firm is mainly due to the firm's practice and reliance on self-finance and financial intermediaries specially banks who are lately constrained in providing the demanded credit due to the increase in reserve requirement which lasted from 2007-2012 as well as 27% national bank bill purchase and the absence of advanced short term liquidity instruments could be the factor for the study's result. Size and growth which are considered important indicators of firm performance are generally found to be associated positively correlated with profitability but statistically insignificant. On the other hand, leverage indicate a unit increase in leverage associated with a decrease in profitability of 0.19642 percent but statistically insignificant

The results from regression model specification II are used to determine hypothesis stated in chapter one as shown in 1.4 section. The second research hypothesis mainly tested Inventory holding period of a firm is negatively associated with profitability. In conformity with hypothesis, the indicator of profitability, return on assets is negatively related with inventory holding period but insignificant. Therefore, the null hypothesis is not confirmed and can be concluded that hypothesis two is rejected.

4.3.3 Regression result of model specification III

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

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

Table 4.4 Regression results of profitability measures and APP

Dependent Variable: ROA

Method: Panel Least Squares

Sample: 2008 2014

Periods included: 7

Cross-sections included: 16

Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
APP	2.79E-05	0.000488	0.057305	0.9544
CR	0.044597	0.003091	14.42712	0.0000
LVG	-0.016741	0.015725	-1.064661	0.2896
SG	0.018702	0.041765	0.447797	0.6553
FS	-0.092012	0.178910	-0.514291	0.6082
C	0.735753	1.406018	0.523289	0.6019

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.744546	Mean dependent var	0.141786
Adjusted R-squared	0.716446	S.D. dependent var	0.068881
S.E. of regression	0.036679	Akaike info criterion	-3.672282
Sum squared resid	0.134533	Schwarz criterion	-3.381015
Log likelihood	217.6478	Hannan-Quinn criter.	-3.554106
F-statistic	26.49638	Durbin-Watson stat	2.274186
Prob(F-statistic)	0.000000		

Source: E-views output results and authors' computation 2008-2014

Table 4.4 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 71.6 percent. This implies that 71.6 percent of the variation in the return on assets can be explained by the variables used in the model. 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 all of the data points taken together (has more explanatory power). The F statistic is used to test the model specification. From the table 4.4 the result of one can see that the model is fit with F-statistics 26.49 at p-value of 0.0000.

The regression results in table 4.4 indicate that holding other things constant a day increase in accounts payable period is associated with an increase in 0.003 percent in profitability but statistically insignificant. Contrary to Raheman and Nasr (2007), Sharma and Kumar (2011)

and Tewodros (2010), this finding holds that more profitable firms wait longer to pay their bills. This implies that they withhold their payment to suppliers so as to take advantage of the cash available for their working capital needs. Deloof (2003) who found a strong negative relationship between profitability and number of days of account payable justifies in his result that less profitable firms tend to delay payments and more profitable firms pay their bills earlier.

Mathuva (2010) and Makori and Jagongo (2013) also found a positive relation between accounts payables and firm's profitability. Their explanation for a positive relationship is that the longer a firm delays its payments to its creditors, the higher the level of working capital levels it reserves and uses in order to increase profitability.

Similarly, except the current ratio, all other variables have insignificant association with firm's profitability. However, sales growth and current ratio has a positive impact on firm profitability while other control variable like size of the firm and debt ratio has a negative impact on profitability of a firm.

The results from regression model specification III are used to determine hypothesis stated in chapter one as shown in 1.4 section. The third research hypothesis was that the account payable period of a firm are significant positively related to a firm's profitability. In conformity with hypothesis, the indicator of profitability, return on assets are positively related with accounts payable period but insignificant. Therefore, the null hypothesis is not confirmed and can be concluded that hypothesis three is rejected.

4.3.4 Regression result of model specification IV

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

$$\text{Model 4: ROA}_{it} = \beta_0 + \beta_1(\text{CCC}_{it}) + \beta_2(\text{CR}_{it}) + \beta_3(\text{SG}_{it}) + \beta_4(\text{DR}_{it}) + \beta_5(\text{FS}_{it}) + \epsilon_{it}$$

