EFFECT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF MANUFACTURING INDUSTRIES IN ETHIOPIA

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

BY:

TAMENE GETNET

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TAMENE GETNET

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APPROVED BY BOARD OF EXAMINERS

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Dean, graduate studies   Signature & Date

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    Advisor   Signature &Date

_____   _____
External Examiner   Signature & Date

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Internal Examiner   Signature & Date

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Abebaw Kassay (Ass.Prof). All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Tamene Getnet   **..................................**

Name Signature& Date

ENDORSEMENT

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

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        Advisor   Signature& Date

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List of Abbreviations and 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
OLS: Ordinary Least Square
ROA: Return on Asset
ROE: Return on Equity
SG: Sales Growth
WC: Working Capital
WCM: Working Capital Management

CLRM: Classical Linear Regression Model

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Abstract

The purpose of this study is to examine the effect 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 14 manufacturing companies are used for a period of five year data (2011-2015) with the total of 70 observations.

Data was analyzed on quantitative basis using descriptive and regression analysis (Ordinary Least Square) method. Non-probability Purposive sampling based on researcher judgment was used. It examined the components in working capital such as accounts receivable period, inventory holding period, accounts payable period, and cash conversion cycle in relation to return on asset (ROA).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 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, negative relationships between liquidity and profitability measures have also been observed. In general the study recommended that firms should minimize capital management components in order to maximize profitability.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Corporate financial management primary deals with three core areas that have a bearing on 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 investment;(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 asset and liabilities.

At one given time both the current assets and current liabilities exist in the business. The current assets and current liabilities are flowing round in a business like an electric current. However "the working capital plays the same role in the business as the role of heart in human body. Working capital funds are generated and these funds are circulated in the business. As and when this circulation stops, the business becomes lifeless. It is because of this reason that the working capital is known as the circulating capital as it circulates in the business just like blood in the human body. " (Agawam, 2000).

Financial objectives, such as sales and profit, are still a primary purpose for companies. In other words, increasing their market value is the main goal. working capital management is a very important component of corporate finance because it directly affects companies 'liquidity and profitability (Deloof,2003;Eljelly,2004;Raheman and Nasr,200).There for efficient management of working capital is a fundamental part of the overall corporate strategy to create shareholder value. In general, companies try to keep an optimal level of working capital that maximizes their value (Deloof;2003 Anza& Nazir,2007) 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 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 business entity takes the decision regarding its current assets and current liabilities it can be termed as working capital management.

The management of working capital can be defined as accounting approaches that emphasize on maintain proper level of both current assets and current liabilities. Working capital management provides enough cash to meet the short-term obligation of a firm. (Raheman and Nasr, 2007) Working capital management is 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 managing the required liquidity in day-to-day operation to ensure firm's smooth running and to meet its obligation.

In their respective studies of working capital management, Deloof (2003) ;Raheman and Nasr (2007) found that current assets of typical manufacturing firm accounts for more than half of the total assets and that the high level 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 profitability and liquidity 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 problem to the firm. Thus, there is a trade-off between this 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 continues 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 share holders' profitability. Indeed, a lot of research has been conducted in different countries to show the impact of working capital components on firms' profitability. However, there are few studies with reference to Ethiopia on working capital management and firms' profitability especially in the manufacturing sector. By looking on the importance of working capital management, the researcher needs to assess the effect of it on firms' performance. Accordingly, the general objective of the study is to examine the effect of working capital management on the profitability of manufacturing industries 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 reduce the risk of stock-outs. Account 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 in that money is locked up in working capital (Deloof, 2003).

Another component of working capital is account payable, which keeps the trade credit not to extend but receiving it from the supplier. Receiving trade credit from a supplier allows a firm to assess the quality of the product 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 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 account 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 Deirgunes,2008;Sharma and Kumar,2011).

Much of the currently available empirical literature on working capital management is focused 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 account payable and enterprise profitability. However, number of days account receivable, number of day's inventory and cash conversion cycle have a significant negative impact on profitability.

Also, Wubshet (2014) examined the impact of working capital management on firms 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, the recent study wubshet (2014) have been done with a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012, So this study was conducted with larger sample size, including all manufacturing company type, used unstructured period for each company and to identify that the presence of inconsistent results might be found. Hence, the study will conducted to fill the gap on impact of working capital management on performance of manufacturing companies in Ethiopia.

1.3 Objective of the Study

1.3.1 General Objective
The general objective of the study is to examine the effect of working capital management on profitability of manufacturing industries in Ethiopia.

1.3.2 Specific Objective
The specific objectives of this study are:-
➢ To analyze the effect of accounts receivable period on performance of manufacturing industries in Ethiopia.
➢ To evaluate the effect of inventory holding period on manufacturing industries performance in Ethiopia.
➢ To ascertain the effect between average payment period and profitability of the manufacturing industries in Ethiopia.
➢ To examine the effect between cash conversion cycle and profitability of the manufacturing industries in Ethiopia.

1.4. Research Hypothesis

The following research hypotheses are made in view of the effect of working, capital management on firms' performance. In light of the research objective the following discussion will covers the hypotheses that this study will attempt to test.

HP1: Account 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 Scope of the Study

The study is delimited to the effect of working capital management on the profitability of large tax payers of manufacturing industries in Ethiopia. The total sample size of the study have 25 large tax payers manufacturing industries according to Ethiopian Revenue and Customs Authority (ERCA) large tax payer's registration data as of Dec-16. The study took five years data from year 20011-2015 based on the company's interest to provide their financial statement as there were companies who do not permit to provide their data. The reason for restricting to this period was that the latest data for investigation was available for these periods. This was necessary to obtain an accurate measure of the impact of the practices in terms of liquidity and profitability as we recover less number of year's data company with more number of years' data company.

1.6 Significance of the Study

The findings of this study may have implications for other companies who are trying to make decisions regarding working capital management reform model. This finding would help to develop an understanding of the advantages and disadvantages of financial practices and techniques of managing Working Capital Components in manufacturing companies. The study would reveal how essential Working Capital Management Strategies such as policies, practice and techniques is for the manufacturing companies in Ethiopia in terms of performance. The study would suggest various financial management techniques manufacturing companies can use to measure their performance in terms of profitability. For example, Current Ratio to assess the firm's liquidity status, Leverage ratios, Cash Conversion Cycle (CCC), and Return on Equity (ROE).

  This study would greatly benefit financial managers and chief executive officers of manufacturing industries 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.

1.7 Definition of Terms
Working Capital

The term "working capital" refers to the investment in current assets which are required to carry on the operations of the business (Firer et al, 2008). Kaveri (1985) refers to it as the difference between current assets and current liabilities. Managing the firm's working capital

is a day-to-day activity that ensures that the firm has sufficient resources to continue its operations and avoid costly interruptions.

Components of Working Capital Management

Bigeret al (2010) proclaim that a popular measure of working capital management is 'cash conversion cycle', 'which is calculated as, days of sales in receivables, plus 'days 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).

Trade Credit

Trade credit is an element of working capital. In its wider sense, it refers to both trade dues (sundry creditors or trade payables) and trade receivables/sundry debtors (Bhole and Mahakud, 2004). While the former serves as a source of funds, the latter represents the use for them. The concept of trade credit originates from a widespread practice in the business world where transactions take place without spot payments.

Capital Structure

Firer et al (2010) refer to capital structure as the specific mixture of long-term debt and equity the firm uses to finance its operations. The problem of how firms choose and adjust their strategic financial mix has drawn interest in corporate literature primarily because the mix of the funds (leverage ratio) affects the cost and availability of capital and thus firm's investment's decisions (Salawu,2009).

1.8 Limitations of the Study

The sample size for this study may not be large enough to study the issue and to represent the study population, for the very reason that, the problem of getting complete financial information for the study period. Moreover, the financial managers of the manufacturing private limited company were not interested to give Secondary data about the issue under consideration. The most difficult problem was shortage of time for the study to collect the necessary data, organize and analyze to finalize the study.

1.9 Organization of the Research Report

The paper is organized in five chapters. Chapter one provides an introductory overview of the full study comprising the statement of the problem, objective of the study, research hypothesis, relevance of the study, delimitation and limitation of the study, and how the study was organized also captured in this chapter.

