



THE EFFECT OF WORKING CAPITAL MANAGEMENT ON FIRM'S
PROFITABILITY: EVIDENCE FROM SELECTED MANUFACTURING
COMPANIES IN ADDIS ABABA ETHIOPIA.

MSC THESIS

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WOLKITE UNIVERSITY, WOLKITE, ETHIOPIA

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A THESIS SUBMITTED TO THE DEPARTMENT OF ACCOUNTING AND
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STATEMENT OF DECLARATION

I hereby declare that this thesis entitled **“The Effect Of working capital management on firm’s profitability: evidence from selected manufacturing companies in Addis Ababa Ethiopia”**, has been carried out by me under the guidance and supervision of **Chernet Bireda (PhD)** and **Meyad Diriba (ass.pro)** and submitted by me for the award of the degree of Master of Science in accounting and finance of Wolkite University.

The thesis is original and has not been submitted for the award of any Degree of diploma any University. It is offered for the partial fulfillment of the degree of Masters of in accounting and finance.

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To certify that the thesis entitled “**The effect of working capital management on firm’s profitability: evidence from selected manufacturing companies in Addis Ababa Ethiopia**” submitted to Wolkite University for the award of the Degree of Master of Science in accounting and finance and is a record of valuable research work carried out by Mr. **Abdulaziz Bereda Kedir**, under our guidance and supervision. Therefore we recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department.

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As members of Board of Examiners of the MSc. thesis open defense examination, we certify that we have read and evaluated the thesis prepared by **Abdulaziz Bereda Kedir** in title “**.The effect of working capital management on Firm’s profitability: evidence from selected manufacturing companies in Addis Ababa Ethiopia**”, and examined the candidate. We recommended that the thesis be accepted as fulfilling the thesis requirement for the Degree of Master of Science in Accounting and finance.

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Table of Contents

STATEMENT OF DECLARATION	ii
ADVISORS' APPROVAL SHEET	iii
EXAMINERS APPROVAL SHEET	iv
Acknowledgements.....	v
List of table.....	ix
List of Figure.....	x
Abstract.....	xi
Acronyms.....	xii
Chapter One	1
1. Introduction.....	1
1.1. Back ground of the study	1
1.2. Statement of the Problems	3
1.3. Objectives of the Study	4
1.3.1. General Objective	4
1.3.2. Specific Objectives	5
1.4. The Study of Hypotheses	5
1.5. Significance of the Study	5
1.6. Scope and limitation of the study.....	6
1.7. Organization of the Study	6
CHAPTER TWO	6
2. LITERATURE REVIEW	Error! Bookmark not defined.
2.1. Introduction.....	Error! Bookmark not defined.
2.2. An overview of Financial Management.....	7
2.2.1. Overview of Manufacturing Companies.....	8
2.2.2. Working Capital and Working Capital Management.....	9
2.2.3. Working Capital Management	10
2.2.4. Working Capital Policies	12
2.2.5. The Level of Working Capital Policy	12

2.2.6.	Liquidity and Profitability.....	14
2.2.7.	Working Capital Management and Profitability	16
2.2.8.	Industry Effects on Working Capital	17
2.3.	Empirical Review.....	18
2.4.	Summery and Knowledge Gap	26
2.5.	Conceptual Framework.....	27
Chapter-Three		Error! Bookmark not defined.
3.	Methodology of the study	Error! Bookmark not defined.
3.1.	Introduction.....	Error! Bookmark not defined.
3.2.	Population and Sampling Procedure	29
3.3.	Sampling design.....	30
3.4.	Research Design.....	30
3.5.	Research Methods Adopted	31
3.6.	Data and Data Collection	31
3.7.	Analysis Technique.....	32
3.8.	Variable Choice and Research Hypothesis	32
3.9.	Dependent Variable	33
3.9.1.	Return on Assets (ROA):	33
3.9.2.	Independent Variables and Their Respective Hypothesis.....	33
3.9.3.	Control Variables	37
3.9.4.	Model Specification	38
3.9.5.	Ethical clearance	39
3.9.6.	Expected Result.....	39
CHAPTER FOUR		39
4.	DATA PRESENTATION AND ANALYSIS	39
4.2.	Descriptive Statistics.....	40
4.3.	Correlation Analysis	42
4.4.	Testing Assumptions of Classical Linear Regression Model (CLRM).....	43
4.4.1.	Test for weather average value of the error term is zero.....	43
4.4.2.	Test for Autocorrelation.....	43
4.4.3.	Test for Normality.....	45
4.4.4.	Test for homoscedasticity	46