Table 4.5 Regression results of profitability measures and CCC

Dependent Variable: ROA

Method: Panel Least Squares

Sample: 2008 2014

Periods included: 7

Cross-sections included: 16

Total panel (balanced) observations: 112

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CCC	-0.001078	0.000509	-2.118675	0.0366
CR	0.042894	0.003115	13.76898	0.0000
LVG	-0.028696	0.016348	-1.755275	0.0823
SG	0.014312	0.040808	0.350725	0.7265
FS	0.527683	0.304798	1.731256	0.0865
C	-3.993781	2.342553	-1.704884	0.0913
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.755512	Mean dependent var	0.141786	
Adjusted R-squared	0.728619	S.D. dependent var	0.068881	
S.E. of regression	0.035883	Akaike info criterion	-3.716159	
Sum squared resid	0.128758	Schwarz criterion	-3.424891	
Log likelihood	220.1049	Hannan-Quinn criter.	-3.597983	
F-statistic	28.09260	Durbin-Watson stat	2.215298	
Prob(F-statistic)	0.000000			

Source: E-views output results and author's computation 2008-2014

Table 4.5 reveals the summary statistics of regression specification IV. The explanatory power of the model as can be seen is that the adjusted R squared values are equal to 72.8 percent. This implies that 72.8 percent of the variation in the return on assets can be explained by the variables used in the model. 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 all of the data points taken together (has more explanatory power). The F statistic is used to test the model specification. From the table 4.5 the result of one can see that the model is fit with F-statistics 28.09 at p-value of 0.0000.

The regression results in table 4.5 indicate that holding other things constant a cash conversion cycle period is associated with a decrease in 0.1078 percent in profitability and statistically significant at 5%. The combined effect of all the three variables; accounts

receivable, inventory holding period and accounts payable period used in model specification IV was analysed by using cash conversion cycle. The result indicate that when the net time interval between actual cash expenditures on a firm's purchase of productive resources and the ultimate recovery of cash receipts from product sales shortens by a day, profitability of manufacturing share companies in Ethiopia increases by 0.11percent. Therefore, decreasing the cycle by one day bring an increment of 0.11percent profit per year on performance of firms. In essence, this negative relationship suggests that corporate managers can increase profitability of their firms by shortening the time lag between a firm's expenditure for purchases of raw materials and the collection of sales of finished goods. Moreover the regression results show that size, sales growth and current ratio have positive correlation coefficient values. However, except CCC and current ratio, variables used in this model are not significant.

Studies like Deloof (2003), Shin and Soenen (1998), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2006), Samiloglu and Demirgunes (2008), Tewodros (2010) and Makori and Jagongo (2013) all found a significant negative relation between the CCC and a firm's profitability. Contradicting evidence was found by Gill et al. (2010) who found a positive relation between the two variables. This is caused by the positive, but not significant, relation between inventories and firm's profitability. Also contradicting evidence is found by Sharma and Kumar (2011) in India, who argued that firms, has a higher level of accounts receivable due to generous trade credit policy which results in longer cash conversion cycle.

Considering the components of the cash conversion cycle (i.e., inventory period, accounts receivable period or accounts payable period) the negative result with cash conversion cycle points out that an increase in profitability is associated with a lower in the cash conversion cycle. It shows that the profitable companies tend to have the longer cash conversion cycle which indicates to inefficient working capital management. This was affected by either inventory period, accounts receivable period or accounts payable period.

The implication is that the increase or decrease in cash conversion cycle has significantly and negatively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher the profitability and vice versa. As stated in theoretical part of this research, cash conversion cycle is an addition of accounts receivable period and inventory holding period and a deduction of accounts payable period. Managing cash conversion cycle efficiently, therefore, means efficient management of these three items. By managing efficiently the accounts receivable period, inventory holding period and accounts

payable period (by making short accounts receivable period, inventory holding period and/or long accounts payable period) managers can control the efficiency of cash conversion cycle and its impact on profitability.

The results from regression model specification IV are used to determine hypothesis stated in chapter one as shown in 1.4 section. The fourth research hypothesis was that the cash conversion cycle of a firm is significantly negatively related to a firm's profitability. In conformity with hypothesis, the indicator of profitability, return on assets are negatively and significantly related with cash conversion cycle at 5% level. Therefore, the null hypothesis is confirmed and can be concluded that hypothesis four is true.

4.4 Conclusion of the chapter

The research provided two types of data analysis; namely descriptive analysis and inferential analysis. The research first looked at the description of working capital management components and profitability. i.e. accounts receivable period (in days), inventory holding period (in days), accounts payable period (in days), cash conversion cycle (in days), current ratio, sales growth, firm size, leverage ratio and return on assets. Their mean, standard deviation, minimum and maximum values were determined.