The second chapter, literature review gives an extensive literature study on working capital and the management 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. Model selection criteria and diagnostic test analysis on the model specification summarizes, concludes and offer recommendations for the study.

CHAPTER TWO

LITERATURE REVIEW

The effects of working capital management upon corporate performance have been the Focus of a substantial amount of theoretical and empirical research for many years' and in different environments.

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 corporate 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 byTaggart (1977) first signaled 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 observes that financing decisions relate to how the investment in working capital is to be funded.

2.1.1 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.

2.1.2 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.

2.1.3 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 Paramecia and Subramanian (2009), working capital is classified into different types and classification based on the following views:

1. Balance sheet view
2. Operating cycle view
On the basis of balance sheet view, working capital is 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 affirm. 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.

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, prepaid and all other current liabilities are a financial decision of the company, and has very little to do with the company's operations in itself. 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 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 interruptions 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 taking care of the fluctuations in the business activity. Fabozzi and Peterson (2003 p. 678) they defined as a rises 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 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 firms' 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 life blood 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 being supplied to the buyer and the final receipt of cash from the sale of these goods. Advantageous to keep the cycle as short as possible as it increases the effectiveness of working capital.

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

Richards and Laughlin cash expenditure on a firm's purchase of production resources and the ultimate recovery of cash receipts from product sales. The time between paying for goods cycle involves (1980) reflects the net time interval between actual expenditure Khan and Jain (2007) also stated that the operating cycle. It is the modification to cash 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 the first phase 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. This phase is, of course, totally absent in the case of service organizations.

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

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.

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. Hendrickson (1992) underlines the importance of accounts receivables. A firm grants trade credit to protect its sales from the competitor's 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, (2) work-in-process and (3) Finished goods. 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.

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.

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

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 instrument 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 out flows; 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.

Gross operating profit (GOP)*:* this ratio explains that how efficient a company is to utilize its operating assets. This ratio calculates the percentage of profit earned against the operating assets of the company (Weston and Brigham, 1977, p. 101).
Gross Operating Profit = (Sales – COGS) / (Total asset –financial asset)
Net profit margin (NPM)*:* It calculates the percentage of each sale dollar remains after deducting interest, dividend, taxes, expenses and costs. In other words, it calculates the percentage of profit a company is earning against its per dollars sale. Higher value of return on sale shows the better performance (Gitman, 1999).NPM = (Earnings available for common stakeholder / Net sales)*100
Return on asset (ROA)*:* 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:
ROA = (Earnings available for common stockholders / total Asset)*100
On the other hand, liquidity ratio measures the short term solvency of financial position of firms. 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.
Current ratio = current asset / 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.

2.4 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 are 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 fulfill current liabilities. And also managers want to invest the excessive amount to earn some return. Hence, managers have to make a choice between two extreme positions; either they choose the long term investments, investments in noncurrent asset such as subsidiaries (equity), with high profitability i.e. high return and low liquidity. On the other hand to 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). There are several measures of profitability which a company can use. Few measures of profitability are discussed here:

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.

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.

Mathura (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 day's 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.

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.

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.

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. Almost all authors have found a negative effect of the variables on firm's profitability.

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. Mathura (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 are 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 industries in Ethiopia with special reference to large tax payers.

2.8 Conceptual framework

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

Figure 2.1 Schematic conceptual frameworks

Source: Authors Design

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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 will 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, and model specifications.

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 effect of working capital management on the performance of manufacturing industries in Ethiopia for the period of year 2011 to year 2015. 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 industries 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 Industries. 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 five years that covers from 2011 to 2015. The reason for covering to this period was that the latest data for investigation was available for these periods.

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 all manufacturing industries 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 limited the entry point into the large taxpayer category to start from companies who have an annual sales turnover greater than 30 million Birr. According to Ethiopian revenue and customs authority (ERCA) large tax payers office(LTO),there are 1002 large tax payers organizations in Ethiopia, manufacturing companies encompasses 214 in number as of Dec 2016 (ERCA, 2016). This study focuses on manufacturing industries. Therefore, the total number of population eligible and used for the study has been 214 large tax payers manufacturing industries 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 industries in Ethiopia. In this case based on the data from Ethiopian revenue and customs authority (ERCA) large tax payers' office, all large tax payers manufacturing companies running businesses in Ethiopia as of Dec 2016 are 214 population have been included. The sampling method used was 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 the status of companies which was large tax payer. The researcher then made the second level sample restriction in selecting sample units to be included in the study is that accessibility to financial statement data for the study period of 2011-2015.

The sampling procedure employed in this study was non-probability purposive sampling technique based on the researcher judgment. The reason for using this sampling method has accessibility of data for the study. It is based on the interest of the company to provide their data to the study and the area to the researcher access to the company close to the study and working area. The researcher tried to make the sample representative of the population manufacturing industries of large tax payers in Ethiopia.

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 analyze the effect 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:

ROA = Net income/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.

The choice of explanatory variables is based on the following factors: 1) alternative theories related to working capital management (for example, one theory may 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 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:

Cash Conversion Cycle (CCC) = Accounts Receivable Period (ARP) + Inventory Holding Period (IHP) - Accounts payable Period (APP)

The three components of Cash conversion cycle are specified below.

A. **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 measured as follows:

Accounts Receivable Period (ARP) = (Accounts Receivables / Sales) X 365days

B. **Inventory Holding Period**

Inventory holding period measures the number of day's 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 measured as follows: Inventory Holding Period (IHP) = (Inventory / Cost of goods sold) X 365days

C. **Accounts Payable Period**

Accounts Payable Period (APP) measures 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: Account Payable Period (APP) = (Accounts Payable / Cost of goods sold*365 days)

3.5.3 Control Variables

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

Current Ratio: Liquidity is one of the objectives of working capital management. In this study, the researcher 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) used as one of the control variable for the study.

The ratio is measured as follows: Current Ratio (CR) = Current Assets/ 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 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 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 (Delos, 2003), (Afza and Nazir, 2007).

3.6 Data analysis

First, this study collects the needed data from large tax payers manufacturing industries 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 analyzed 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 parameters in a linear regression model and also for estimating the parameters have structured and unstructured method. This study uses an ordinary least squares (OLS) regression to estimate the equation with structured method.

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 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 repressors 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 allows for latent firm specific heterogeneity. The simplest types of fixed effects models allow the intercept in the regression model to differ cross -sectionals. To determine whether the fixed effects are necessary or not, this study run HausmanTest.

H0: Random Effects model is appropriate
H1: Fixed Effects model is appropriate Decision Rule: Reject H0 if p-value less than significance level 5%. Otherwise, do not reject H0. According to the results presented below the study adopt Random effects model.
Table 3.1 Correlated Random Effects - Hausman 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	4.499318	5	0.4800

Cross-section random effects test comparisons:

Model 2: ROA C INV 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	3.577446	5	0.6117

Cross-section random effects test comparisons:

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	3.517570	5	0.6207

Cross-section random effects test comparisons:

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	3.473517	5	0.6274

Cross-section random effects test comparisons:

Source: E-Views output results and author's computation 2011-2015

3.7 Model specifications

To analyze the effect of working capital management on profitability, the study used the following methods: (i) descriptive statistical analysis where in 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. Panel least squares method was used in regression analysis, where in 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 effect of working capital management on profitability of manufacturing industries in Ethiopia, the model used by (Samiloglu & Demirgunes, 2008) has been adopted and adapted. Generally, this model specify as:

$$ROA_{it} = \beta_0 + \Sigma \beta_i X_{it} + \varepsilon_{it}$$
Source: Samiloglu & Demirgunes, 2008
Where:
ROA_{it} are Return on Assets of firm i at time t; i = firms
β_0 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 2011 to 2015)
ε_i is the error term