4.4.5.	Model Selection Test: Random Verses Fixed effect Model	47
4.5.	Regression Results and Discussion.....	48
4.5.1.	The adjusted R^2 determination and coefficient R^2	49
4.5.2.	Summary of Result Interpretation	50
4.5.3.	Discussion of the Regression Result.....	50
CHAPTER FIVE		53
5.	CONCLUSIONS AND RECOMMENDATIONS	53
5.1.	Conclusions.....	53
5.2.	Recommendation.....	55
5.3.	Further Consideration	56
REFERENCE.....		57
Appendix 1 Sample Companies Detail information		Error! Bookmark not defined.
Appendix-2 Husman test resualt		60
Appendix-3 Test of hetroskedastics		62

List of table

Table 3-1 Dependent Independent and control variables	37
Table 3-2: explanatory variables and their expected effect on the dependent variables	38
Table 4-1 Presents descriptive statistics for manufacturing firms in Addis Ababa for a period of five years, from 2015 to 2019	40
Table 4-2: Correlation among Explanatory Variables	42
Table 4-3: DW test result test of autocorrelation.....	45
Table 4-4: Heteroscedasticity test	47
Table 4-5: Hausmann Test Result	48
Table 4-6: Random effect model regression result	49

List of Figure

Figure 4-1: Rejection, non-rejection, and inconclusive regions for DW test.....	44
Figure 4-2 DW test result.....	45
Figure 4-3 Normality test.....	46

Abstract

The main purpose of this study was to determine empirically the impact of working capital management on profitability. To indicate relationship between these two, the author collected secondary data from 19 manufacturing companies in Addis Ababa, Ethiopia for the period of 2015 to 2019. Inventory holding period, Accounts receivable period and accounts payable period are used as independent working capital policy variables. However, cash conversion cycle (CCC) and current assets to total assets ratio are used as comprehensive measures of working capital investment policy. On the other hand, current liabilities to total assets ratio is used as measure of working capital financing policy. The regression results show inverse relationship between inventory holding periods and accounts receivable with profitability. However there is statistically insignificant relationship between accounts payable period and profitability. The results also show that there exists significant negative relationship between profitability of the sampled firms and cash Conversion cycle (CCC). In hence to that there is significant positive relationship between current assets to total assets ratio and profitability measures has been observed. The other hand, results show that a significant positive relationship between current liabilities to total assets ratio and profitability. To be profitable, firms must try to keep these numbers of days account receivable and inventory turnover days to minimum level. This also helps to minimal the cash conversion cycle (CCC). Since aggressiveness of working capital management investment policies is inversely related to profitability, and aggressive investment policy positively related with profitability, the financial managers of manufacturing Companies should follow conservative investment policy and aggressive financing policy in their working capital management in manufacturing companies.

Data and Data Collection to gather the necessary data copies of audited financial statements in the form of income statement and statement of financial position over the period of five years has been use.

The population of study will comprised 19 manufacturing share companies in Addis Ababa Ethiopia. The E – views-9 software has been used to analyse financial data and Researcher used panel Least Squares methods for analysis.

Acronyms

ARP = Accounts Receivable Period

APP = Accounts Payable Period

CATAR= Current asset total asset ratio

CA = Current Assets

CCC = Cash Conversion Cycle

CLTAR= Current liability to total asset ratio

ERCA= Ethiopian revenues and Customs Authority

GDP= gross domestic product

ICP = Inventory Conversion Period

INF= inflation

Ln Sales = Firm Size

OLS= Ordinary List Square

ROA = Return on Assets

WCM = Working Capital Management

WC = Working Capital

Chapter One

1. Introduction

1.1 Back ground of the study

The scope of the study, to investigate determinant working capital management is an integral part of the overall management of a company. The study was conducted to investigate the effect of working capital management on profitability in selected manufacturing companies in Addis Ababa Ethiopia.