The findings showed that inventory holding period and accounts payable period are on average 248 days and 114 days respectively, cash conversion period had a mean of 251, leverage ratio (0.42), average collection period (117) current ratio (3.4) sales growth (0.1641), size of the firm measured as log of sales is 8.0925 and the overall return on assets recorded a mean of 0.1418. (Table 4.1)

The empirical results from the test hypothesis shows that except hypothesis two (HP2), inventory holding period of the firm are significantly negatively related and hypothesis three (HP3), the account payable period of a firm are significantly positively related to a firm's profitability; the study accepted the null hypothesis.

CHAPTER FIVE

CONCLUTIONS AND RECOMMENDATIONS

This chapter presents conclusions drawn from the overall overviews of the research and its main findings. Then recommendations have been forwarded by the researcher based on the findings made. Finally, future research direction has been provided.

5.1 Conclusions

The management of working capital is one of the most important financial decisions of a firm. The ability of the firm to operate for longer durations depends on a proper trade-off between management of investment in long-term and short-term funds (working capital). Firms can achieve optimal management of working capital by making the trade-off between profitability and liquidity. It is necessary for a firm to monitor its working capital properly and maintain its balance at the appropriate level. Shortage of working capital may lead to lack of liquidity as well as loss of production and sales; on the contrary, excess balance of working capital could be seen as loss of investment opportunities.

This research studied the impact of working capital management on profitability of manufacturing share companies in Ethiopia. The study used quantitative research approach. Data was analysed using descriptive statistics and regression analysis on a sample of 16 manufacturing share companies in Ethiopia for the period of 2008-2014.

The impact of working capital management has been analysed by using OLS regression model between WCM and profitability. The study used return on asset as dependent variable. Accounts receivable period, inventory holding period and accounts payable period were used as independent working capital management variables. Moreover, cash conversion cycle was used as comprehensive measures of working capital management. In addition, the study used current ratio, which was used as liquidity indicator; firm size, as measured by logarithm of sales; firm growth rate, as measured by the change in annual sales; and financial leverage, measures the total debt of the firm; as control variables.

Descriptive statistics were used to examine the trend of the chosen variables among the samples firms. The mean value of the 16 firms included in the study as measured by return on asset was 14.18 percent and it deviates from the mean to both sides by 6.9 percent. Its minimum value is -4 percent while the maximum is 28 percent. While the liquidity position as measured by current ratio is on average 3.4. The firms receive cash collection from their customer on average at 117 days and have accounts payable period on average at 114 days.

The average inventory period that means the period from inventory purchased to inventory sold averaged is 248days. On the other side, cash conversion cycle as a comprehensive measure of working capital management of manufacturing share companies of the study on average takes 251days. Before the regression were run, the data have tested the assumptions underlying OLS and are fulfilled all tested assumptions made.

The regression analyses of the number of day's accounts receivables indicate that there is a 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, the higher the profitability and vice versa. Therefore, firms can increase their profitability by reducing the accounts receivable period as much as possible.

The regression analyses of inventory holding period indicate that there is a negative relation between these days and firm's profitability. This means that the shorter the firm's inventory holding period, the higher the profitability and vice versa. Therefore, firms can increase their profitability by reducing the inventory holding period as much as possible. In another way, firms should faster the speed of inventory turnover to maximize profitability.

The regression analyses of account payable period indicate that there is a positive relation between these days and firm's profitability. This means that the longer the firm's accounts payable period, the higher the profitability and vice versa. This can be described as the longer a firm delays its payments to its creditors, can increases profitability.

The regression analyses of cash conversion cycle indicate that there is a significant negative relation at 5percent level between this cycle and firm's profitability. This means that the shorter the firm's cash conversion cycle, the higher the profitability and vice versa. The negative relationship between accounts receivable period and profitability suggests that high profitable firms pursued an increase of their accounts receivables in an attempt to increase their cash gap in the cash conversion cycle. Similarly, the positive relationship between accounts payable period and profitability shows that when firms delay their payments they earn more profits. The negative relationship between inventory holding period and profitability suggests that firms should make speed the turnover of inventory to be profitable. Therefore, manufacturing share firms of Ethiopia can increase their profitability by making lower the length of cash conversion cycle and keeping each different component (accounts receivables, accounts payables, and inventory) to the optimal level.

5.2 Recommendations

The recommendations of the research were premised on the summary of and conclusions from the results and discussion. The study has shown a clear understanding of working capital components and its impact on profitability of firms. In order to improve firms' performance, management of working capital components is necessary. Therefore, the researcher recommends the following points based on the study findings.