3.7.2 Specific regression model

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
Model 1: $ROA_{it} = \beta_0 + \beta_1 (ARP_{it}) + \beta_2 (CR_{it}) + \beta_3 (SG_{it}) + \beta_4 (FL_{it}) + \beta_5 (FS_{it}) + \varepsilon_{it}$
ii) Model Specification (II) regressed for inventory holding period
Model 2: $ROA_{it} = \beta_0 + \beta_1 (IHP_{it}) + \beta_2 (CR_{it}) + \beta_3 (SG_{it}) + \beta_4 (FL_{it}) + \beta_5 (FS_{it}) + \varepsilon_{it}$
iii) Model Specification (III) regressed for accounts payable period
Model 3: $ROA_{it} = \beta_0 + \beta_1 (APP_{it}) + \beta_2 (CR_{it}) + \beta_3 (SG_{it}) + \beta_4 (FL) + \beta_5 (FS_{it}) + \varepsilon_{it}$
IV) Model Specification (IV) regressed for cash conversion cycle
Model 4: $ROA_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (CR_{it}) + \beta_3 (SG_{it}) + \beta_4 (FL_{it}) + \beta_5 (FS_{it}) + \varepsilon_{it}$
Where: β_0 = intercept of the regression,
$\beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 = coefficients on each respective explanatory variables,

ROAit = Return on asset – for firm i at corresponding time t.
ARPit = Account receivable Period – for firm i at corresponding time t.
IHPit = Inventory holding period - for firm i at corresponding time t.
APPit = Account payable period - for firm i at corresponding time t.
CCCit = cash conversion cycle - for firm i at corresponding time t.
CRit = Current ratio - for firm i at corresponding time t.
SGit = Sales growth for firm i at corresponding time t.
FLit = Firm Leverage for firm i at corresponding time t.
FSit = Size of firm i at corresponding time t.
t = time= 1, 2…. 7 (from year 2009 to 2015), and
εit = is the error term of the regression – for firm i at time t

In the first regression model, the ARP will be regressed against the ROA. In the second regression model, the IHP will be 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 regress against the ROA.

3.8 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 will describe. Next, the population of the study area as well the techniques used to draw a sample will mention. 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 analyzes the impact of working capital management on profitability.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Revision

This chapter presents and discusses the empirical results on the effect of working capital management on firm's profitability. The study provided two types of data analysis; namely descriptive analysis and inferential analysis. First, the results of descriptive statistics which shows the relevant phenomena of variables such as maximum, minimum mean and standard Deviation of variables used in the study was 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 Tests for the Classical Linear Regression Model (CLRM) Assumptions

In order to make the data ready for analysis and to get reliable results from the research, the model stated previously was tested for five CLRM assumptions. Among them the major ones are: test for heteroscedasticity, autocorrelation, multicollinearity, normality and constant variable. Accordingly, the following sub-section presents the tests made.

4.2.1 Assumption one: the errors have zero mean (E (ε) = 0) or constant variable

The first assumption states that the average value of the errors should be zero. According to (Brooks 2008) if the regression equation contains a constant term, this presumption will never be breached. Therefore, since from the regression result table the constant term (i.e. β0) was included in the regression equation; this assumption holds good for the model.

4.2.2 Assumption two: homoscedasticity (variance of the errors is constant (

Heteroskedasticity is a systematic pattern in the errors where the variances of the errors are not constant. When the variance of the residuals is constant it is referred as homoscedasticity, which is desirable. To test for the absence of heteroscedasticity Breusch-Pagan-Godfrey test was used in this study. In this test, if the p-value is very small, less than 0.05, it is an indicator for the presence of heteroscedasticity (Gujarati 2004).

Table 4.1 present three different types of tests for heteroscedasticity. Since the p-values of all the three tests are considerably in excess of 0.05 it's a clear indicator that there is no evidence for the presence of heteroscedasticity. Hence, the model passes the second test.

Table4.1: Breusch-Pagan-Godfrey test for Heteroskedasticity

Model 1: ROA C ARP CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.636901	Prob. F(5,64)	0.6723
Obs*R-squared	3.317960	Prob. Chi-Square(5)	0.6511
Scaled explained SS	4.210202	Prob. Chi-Square(5)	0.5196

Model 2: ROAC INV CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.208043	Prob. F(5,64)	0.3156
Obs*R-squared	6.036748	Prob. Chi-Square(5)	0.3027
Scaled explained SS	7.265025	Prob. Chi-Square(5)	0.2017

Model 3: ROA C APP CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.442344	Prob. F(5,64)	0.8173
Obs*R-squared	2.338264	Prob. Chi-Square(5)	0.8006
Scaled explained SS	2.852483	Prob. Chi-Square(5)	0.7227

Model 4: ROA C CCC CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.698707	Prob. F(5,64)	0.6264
Obs*R-squared	3.623273	Prob. Chi-Square(5)	0.6048
Scaled explained SS	4.497670	Prob. Chi-Square(5)	0.4802

Source: E-Views output results and author's computation 2011-2015

4.2.3 Assumption three: covariance between the error terms over time is zero (cov (ui, uj) = 0)

This assumption states that covariance between the error terms over time or cross-sectional, for that type of data is zero. That is, the errors should be uncorrelated with one another. If the errors are not uncorrelated with one another it is an indicator for the presence of Auto correlation or serial correlation (Brooks, 2008).

Accordingly, Breusch–Godfrey serial correlation LM test were made in order to figure out the presence of autocorrelation.

Breusch–Godfrey test (Table 4.2). The result of the statistic labeled "obs*R-squared", which is the LM test statistic for the null hypothesis of no serial correlation shows a p-value of greater than 0.05 which strongly indicates the absence of autocorrelation.

Table 4.2 Breusch-Godfrey Serial Correlation LM Test

Model 1: ROA on ARP CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.578096	Prob. F(8,56)	0.1523
Obs*R-squared	12.87776	Prob. Chi-Square(8)	0.1161

Model 2: ROA on INV CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.899908	Prob. F(8,56)	0.0781
Obs*R-squared	14.94325	Prob. Chi-Square(8)	0.0603

Model 3: ROA on APP CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.489429	Prob. F(8,56)	0.1819
Obs*R-squared	12.28116	Prob. Chi-Square(8)	0.1391

Model 4: ROA on CCC CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.927668	Prob. F(8,56)	0.0736
Obs*R-squared	15.11445	Prob. Chi-Square(8)	0.0570

Source: E-Views output results and author's computation 2011-2015

4.2.4 Assumption four: Normality (errors are normally distributed

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; 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 in Figure 4.1, 4.2, 4.3 and Figure 4.4

Model1: ROA C ARP CR LVG SG FS

Figure 4.1 Normality Test result for the regression model ROA on ARP

Source: E-Views output results and author's computation 2011-2015

Model2: ROA C INV CR LVG SG FS

Figure 4.2 Normality Test for the regression model ROA on INV

Source: E-Views output results and author's computation 2011-2015

Model3: ROA C APP CR LVG SG FS

Figure 4.3 Normality Test result for the regression model ROA on APP

Source: E-Views output results and author's computation 2011-2015

Model4: ROA C CCC CR LVG SG FS

Figure 4.4 Normality Test result for the regression model ROA on CCC

Source: E-Views output results and author's computation 2011-2015

4.2.5 Assumption five: Multicollinearity Test

According to (Churchill and Iacobucci 2005), multicollinearity is concerned with the relationship which exists between explanatory variables. When there exists the problem of multicollinearity, the amount of information about the effect of explanatory variables on dependent variables decreases and as a result, many of the explanatory variables could be judged as not related to the dependent variables when in fact they are. How much correlation causes multicollinearity, however, is not still clearly define. Many authors have suggested different level of correlation to judge the presence of multicollinearity. While (Hair, et al. 2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem.(Malhotra,2007) stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. (Kennedy 2008) suggests that any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to in efficient estimation and less reliable results. This indicates that there is no consistent agreement on the level of correlation that causes multicollinearity.

Therefore, in this study correlation matrix for five of the independent variables is shown below in Table 4.3 The results of the estimated correlation matrix shows that the highest correlation of 0.578 which is between Cash conversion cycle(CCC) and Account payable period(APP). Since there is no correlation above 0.7, 0.75 and 0.9 according to (Kennedy 2008), (Malhotra 2007) and (Hair, et al. 2006) respectively, it can be concluded that there is no problem of multicollinearity.