Working capital management is an important component of the overall management of companies (Nazir & Afza, 2008). It refers to the management of current assets and current liabilities. There are different reasons that make it an important topic of study. Managers spend most of their time on managing the working capital of their firm (Horne and Wachowicz, 2004, Lamberson 1995, Pandey, 2005, and Rao, 1989. Besides, working capital affects profitability of firms (Weston and Coperland 1986). Further, according to Smith (1973) it influences the value (net worth) of companies.

Manufacturing is the production of goods for use or sale using machines, tools and labor. It refers to a series of human activities, from handcraft to high tech, but mostly applied to industrial production. Manufacturing activity increased as the governments five year plans diversified the economy by encouraging agro industrial activity and by substituting domestically produced goods for imported items in 1957. In 1975, the Derg regime nationalized most of the industries in the country and it was another factor for the sector to remain at its infancy level by discouraging and underutilization of private investors. In 1984/85 manufacturing and handicrafts is getting encourage and together accounted.

Working capital (wc) refers to the capital that companies use in their daily operations and it consists of companies' current assets and current liabilities, and management of Working capital is the ability to control the current assets and current liabilities in a manner that provides the firm with maximum return on its assets and minimizes payments for its liabilities. Working capital management efficiency is vital especially for manufacturing firms, where a major part of assets is composed of current assets that will directly affect the profitability and liquidity of firms (Raheman & Nasr 2007).

Wang (2002), shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009) have shown that working capital management has an effect on profitability of a firm and Proper estimation of working capital is a difficult task for the management because amount of working capital varies across firms over the periods depending upon the nature of business, scale of operation, production cycle, credit policy, availability of raw materials, etc. For this reason significant amount of funds is necessary to invest permanently in the form of various current assets. For instance, due to time lag between sale of goods and their actual realization in cash, adequate amount of working capital is always required to be made available for maintaining the desired level of sale (Blinder & L.J.Maccini, 1991).

The working capital management (WC) practices also examine the impact of aggressive/conservative working capital investment and financing policy. Wajahat & Syed (2010), Vishnani S & Shah B (2007) argue that working capital is just an idle resource with a high cost and low benefit associated with it so they advised companies to follow zero working capital policy but such a policy is very risky because it reduces the liquidity and it might leads to a default. Other researchers support companies to have a working capital policy because they believe that proper management of components of working capital can balance cost and benefits of the company and it will reduce the risk of default by raising the level of liquidity. Companies can choose among three different types of working capital i.e. aggressive, conservative and moderate but their choice depends on their desire level of liquidity and risk.

Investments in current assets are more important to ensure transferring of goods or services to the ultimate customers, and a proper management should give the desired impact on profitability. If resources are blocked at different stage of supply chain, this will prolong cash operating cycle. Although this might increase profitability (due to increase sales), it may also adversely affect the profitability if the costs tied up in working capital exceed the benefits of holding more inventory and/or granting more trade credit to customers (Arshad, 2013). Modern Financial management aims at reducing the level of current assets without ignoring the risk of stock outs. Proper working capital management improves firms' profitability and liquidity position, and thus increasing the market value of the firm (Ali, 2011). Liquidity and profitability are two sides of the same coin because they work in opposite directions. Increasing liquidity of the firm will

Decrease profitability of the firm and vice versa. Therefore finance managers need to maintain a level of working capital that will ensure liquidity of the firm but not decrease its profitability.

1.2 Statement of the Problems

Most studies on the determinants of working capital requirement in developing and emerging countries as found in the extant literature examined the relationship between determinant factors and the size of net working capital. The effect of working capital management on firm's profitability evidence from selected manufacturing companies in Addis Ababa Ethiopia are often not explored. And the present study wants to fill the gap on lack of clarity about the determinant.