- i) The negative relationship between manufacturing firms' financial performance and accounts receivable period increases firm's profitability when there is high collection of accounts receivable. The result of the study shows whenever the average collection period of the firm decreases, firms profitability increases. Therefore the researcher suggests to the managers of the firm to control their receivable and uncollectible before long. The researcher further recommended that firms should engage in relationship with those customers who allow short payment period by considering taking into account not to lose customers who delay payments.
- ii) The study found negative relationship between inventory holding period and firms' profitability. It is apparent that higher IHP is associated with higher storage, carrying cost and also prone to spoilage. Hence, the regression result indicate IHP is insignificant in impacting profitability. However, as far as previous empirical and theoretical studies concerned minimizing IHP will result in efficient outcome of investment. The researcher recommended the firms should work on in bettering the inventory management system that minimizes the holding period.
- iii) The study also found positive relationship between accounts payable period and firms' profitability. It indicates that whenever firms wait longer to pay their account payables, it increases profitability. However, the study found out there is an insignificant relationship between APP and profitability. Therefore, the researcher recommended that firms should consider the terms of APP to be longer to have an impact on firms' profitability.
- iv) The study also found that cash conversion cycle has a negative relationship with firms' profitability. Therefore, regarding the CCC, the researcher recommended that lowering working capital cycle as a measure of efficient working capital

management is the one to be appraised. This means that Investment in working capital could be optimized and cash flows could be improved by reducing the time frame of the physical flow from receipt of raw material to shipment of finished goods, *i.e.* inventory management, and by improving the terms on which firm sells goods as well as receipt of cash.

Finally, management of manufacturing firms made under study can create value for the shareholders as well to make the firms performance well by reducing: the net time interval between actual cash expenditures on a firm's purchase of productive resources and the ultimate recovery of cash receipts from product sales.

5.3 Suggestion on continued research

There is need for further studies to carry out an impact of working capital management on profitability of firms by incorporating more working capital variables that affects profitability.

This study focuses only on the relation between working capital management and profitability measured as ROA. There are also other measures of profitability, ROI, GOP, ROE to consider for further study.

Also, this study looks impact of working capital management on profitability of manufacturing share companies in Ethiopia by focusing of operational working capital components like accounts receivables, inventories and accounts payable. The future researcher should extend on manufacturing companies of Ethiopia by using financial working capital components like cash, prepaid and tax payable.

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Appendix 1 Name of detail manufacturing companies

1. Adamitulu Pesticide Processing S.C ,Oromia Region,Tel: 046 45 90 66, P.O.Box 274
2. Addis Ababa Bottle and Glss share company
3. Addis Modjo Edible oil complex share company
4. Alkyd Resin share company
5. Ambo mineral water share company, Oromia Region Tel 0112 36 20 24
6. Anbessa shoe share company, Addis Ababa Lideta sub city Tel 0112 75 16 05
7. Awash wine share company , Addis Ababa Lideta sub city Tel 0113 20 13 91
8. Bedele Brewery share company, Oromia region, Tel 0114 44 50 14
9. Chemical industry corporation
10. China-Africa overseas Leather products S.C
11. East Africa Bottling share company, Addis Ababa Lideta sub city Tel 0112 75 63 82
12. East Cement share company
13. Ethiopian Chip wood and Furniture(ECAFCO) share company
14. Ethio Japanese synthetic textile share company
15. Ethiopian crown and can manufacturing
16. Ethiopian Iron and steel factory, Addis Ababa Akaki Kaliti sub city Tel 0114 34 27 19
17. Ethiopian Marble processing Enterprise, A.A N. silk sub cityTel 0114 66 63 09
18. Ethiopian Petroleum & Natural Gas Development Enterprise
19. Ethiopian Plastic S.C Addis Ababa, kirkos sub city Tel 0115 51 78 90
20. Ethiopian Pharmaceuticals Manufacturing S.C
21. Ethiopian Spice Extraction S.C Addis Ababa, Akaki sub city
22. Faffa Food share company, Addis Ababa Akakai kaliti sub city Tel 0114 42 17 55
23. Harar Brewery share company, Harari region Hundene sub city Tel 0256660267
24. Heineken Breweries share company,
25. Horizon-Addis tyre share company
26. Kaliti Food share company, Addis Ababa Akaki kaliti sub city Tel 0114 39 01 44
27. Kaliti Metal products factory, Addis Ababa Akaki kaliti sub city Tel 0114 34 01 10
28. Meta abo Brewery share company, Oromia Region, Tel 0113 38 31 29
29. Metal and Engineering corporation,
30. Moha soft drinks industry S.C,Addis Ababa Lideta sub city Tel 0112 75 01 22
31. National Alchohol Processing S.C
32. National Tobacco Enterprise(Ethiopia) S.C, Addis Ababa Nefas silk lafto sub city Tel 0115 51 00 44