Table 4.3: Correlation matrix between explanatory variables

	APP	ARP	CCC	CR	FL	FS	INV	ROA	SG
APP	1.000000	0.443034	-0.582244	-0.097025	0.091552	-0.315038	0.374193	-0.261652	-0.075362
ARP	0.443034	1.000000	0.090877	-0.099114	0.006414	-0.229755	0.307273	-0.276252	0.285118
CCC	-0.582244	0.090877	1.000000	0.009547	-0.095773	0.193066	0.495877	0.037010	0.166505
CR	-0.097025	-0.099114	0.009547	1.000000	-0.153109	-0.037355	-0.075097	-0.139515	-0.023112
FL	0.091552	0.006414	-0.095773	-0.153109	1.000000	-0.025272	-0.007145	0.049260	-0.110931
FS	-0.315038	-0.229755	0.193066	-0.037355	-0.025272	1.000000	-0.071320	0.416646	0.011779
INV	0.374193	0.307273	0.495877	-0.075097	-0.007145	-0.071320	1.000000	-0.184698	0.007887
ROA	-0.261652	-0.276252	0.037010	-0.139515	0.049260	0.416646	-0.184698	1.000000	0.025226

SG	-0.075362	0.285118	0.166505	-0.023112	-0.110931	0.011779	0.007887	0.025226	1.000000

Source: E-Views output results and author's computation 2011-2015

4.3 Descriptive Statistics for the study variable

In this section the results from descriptive statistics was discussed. Table 4.4 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 4.4 Descriptive statistics

	APP	ARP	CCC	CR	FL	FS	INV	ROA	SG
Mean	150.8629	65.28344	111.4096	3.784796	0.698990	7.520255	196.9891	0.120293	0.431618
Median	61.40945	35.05228	100.3542	1.597086	0.577971	7.567343	152.4950	0.069045	0.103346
Maximum	1446.715	422.3068	901.1035	118.7222	5.072394	9.532252	999.3714	0.630654	10.33236
Minimum	-2.498269	0.000000	-1196.677	-8.518848	-0.047990	3.774590	0.000000	-0.220731	-0.821666
Std. Dev.	258.4161	76.16889	256.8970	14.34697	0.715261	1.307681	200.6824	0.167841	1.691541

Source: E-Views output results and author's computation 2011-2015

As it is shown in table 4.4 the mean value of return on assets are around 12.02 percent which was three times less than Wubshet finding 32.09 percent. Standard deviations are 16.78 percent, means that value of profitability can deviate from mean to both sides by 16.78 percent with slit difference to wubshet 17.83 finding. The minimum value of return on asset is -22.07 percent while the maximum is 63.06 percent that illustrate large difference between the minimum and maximum result relative to Wubshet minimum -5 and maximum 55 percent.

Firms under the study receive payment on sales on average of 65 days and it can vary by 746 days to both sides of the mean value. The minimum and maximum account receivable Period for the sampled firms is 0 and 422 days respectively that confirm bigger variation according to Wubishet finding 0.36 and 177.

The descriptive statistics show that it takes on average of 197 days to sell inventory. The standard deviation of inventory holding period is 200 days with 0 and 999 days as minimum and maximum values respectively. Wubshet study have some variation with average inventory holding period of 133.11, standard deviation of 48.66 and minimum and maximum Inventory holding period of 0 and 192 that indicate enormous gap.

On average, firms wait 150 days to pay for their purchases almost three times fewer than Wubeshet result 544.38.Its standard deviation for the firms under study is 258 days which

deviates from both sides of the mean value. The accounts payable period ranges from -2 to 1447 days to pay their credit purchase that shows great gap to pay their payable relative to Wubishet finding as minimum 236 and maximum 694 .

The cash conversion cycle, used as a comprehensive measure of working capital management Have an average 111 days and the standard deviation of 256 days that have great difference of average cash conversion period with Wubishet -276.99. The minimum value of the cash Conversion cycle shows -1197 days and on the other way, the maximum time for the cash conversion period is 901 days that indicate there have high vibration of minimum and maximum cash conversion period in relative to Wubshet finding which ranges -525.24 and 136 days.

Table 4.4 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 4 times current liabilities with a standard deviation of 14.34 The highest current ratio for a firm in the study period is 119, with the lowest at -8.5 comparative with Wubshet some difference of current ratio 2.41 and great difference of maximum and minimum current ratio 3.76 and 1.63.

The results of descriptive statistics show that the leverage ratios of the manufacturing Share companies are 69 percent with a standard deviation of 71 percent. The maximum debt Financing used by the firm is 507 percent and its minimum level is -4.7 percent. This shows that there is a firm that not used debt in its operation. Wubshet study shows that average leverage ratio of 148 percent relatively two times and a big difference of maximum and minimum leverage ratio of 277 & 41.

The other control variable, firm size, as measured by the natural logarithm of annual sales, is 7.5 on average and standard deviation is 1.3. The minimum and maximum values of firm Size for the firm measured by natural logarithm of annual sales are 3.7 and 9.5 respectively. Wubshet found that 28.29 of average natural logarithm of annual sales almost 4 times greater and 83.38 and -50.39 maximum and minimum natural logarithm of annual sales indicating higher difference with this study.

Lastly, the firm sales growth measured by changes in annual sales has an average of 43% and there is a deviation of 169 percent from mean value of sales growth to both directions. The Sales growth among the study firms is ranged from -82 percent to 1033 percent.

4.4 Regression Results

Following classical linear regression model test and descriptive statistics presented in sections 4.2 and 4.3 respectively, the regression analysis in this section is used to shed more light on the effect 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 effect of management of working capital on firm's profitability.

4.4.1 Regression result of model specification I

Model specification I regressed effect of accounts receivable period on return on asset.
Model 1: $ROA_{it} = \beta_0 + \beta_1 (ARP_{it}) + \beta_2 (CR_{it}) + \beta_3 (SG_{it}) + \beta_4 (FL_{it}) + \beta_5 (FS_{it}) + \varepsilon_{it}$

Table 4.5 Regression results of profitability measures and ARP

Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/29/17   Time: 19:15
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.168161	0.095119	-1.767895	0.0821
ARP	-0.000449	0.000210	-2.139454	0.0364
CR	-0.002272	0.001063	-2.138459	0.0365
FL	0.033375	0.021342	1.563784	0.1230
FS	0.037155	0.011778	3.154738	0.0025
SG	0.009357	0.009204	1.016611	0.3134
VAR1	0.497151	0.125138	3.972804	0.0002
VAR2	0.447279	0.125235	3.571510	0.0007
VAR3	0.428401	0.126104	3.397188	0.0012

R-squared	0.528247	Mean dependent var	0.120293	
Adjusted R-squared	0.466378	S.D. dependent var	0.167841	
S.E. of regression	0.122607	Akaike info criterion	-1.240146	
Sum squared resid	0.916979	Schwarz criterion	-0.951053	
Log likelihood	52.40510	Hannan-Quinn criter.	-1.125315	
F-statistic	8.538132	Durbin-Watson stat	1.407681	
Prob(F-statistic)	0.000000			

Source: E-views output results and author's computation 2011-2015

Table 4.5 reveals the summary statistics of regression specification I. The explanatory power of the model as can be seen is that the adjusted R squared values are equal to 46.63 percent. This Implies that 46.63 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 as its probability value is significant.

The regression results in table 4.5 indicate that holding other things constant a day increase in day's sales receivable is associated with a decrease in 0.044 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), Mulualem (2011) and Yadav and kumar (2014) and empirical results of this study show significant negative relationship between accounts receivable period and firms profitability. This negative relationship indicates that slow collection of accounts receivables is affects profitability negatively. 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 a decrease in 0.2272 percent and statistically significant.

On the other hand, leverage indicates a unit increase in leverage associated with an increase in profitability of 3.3375 percent & statistically insignificant. A unit increase in sales Growth is associated with an increase in profitability of 0.93 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 3.7155 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 having 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. Therefore, the null hypothesis is confirmed and can be conclude that hypothesis one is true.

4.4.2 Regression result of model specification II

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

Model 2: ROAit = β0 +β1 (IHPit) +β2 (CRit) +β3 (SGit) + β4 (DRit) +β5 (FSit) +εit

Table 4.6 Regression results of profitability measures and IHP

Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/29/17   Time: 20:01
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.217520	0.093628	-2.323238	0.0235
INV	-8.46E-05	7.66E-05	-1.104040	0.2739
CR	-0.002134	0.001088	-1.960783	0.0545
FL	0.031959	0.021928	1.457435	0.1501
FS	0.042438	0.011763	3.607871	0.0006
SG	0.003568	0.009028	0.395199	0.6941
VAR1	0.490295	0.128978	3.801394	0.0003
VAR2	0.447391	0.129050	3.466793	0.0010
VAR3	0.429732	0.129470	3.319163	0.0015

R-squared	0.502784	Mean dependent var	0.120293
Adjusted R-squared	0.437575	S.D. dependent var	0.167841
S.E. of regression	0.125872	Akaike info criterion	-1.187575
Sum squared resid	0.966475	Schwarz criterion	-0.898483
Log likelihood	50.56514	Hannan-Quinn criter.	-1.072744
F-statistic	7.710382	Durbin-Watson stat	1.415131
Prob(F-statistic)	0.000000		

Table 4.6 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 43.75 percent. This implies that 43.75 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 4.6 result of one can see that the model is fit with F- statistics 7.71 at p-value of 0.0000.

The regression result for inventory holding period in table 4.6 implies a day increase in Inventory holding period is associated with a decrease in profitability by 8.46 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 as a result of the excess balance would costs the company such as loss of benefit from short-term investment, having long outstanding stocks and obsolete inventories. 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 4.6 is that the conventional measure of liquidity, i.e., current ratio, is insignificant negatively related with the return on assets, and the results are inconsistent 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 a decrease in 0.213 percent and statistically insignificant. Size and growth which are considered important Indicators of firm performance are generally found to be associated positively correlated with Profitability. But statistically firm size was significant effect while the later is insignificant, On the other hand, leverage indicate a unit increase in leverage associated with an increase in profitability of 3.195 percent but statistically insignificant.

The results from regression model specification II are used to determined hypothesis stated in chapter one as shown in 1.4 section. The second research hypothesis mainly tested is 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 it is insignificant effect. Therefore, the null hypothesis is not confirmed and can be concluded that hypothesis two is rejected.

4.4.3 Regression result of model specification III
Model specification III regressed effect of accounts payable period on ROA.
Model 2: ROAit = β0 + β1 (APPit) +β2 (CRit) +β3 (SGit) + β4 (DRit) +β5 (FSit) +εit
Table 4.7 Regression results of profitability measures and APP
Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/29/17   Time: 19:49
Sample: 2011 2015

Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.188017	0.098396	-1.910813	0.0607
APP	-8.63E-05	6.23E-05	-1.385646	0.1709
CR	-0.002189	0.001084	-2.019120	0.0479
FL	0.034558	0.021818	1.583895	0.1184
FS	0.037846	0.012289	3.079774	0.0031
SG	0.002643	0.009001	0.293599	0.7701
VAR1	0.498378	0.127769	3.900610	0.0002
VAR2	0.456956	0.127712	3.578028	0.0007
VAR3	0.424111	0.128860	3.291251	0.0017

R-squared	0.508324	Mean dependent var		0.120293
Adjusted R-squared	0.443842	S.D. dependent var		0.167841
S.E. of regression	0.125169	Akaike info criterion		-1.198781
Sum squared resid	0.955705	Schwarz criterion		-0.909689
Log likelihood	50.95733	Hannan-Quinn criter.		-1.083950
F-statistic	7.883188	Durbin-Watson stat		1.477345
Prob(F-statistic)	0.000000			

Source: E-views output results and authors' computation 2011-2015

Table 4.7 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 44.38 Percent. This implies that 44.38 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 4.7 the result of one can see that the model is fit with F-statistics 7.88 at p-value of 0.0000.

The regression results in table 4.7 indicate that holding other things constant a day increase in accounts payable period is associated with a decrease in 8.63 percent in profitability but statistically insignificant. So the result was in conformity to Raheman and Nasr (2007), Deloof (2003), Sharma and Kumar (2011) and Tewodros (2010), but in opposite to Mathuva (2010) and Makori and Jagongo (2013) finding. This implies that they pay to suppliers earlier so as to take advantage of sales discount for their credit purchase but the 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 and firm size, all other variables have insignificant association with firm's profitability. However, sales growth, firm size and debt ratio have a positive impact on firm profitability while current ratio has a negative impact on profitability of a firm.

The results from regression model specification III are used to determined hypothesis stated in chapter one as shown in 1.4 section. The third research hypothesis was that the account payable period of a firm are significant positively related to a firm's profitability. In opposite to hypothesis, the indicator of profitability, and return on assets are negatively related with

accounts payable period and insignificant. Therefore, the null hypothesis is not confirmed and can be conclude that hypothesis three is rejected.

4.4.4 Regression result of model specification IV

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

Model 4: ROAit = β0 +β1 (CCCit) +β2 (CRit) +β3 (SGit) + β4 (DRit) +β5 (FSit) +εit

Table 4.8Regression results of profitability measures and CCC

Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/29/17   Time: 21:20
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.242268	0.092730	-2.612614	0.0113
CCC	-7.78E-06	6.20E-05	-0.125450	0.9006
CR	-0.002043	0.001096	-1.864385	0.0671
FL	0.032725	0.022200	1.474111	0.1456
FS	0.043447	0.012114	3.586479	0.0007
SG	0.003730	0.009234	0.403893	0.6877
VAR1	0.502457	0.129878	3.868687	0.0003
VAR2	0.460761	0.129958	3.545476	0.0008
VAR3	0.432672	0.130766	3.308744	0.0016

R-squared	0.492979	Mean dependent var	0.120293	
Adjusted R-squared	0.426485	S.D. dependent var	0.167841	
S.E. of regression	0.127107	Akaike info criterion	-1.168048	
Sum squared resid	0.985533	Schwarz criterion	-0.878956	
Log likelihood	49.88169	Hannan-Quinn criter.	-1.053217	
F-statistic	7.413832	Durbin-Watson stat	1.404291	
Prob(F-statistic)	0.000001			

Source: E-views output results and author's computation 2011-2015

Table 4.8 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 42.64 Percent. This implies that 42.64 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 4.8 the result of one can see that the model is fit with F-statistics 7.41 at p-value of 0.0000.

The regression results in table 4.8 indicate that holding other things constant a cash conversion cycle period has an effect decrease in 3.67 percent in profitability and statistically insignificant. 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 7.78 percent. Therefore, decreasing the cycle by one day bring an increment of 7.78 percent 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. In conformity to 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) this studies found a negative relation between the CCC and a firm's profitability but it's is insignificant. 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 lower cash conversion cycle which indicates to inefficient working capital management. This could be affected by either inventory period, accounts receivable period or accounts payable period.

The implication is that the increase in cash conversion cycle has negatively affect profitability of the firms but it is insignificant. 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 determined 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 significant negatively related to a firm's profitability. In conformity with hypothesis, the indicator of profitability, return on assets is negatively related with cash conversion cycle but it is not significant. Therefore, the null hypothesis is not confirmed and can be conclude that hypothesis four is rejected.

4.5 Summery of finding

The research provided two types of data analysis; namely descriptive analysis and inferential Analysis. The research first looked 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 is averagely 193 days and 143 days respectively, cash conversion period had a mean of 114, leverage ratio (0.67), average collection period (64) current ratio (3.92) sales growth (0.43), size of the firm measured as log of sales is 7.45 and the overall return on assets recorded a mean of 0.1179.

The empirical results from the test hypothesis show that except hypothesis One (HP1), that was account receivable period of the firm which have resulted significant negatively related

with profitability, the other three hypotheses Inventory holding period (HP2), account payable period (HP3) and cash conversion period (HP4) results show that negatively insignificant hence null hypothesis have rejected.

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

This research studied the impact of working capital management on profitability of manufacturing companies in Ethiopia. The study used quantitative research approach. Data was analyzed using descriptive statistics and regression analysis on a sample of 14 manufacturing share companies in Ethiopia for the period of 2011-2015.

The impact of working capital management has been analyzed 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 14 firms included in the study as measured by return on asset was 11.78 percent and it deviates from the mean to both sides by 16.42percent. Its minimum value is -22.07 percent while the maximum is 63.06 percent. While the liquidity position as measured by current ratio is on average 3.92. The firms receive cash collection from their customer on average at 64 days and have accounts payable period on average at 143 days.

The average inventory period that means the period from inventory purchased to inventory sold averaged is 143 days. 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 114 days. Before the regression was 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 by push customers to pay their credit earlier and construct good relation with these customers.

The regression analyses of inventory holding period indicate that there is insignificant negative relation between these days and firm's profitability. This means that inventory Holding period, haven't effect on the profitability of manufacturing companies in Ethiopia. The negative effect indicates firms increase their Profitability by reducing the inventory holding period even though insignificant results.