33. Repi Soap and Detergent S.C
34. Tikur Abay Shoe share company

Appendix 2 Strata of sample companies

1st Strata

1. Manufacture of Food Products
 - i) Addis Modjo Edible oil complex share company
 - ii) Ethiopian Spice Extraction S.C
 - iii) Faffa Food Share company
 - iv) Kalitti Food share company

2nd Strata

2. Manufacture of Beverages, Mineral water and soft drinks
 - i) Ambo mineral water share company
 - ii) Awash wine share company
 - iii) Bedelle Brewery share company
 - iv) East Africa Bottling share company
 - v) Harar Brewery share company
 - vi) Heineken Breweries share company
 - vii) Meta abo Brewery share company
 - viii) Moha soft drinks industry S.C
 - ix) National Alcohol Processing S.C

3rd Strata

3. Manufacture of textiles, leather and related products
 - i) Anbessa shoe share company
 - ii) China-Africa overseas leather products S.C
 - iii) Ethio Japanese synthetic textile share company
 - iv) Tikur Abay shoe share company

4th Strata

4. Manufacture of chemicals, pharmaceuticals, pesticide, paint, soap and detergent
 - i) Adamitulu pesticide processing S.C
 - ii) Chemical industry corporation
 - iii) Ethiopian petroleum & Natural Gas development Enterprise
 - iv) Ethiopian pharmaceuticals manufacturing S.C
 - v) Repi soap and detergent S.C

5th Strata

5. Manufacture of Basic metals and metal components
 - i) Ethiopian crown and can manufacturing
 - ii) Ethiopian Iron and steel factory
 - iii) Kaliti metal products factory

- iv) Metal and Engineering corporation

6th Strata

- 6. Manufacture of other products which was not categorized under the above strata like glass, plastics, Furniture, clay and etc.
 - i) Addis Ababa Bottle and Glass share company
 - ii) Alkyd Resin share company
 - iii) East cement share company
 - iv) Ethiopian chip wood and furniture (ECAFCO) S.C
 - v) Ethiopian Marble Processing Enterprise
 - vi) Ethiopian Plastic S.C
 - vii) Horizon-Addis tyre S.C
 - viii) National Tobacco Enterprise (Ethiopia) S.C

Appendix 3 Name of sample companies

1. Adomitulu Pesticide Processing S.C ,Oromia Region,Tel: 046 45 90 66, P.O.Box 274;
ownership structure: public enterprise
2. Addis Ababa Bottle and Glass share company; ownership structure: state owned
3. Alkyd Resin share company;ownership structure: state owned
4. Anbessa shoe share company, Addis Ababa Lideta sub city Tel 0112 75 16 05;
ownership structure: public enterprise
5. Awash wine share company , Addis Ababa Lideta sub city Tel 0113 20 13 91;
ownership structure: private
6. Bedele Brewery share company, Oromia region, Tel 0114 44 50 14;ownership
structure: private
7. Ethiopian Chip wood and Furniture(ECAFCO) share company; ownership structure:
public enterprise
8. Ethiopian crown and can manufacturing; ownership structure: public enterprise
9. Faffa Food share company, Addis Ababa Akakai kaliti sub city Tel 0114 42 17 55;
ownership structure: public enterprise
10. Kaliti Food share company, Addis Ababa Akaki kaliti sub city Tel 0114 39 01 44;
ownership structure: public enterprise
11. Kaliti Metal products factory, Addis Ababa Akaki kaliti sub city Tel 0114 34 01 10;
ownership structure: public enterprise
12. Meta abo Brewery share company, Oromia Region, Tel 0113 38 31 29; ownership
structure: private
13. Moha soft drinks industry S.C,Addis Ababa Lideta sub city Tel 0112 75 01 22;
ownership structure: private
14. National Tobacco Enterprise(Ethiopia) S.C, Addis Ababa Nefas silk lafto sub city Tel
0115 51 00 44; ownership structure: Joint venture
15. Repi Soap and Detergent S.C; ownership structure: Joint venture
16. Tikur Abay Shoe share company; ownership structure: public enterprise