The regression analyses of account payable period indicate that there is insignificant negative relation between these days and firm's profitability. This means that the longer the firm's accounts payable period, the lower the profitability and vice versa even though there haven't significant result.

The regression analyses of cash conversion cycle indicate that there is an insignificant negative relation 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 still insignificant results.

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.

> ➢ The negative relationship between manufacturing firms 'financial performance and accounts receivable period increases firm's profitability when there is short collection period 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.

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

12. REFERANCES

Abenet, Yohannes, Hailu and Professor P.Venkateswarlu (2016), "*Effect of working capital management on firms profitability evidence from manufacturing companies in eastern, Ethiopia International Journal of Applied Research*"

Afza, T. and Nazir, M. S. (2007). Is It Better To Be Aggressive Or Conservative In Managing Working Capital? Journal of Quality and Technology Management, 3(2), 11-21.

Arnold, G. (2008).*Corporate financial management 4th edition*. Pearson education limited; New York

Arunkumar O.N &Ramanan T.R (2013) *Working Capital Management and profitability: A Sensitivity Analysis*. International Journal of Research and Development: A Management review. Vol 2, pp 52 – 58

BY DURU, ANASTESIA NWAKAEGO (2000 to 2011), "*Impact of Working Capital Management on Corporate Profitability of Nigerian Manufacturing Firms*":

By: Mifta Ahmed (2016), "*IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF MANUFACTURING SHARE COMPANIES IN ETHIOPIA ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF ACCOUNTING AND FINANCE*"

Joana Filipa Lourenço Garcia Faculdade de Economia da Universidade do Porto (2011), "*The Impact of Working Capital Management upon Companies' Profitability: Evidence from European Companies*"

James NdiranguKung'u (2015), "Effects *of Working Capital Management on Profitability of Manufacturing Firms in Kenya*" A Thesis submitted in partial fulfillment for the Award of Doctor of Philosophy Degree in Business Administration of Jomo Kenyatta University of Agriculture and Technology",

Wubshet Mengesha (2014) Impact of working capital management on firms' performance: The case of selected metal manufacturing companies in Addis Ababa, Ethiopia. Jimma University, July 2014

Nuru Mohammed ,"*THE EFFECT OF WORKING CAPITAL POLICIES MANAGEMENT ON FIRMS' PROFITABILITY Evidence from Manufacturing Private Limited Companies in Addis Ababa, Ethiopia*". A Thesis Proposal Submitted for the partial fulfillment of Master's Degree in masters of Business Administration in Finance (MBA in finance).

Kenya Paul Muoki Nzioki1*, Stephen Kirwa Kimeli2, Marcella Riwo Abudho3 and JanifferMwende Nthiwa4, "*Management of working capital and its effect on profitability of manufacturing companies listed on Nairobi securities exchange (NSE)*,"

Ballon R. H.(2004).*Business Logistics/Supply Chain Management*. Planning, Organizing and Controlling the Supply Chain 5th Ed. Pearson's-Prentice Hall. USA. Baumol, W. J., (1952): Journal of Economics Vol. LXVI, No.4 pp 67-71

Besley, S. & Meyer, R. L. (1987).An Empirical Investigation of Factors Affecting the Cash Conversion Cycle. *Annual Meeting of the Financial Management Association, as Vegas, Nevada.*

Brealey, R. and Myers, S. 1996, 'Principles of Corporate Finance', 3th ed. New York: McGraw-Hill.

Brigham, F. and Houston, F. (2003), *'Fundamentals of financial management'*, 10th ed. McGraw-Hill Inc: New York

Brooks, C., 2008, 'Introductory econometrics for finance', 2nd ed, Cambridge university press, Newyork

Collins, M.C. Saxena,A.K., and Wamsley,J. W., (1996); The role of insiders and divided Policy; A comparison of regulated and unregulated firms, Journal of finance and Strategic decision, 9, 2898 – 3021

Copeland, T.E., Weston, J. F., and Shastri, K., (2005): Financial Theory and Corporate Policy, 4th ed, Pearson Addison Wesley

Daniel Mogaka Makori and Ambrose Jagongo, (2013), *International Journal of Accounting and Taxation,* Vol 1 No. 1, December 2013 pp.1-14

Deloof M (2003), *'Does working capital management affect profitability of Belgian firms'*, Journal of Business Finance and Accounting*, Vol 30, No. 3 &4,* pp. 573-588.

Deloof, M. &Jeger, M (1996). Trade Credit, Product Quality, and Intragroup Trade: Some European Evidence. *Financial Management, 25(3),* pp. 945-968.

Donaldson, G., (1961): Corporate Debt capacity: A study of corporate Debt policy and the determination of corporate Debt capacity, Beston, of Havard Graduate

Eljelly A. 2004, Liquidity-profitability tradeoff: an empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14: 48-61.

Ethiopian revenue and customs authority, List of manufacturing large tax payers in Ethiopia, (March 2015),

Ethiopian revenue and customs authority, Tax revenue to gross domestic proportion (July 2014),

Falope OI and Ajilore OT, 2009, Working capital management and corporate profitability: evidence from panel data analysis of selected quoted companies in Nigeria. Research Journal of Business Management, 3: 73-84...

Fried, D., Sondhi, A.C., White, G.I. (2003). "The Analysis and use of Financial Statements". 3rd Edn. *John Wiley & Sons*, ISBN 978-0471-37594-4, pp 124.

Garcia-Teruel, P.J., Martinez-Solano, P. (2006). "Effects of Working Capital Management on SME Profitability". *International Journal of Finance*, 3, pp 164-177.

Gill, a, Biger, N. &Mathur, N. (2010). The Relationship between Working Capital Management and Profitability: Evidence from the United States. *Business and Economics Journal, 2010.*

Gitman, L. J. 1999, 'Principles of managerial finance' 7th Edition, Addison Wesley, U.S.A.

Gujarati, D. 2004, 'Basic econometrics' 4th ed McGraw−Hill Companies.

H. C. Thode. Testing for Normality. Marcel Dekker, New York, 2002.

Hendriksen, E. S., (1992): Accounting Theory, 5th ed, Richard D Edwin Homewood

Jarvis, R., Kitching, J., Curran, and J. and Lightfoot, G., (1996): "The Financial Management Analysis, new York publish press, pp 14

Jordan, B.D., Ross, S.A., Westerfield, R.W. (2003). "Fundamentals of Corporate Finance". 6thEdn. *McGraw-Hill Irwin Publications, New York*, ISBN: 0-07-246974-9, pp 167.

Jose, M.L., Lancaster, C. & Stevens, J.L. (1996). Corporate Return and Cash Conversion Cycle. *Journal of Economics and Finance, 20(1),* pp. 33-46.

Joshi, R. N. (2000). *Cash Management Perspective Principles and Practices*, Newage, International (P) Ltd.

Kargar, J. and Blumenthal, R. A., (1994): Leverage Impact of Working Capital in Small Businesses; *TMA Journal*, Vol.14, No.6, pp.46-53

Keynes, John M. 1973. "What is Money?" *Economic Journal* 24 (95) September: 419-21.

Khan, M. Y.and Jain P .J. (2007). *Financial Management*. Tax, Problems and Cases. 5th ed, Tata, MC Graw Hill Publishing Company Limited.

Lawal, Abiola, and Oyewole (2015*) Effect of Working Capital Management on the Profitability of Selected Manufacturing Companies in Nigeria*, pp 370-386

Lazaridis, I. and Tryfonidis, D. (2006), *'Relationship between working capital management and profitability of listed companies in the Athens stock exchange'*, Journal of FinancialManagement and Analysis, *Vol 19*(1)

Long, M. S., Malitz, I. B. &Ravid, S. A. (1993). Trade Credit, Quality Guarantees, and Product Marketability. *Financial Management, 22(4),* pp. 117-127.

Appendix1: Heteroscedasticity Test: Breusch-Pagan-Godfrey test of the regression model ROA ARP CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.636901	Prob. F(5,64)	0.6723
Obs*R-squared	3.317960	Prob. Chi-Square(5)	0.6511
Scaled explained SS	4.210202	Prob. Chi-Square(5)	0.5196

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 07/01/17   Time: 15:44
Sample: 1 70
Included observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.009485	0.029119	-0.325733	0.7457
CR	0.000232	0.000322	0.719601	0.4744
FL	0.000486	0.006458	0.075308	0.9402
FS	0.004321	0.003581	1.206586	0.2320
SG	-0.000170	0.002824	-0.060061	0.9523
ARP	-4.58E-05	6.44E-05	-0.710669	0.4799

R-squared	0.047399	Mean dependent var	0.021163
Adjusted R-squared	-0.027022	S.D. dependent var	0.037142
S.E. of regression	0.037640	Akaike info criterion	-3.639679
Sum squared resid	0.090674	Schwarz criterion	-3.446950
Log likelihood	133.3888	Hannan-Quinn criter.	-3.563125
F-statistic	0.636901	Durbin-Watson stat	1.478068
Prob(F-statistic)	0.672302		

Appendix 2: Heteroscedasticity Test: Breusch-Pagan-Godfrey test for the regression model of ROA INV CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.208043	Prob. F(5,64)	0.3156
Obs*R-squared	6.036748	Prob. Chi-Square(5)	0.3027
Scaled explained SS	7.265025	Prob. Chi-Square(5)	0.2017

Test Equation:
Dependent Variable: RESID^2

Method: Least Squares
Date: 07/01/17   Time: 15:55
Sample: 1 70
Included observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005923	0.027327	-0.216758	0.8291
CR	0.000209	0.000314	0.665727	0.5080
FL	0.000704	0.006318	0.111484	0.9116
FS	0.004588	0.003403	1.348020	0.1824
SG	-0.001204	0.002639	-0.456397	0.6496
INV	-3.88E-05	2.22E-05	-1.745151	0.0858

R-squared	0.086239	Mean dependent var		0.021705
Adjusted R-squared	0.014852	S.D. dependent var		0.037097
S.E. of regression	0.036820	Akaike info criterion		-3.683715
Sum squared resid	0.086767	Schwarz criterion		-3.490987
Log likelihood	134.9300	Hannan-Quinn criter.		-3.607161
F-statistic	1.208043	Durbin-Watson stat		1.556603
Prob(F-statistic)	0.315573			

Appendix3: Heteroscedasticity Test: Breusch-Pagan-Godfrey test for the regression model of ROA APP CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.442344	Prob. F(5,64)	0.8173
Obs*R-squared	2.338264	Prob. Chi-Square(5)	0.8006
Scaled explained SS	2.852483	Prob. Chi-Square(5)	0.7227

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 07/01/17   Time: 16:06
Sample: 1 70
Included observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.008723	0.029995	-0.290827	0.7721
CR	0.000215	0.000327	0.656993	0.5135
FL	-0.000783	0.006581	-0.118944	0.9057
FS	0.004163	0.003724	1.117918	0.2678
SG	-0.001101	0.002751	-0.400376	0.6902
APP	-3.84E-06	1.90E-05	-0.202185	0.8404

R-squared	0.033404	Mean dependent var		0.021794
Adjusted R-squared	-0.042112	S.D. dependent var		0.037503
S.E. of regression	0.038284	Akaike info criterion		-3.605731

Sum squared resid	0.093805	Schwarz criterion	-3.413003
Log likelihood	132.2006	Hannan-Quinn criter.	-3.529177
F-statistic	0.442344	Durbin-Watson stat	1.399532
Prob(F-statistic)	0.817256		

Appendix 4: Heteroscedasticity Test: Breusch-Pagan-Godfrey test for the regression model of ROA CCC CR FL FS SG

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.698707	Prob. F(5,64)	0.6264
Obs*R-squared	3.623273	Prob. Chi-Square(5)	0.6048
Scaled explained SS	4.497670	Prob. Chi-Square(5)	0.4802

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 07/01/17   Time: 16:30
Sample: 1 70
Included observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022320	0.028525	-0.782461	0.4368
CR	0.000268	0.000335	0.799905	0.4267
FL	0.000871	0.006765	0.128793	0.8979
FS	0.005978	0.003694	1.618208	0.1105
SG	-0.000790	0.002855	-0.276786	0.7828
CCC	-1.36E-05	1.91E-05	-0.709610	0.4805

R-squared	0.051761	Mean dependent var	0.022409
Adjusted R-squared	-0.022320	S.D. dependent var	0.038898
S.E. of regression	0.039329	Akaike info criterion	-3.551878
Sum squared resid	0.098995	Schwarz criterion	-3.359149
Log likelihood	130.3157	Hannan-Quinn criter.	-3.475324
F-statistic	0.698707	Durbin-Watson stat	1.446102
Prob(F-statistic)	0.626389		

Appendix 5: Breusch-Godfrey Serial Correlation LM Test of ROA ARP CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.578096	Prob. F(8,56)	0.1523
Obs*R-squared	12.87776	Prob. Chi-Square(8)	0.1161

Test Equation:
Dependent Variable: RESID
Method: Least Squares

Date: 07/01/17   Time: 14:50
Sample: 1 70
Included observations: 70
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.015148	0.139304	-0.108744	0.9138
ARP	4.62E-05	0.000321	0.143744	0.8862
CR	2.27E-05	0.001323	0.017183	0.9864
FL	-0.007755	0.025822	-0.300304	0.7651
FS	0.002121	0.016567	0.128008	0.8986
SG	0.003316	0.011859	0.279585	0.7808
RESID(-1)	0.347994	0.138164	2.518694	0.0147
RESID(-2)	0.177367	0.142563	1.244134	0.2186
RESID(-3)	-0.075199	0.153922	-0.488551	0.6271
RESID(-4)	0.028091	0.147100	0.190967	0.8492
RESID(-5)	-0.100365	0.147165	-0.681989	0.4981
RESID(-6)	0.073433	0.158753	0.462560	0.6455
RESID(-7)	0.021736	0.147038	0.147827	0.8830
RESID(-8)	0.000853	0.145546	0.005859	0.9953

R-squared	0.183968	Mean dependent var		-1.83E-16
Adjusted R-squared	-0.005468	S.D. dependent var		0.146527
S.E. of regression	0.146927	Akaike info criterion		-0.820903
Sum squared resid	1.208905	Schwarz criterion		-0.371204
Log likelihood	42.73161	Hannan-Quinn criter.		-0.642277
F-statistic	0.971136	Durbin-Watson stat		1.997762
Prob(F-statistic)	0.490224			

Appendix 6: Breusch-Godfrey Serial Correlation LM Test of ROA INV CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.899908	Prob. F(8,56)	0.0781
Obs*R-squared	14.94325	Prob. Chi-Square(8)	0.0603

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 07/01/17   Time: 15:13
Sample: 1 70
Included observations: 70
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.016284	0.115610	-0.140849	0.8885
CR	-4.80E-05	0.001313	-0.036565	0.9710
FL	-0.010575	0.025625	-0.412668	0.6814

FS	0.003714	0.014394	0.258011	0.7973
SG	0.003094	0.011183	0.276627	0.7831
INV	-2.91E-05	9.23E-05	-0.314767	0.7541
RESID(-1)	0.277844	0.136897	2.029587	0.0472
RESID(-2)	0.297277	0.139036	2.138125	0.0369
RESID(-3)	0.009402	0.148567	0.063287	0.9498
RESID(-4)	-0.059973	0.143461	-0.418040	0.6775
RESID(-5)	-0.145830	0.147820	-0.986542	0.3281
RESID(-6)	0.127245	0.148715	0.855628	0.3958
RESID(-7)	-0.004462	0.141256	-0.031590	0.9749
RESID(-8)	0.010386	0.140804	0.073760	0.9415

R-squared	0.213475	Mean dependent var	-3.46E-17
Adjusted R-squared	0.030889	S.D. dependent var	0.148390
S.E. of regression	0.146081	Akaike info criterion	-0.832460
Sum squared resid	1.195015	Schwarz criterion	-0.382761
Log likelihood	43.13609	Hannan-Quinn criter.	-0.653834
F-statistic	1.169174	Durbin-Watson stat	2.007945
Prob(F-statistic)	0.325499		

Appendix 7: Breusch-Godfrey Serial Correlation LM Test of ROA APP CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.489429	Prob. F(8,56)	0.1819
Obs*R-squared	12.28116	Prob. Chi-Square(8)	0.1391

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 07/01/17   Time: 15:19
Sample: 1 70
Included observations: 70
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.046324	0.128461	-0.360608	0.7197
CR	0.000157	0.001341	0.117406	0.9070
FL	-0.005931	0.026561	-0.223281	0.8241
FS	0.005493	0.015813	0.347360	0.7296
SG	0.003736	0.011318	0.330058	0.7426
APP	4.62E-05	8.02E-05	0.576162	0.5668
RESID(-1)	0.291166	0.137496	2.117629	0.0387
RESID(-2)	0.239486	0.138279	1.731901	0.0888
RESID(-3)	-0.025297	0.147310	-0.171729	0.8643
RESID(-4)	-0.013464	0.144217	-0.093357	0.9260
RESID(-5)	-0.096178	0.144656	-0.664874	0.5089
RESID(-6)	0.098449	0.150163	0.655615	0.5148

RESID(-7)	0.022814	0.144132	0.158287	0.8748
RESID(-8)	-0.003994	0.144796	-0.027586	0.9781

R-squared	0.175445	Mean dependent var	-6.68E-17
Adjusted R-squared	-0.015969	S.D. dependent var	0.148695
S.E. of regression	0.149877	Akaike info criterion	-0.781142
Sum squared resid	1.257941	Schwarz criterion	-0.331443
Log likelihood	41.33997	Hannan-Quinn criter.	-0.602516
F-statistic	0.916572	Durbin-Watson stat	1.985861
Prob(F-statistic)	0.542011		

Appendix 8: Breusch-Godfrey Serial Correlation LM Test of ROA CCC CR FL FS SG

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.927668	Prob. F(8,56)	0.0736
Obs*R-squared	15.11445	Prob. Chi-Square(8)	0.0570

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 07/01/17   Time: 15:25
Sample: 1 70
Included observations: 70
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.047499	0.116343	-0.408269	0.6846
CR	6.44E-05	0.001315	0.049011	0.9611
FL	-0.008723	0.026296	-0.331706	0.7413
FS	0.007389	0.014996	0.492733	0.6241
SG	0.003803	0.011350	0.335047	0.7388
CCC	-3.80E-05	7.37E-05	-0.514912	0.6086
RESID(-1)	0.302120	0.137072	2.204101	0.0316
RESID(-2)	0.256443	0.138430	1.852505	0.0692
RESID(-3)	0.018043	0.148830	0.121230	0.9039
RESID(-4)	-0.028770	0.142427	-0.201999	0.8406
RESID(-5)	-0.117534	0.146924	-0.799963	0.4271
RESID(-6)	0.126729	0.147804	0.857411	0.3949
RESID(-7)	0.033050	0.141233	0.234007	0.8158
RESID(-8)	0.001566	0.141134	0.011096	0.9912

R-squared	0.215921	Mean dependent var	-6.32E-17
Adjusted R-squared	0.033902	S.D. dependent var	0.150777
S.E. of regression	0.148199	Akaike info criterion	-0.803662
Sum squared resid	1.229929	Schwarz criterion	-0.353963
Log likelihood	42.12817	Hannan-Quinn criter.	-0.625036
F-statistic	1.186257	Durbin-Watson stat	1.997219
Prob(F-statistic)	0.313307		

Appendix 9: Redundant fixed effect test of ROA 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	4.499318	5	0.4800

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ARP	-0.000140	-0.000292	0.000000	0.2278
CR	-0.000716	-0.001112	0.000000	0.2556
FL	0.031178	0.022015	0.000305	0.5997
FS	0.035694	0.041304	0.000112	0.5959
SG	0.010134	0.009636	0.000014	0.8943

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/30/17   Time: 10:19
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.162452	0.151518	-1.072160	0.2887
ARP	-0.000140	0.000291	-0.481488	0.6322
CR	-0.000716	0.001248	-0.574004	0.5685
FL	0.031178	0.033123	0.941264	0.3510
FS	0.035694	0.019075	1.871257	0.0671
SG	0.010134	0.011450	0.885061	0.3803

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.548402	Mean dependent var	0.120293
Adjusted R-squared	0.389015	S.D. dependent var	0.167841
S.E. of regression	0.131194	Akaike info criterion	-0.998095
Sum squared resid	0.877802	Schwarz criterion	-0.387789
Log likelihood	53.93331	Hannan-Quinn criter.	-0.755674

F-statistic	3.440690	Durbin-Watson stat	2.549444
Prob(F-statistic)	0.000268		

Appendix 10: Redundant fixed effect test of ROA INV 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	3.577446	5	0.6117

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CR	-0.000672	-0.000990	0.000000	0.3352
FL	0.028469	0.019642	0.000271	0.5921
FS	0.037818	0.044640	0.000087	0.4651
SG	0.008651	0.006489	0.000010	0.5003
INV	-0.000046	-0.000079	0.000000	0.3385

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/30/17   Time: 14:56
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.176085	0.142086	-1.239281	0.2209
CR	-0.000672	0.001242	-0.541157	0.5908
FL	0.028469	0.032925	0.864669	0.3913
FS	0.037818	0.018076	2.092220	0.0414
SG	0.008651	0.010818	0.799711	0.4276
INV	-4.63E-05	9.66E-05	-0.479089	0.6339

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.548382	Mean dependent var	0.120293
Adjusted R-squared	0.388988	S.D. dependent var	0.167841
S.E. of regression	0.131197	Akaike info criterion	-0.998050
Sum squared resid	0.877842	Schwarz criterion	-0.387744

Log likelihood	53.93174	Hannan-Quinn criter.	-0.755629
F-statistic	3.440408	Durbin-Watson stat	2.600716
Prob(F-statistic)	0.000268		

Appendix 11: Redundant fixed effect test of ROA 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	3.517570	5	0.6207

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CR	-0.000729	-0.001071	0.000000	0.3179
FL	0.030211	0.022100	0.000270	0.6218
FS	0.035627	0.041065	0.000117	0.6156
SG	0.007495	0.004903	0.000012	0.4540
APP	-0.000029	-0.000055	0.000000	0.3806

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/30/17   Time: 15:03
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.164849	0.157700	-1.045334	0.3008
CR	-0.000729	0.001259	-0.579337	0.5649
FL	0.030211	0.033017	0.915027	0.3645
FS	0.035627	0.019941	1.786662	0.0799
SG	0.007495	0.011019	0.680212	0.4994
APP	-2.90E-05	7.92E-05	-0.366111	0.7158

	Effects Specification		

Cross-section fixed (dummy variables)

R-squared	0.547539	Mean dependent var	0.120293
Adjusted R-squared	0.387847	S.D. dependent var	0.167841

S.E. of regression	0.131319	Akaike info criterion	-0.996184
Sum squared resid	0.879481	Schwarz criterion	-0.385878
Log likelihood	53.86644	Hannan-Quinn criter.	-0.753763
F-statistic	3.428714	Durbin-Watson stat	2.610283
Prob(F-statistic)	0.000278		

Appendix12: Redundant fixed effect test of ROA INV 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	3.473517	5	0.6274

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CR	-0.000635	-0.000904	0.000000	0.4293
FL	0.028825	0.020317	0.000264	0.6008
FS	0.039579	0.046650	0.000094	0.4654
SG	0.008874	0.006905	0.000015	0.6132
CCC	-0.000012	-0.000018	0.000000	0.8257

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 06/30/17   Time: 15:11
Sample: 2011 2015
Periods included: 5
Cross-sections included: 14
Total panel (balanced) observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.197581	0.141202	-1.399275	0.1678
CR	-0.000635	0.001252	-0.507092	0.6143
FL	0.028825	0.033071	0.871609	0.3875
FS	0.039579	0.018719	2.114321	0.0394
SG	0.008874	0.011454	0.774787	0.4420
CCC	-1.21E-05	7.80E-05	-0.154412	0.8779

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.546562	Mean dependent var	0.120293
Adjusted R-squared	0.386525	S.D. dependent var	0.167841
S.E. of regression	0.131461	Akaike info criterion	-0.994027
Sum squared resid	0.881381	Schwarz criterion	-0.383721
Log likelihood	53.79093	Hannan-Quinn criter.	-0.751606
F-statistic	3.415219	Durbin-Watson stat	2.592256
Prob(F-statistic)	0.000290		