Any firm is required to obtain a balance between profitability and liquidity while conducting its day to day operations. As inadequate amount of working capital impairs a firm's liquidity, holding of excess working capital results in the reduction of the profitability of manufacturing companies. .

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

Working capital management was given very less attention in contrast to long term investment. Even if it played a very vital and important role in the growth of firm and in enhancement of profitability. Deficiency in the planning and control of working capital management is one of the main causes of business failure and it is a neglected subject which has been too little investigated or written about. The two main objectives need to be satisfied by working capital management is liquidity and profitability but there should be a trade-off / balance between these two objectives.

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

In relation to the globe working capital management practices in our country are still immature. If manufacturing sector in our country was adopts comprehensive working capital management, this would be directly affecting profit and value maximization of the organization. (Ephrem2011).Working capital management is an important component of corporate finance because of its direct impact on profitability and liquidity of a business entity. Owing to this strategic role of the firms value creation process and the following recent global financial crisis efficient management of working capital requirement is not a question of pleasure, rather it becomes a question of survival. Numerous research studies addressing the determinants of working capital requirement have begun to appear in the corporate finance literature. However, a study contended that the findings are quite mixed. They lack cohesiveness which is attributable to variations in factors such as culture, perceptions, market size, industry variations, market depth, efficiency, and regulations.

1.1.2 Research questions

The study has the following research questions;

1. Does receivable management affects companies' performance?
2. Does payable management impacts on companies' profitability?
3. Does payable inventory management impacts on companies' profitability?
4. Does cash conversion cycle impacts on companies' profitability?
5. Does payable management impacts on companies' profitability?

To The best of researcher's knowledge, no research has been done in case of working capital management (wcm) and profitability of manufacturing companies in Addis Ababa. Thus, this study was conduct the aim of providing the following research objective:

1.3Objectives of the Study

1.3.1General Objective

The General objective of the study is to examine the effect of working capital management on firm's profitability from selected manufacturing companies in Addis Ababa Ethiopia.

1.3.2 Specific Objectives

More specifically the objectives of this study are as follow.

- ✓ To analyse the effect of receivable management on companies performance
- ✓ To provide the impact of payable management on companies performance.
- ✓ To elaborate the effect of inventory management on companies performance
- ✓ To evaluate the effect of cash conversion cycle management on companies performance
- ✓ To examine the effect of working capital investment policy on firms' profitability.
- ✓ To determine the effect of working capital financing policy on firms' profitability.

1.4 Hypothesis of the study

. In order to achieve the objectives of the study, a number of hypotheses were tested regarding the effects of working capital management on the performance of manufacturing companies/the effect of working capital management based on profitability and different empirical research and theoretical reviews. These testable hypotheses can be formulated as follows.

- ✓ H1: There is significant and negative relationship between Average Collection Period (ACP) and Profitability of the Companies.
- ✓ H2: There is significant negative relationship between Inventory Conversion Period (ICP) and Profitability of the Companies.
- ✓ H3: There is significant positive relationship between Average Payment Period (APP) and Profitability of the companies.
- ✓ H4: There is significant negative relationship between Cash Conversion Cycle (CCC) and Profitability of the companies.
- ✓ H5: There is strong negative relationship between current assets to total assets ratio and profitability of the companies.
- ✓ H6: There is significant positive relationship between current liabilities to total assets ratio and profitability of the companies.

1.5 Significance of the Study

This study is significant, in the first place, in its empirical analysis of manufacturing companies. To understand the effect of working capital management on the profitability of the companies. In addition, the study may have vital use for policy makers to consider the identified factor and to take corrective measure.

The target of the study was an industry in a different nature of operation which process is the most Advantageous driver for work in progress inventory and finished goods. In addition to this, Manufacturing sector is one of the basic sectors in country, It used to due consideration regarding the management of liabilities and assets.

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

1.6 Scope and limitation of the study

The researcher was mainly targeted on 64 manufacturing companies from Addis Ababa Ethiopia to the effect of working capital management (wcm) on firm's profitability of the selected manufacturing companies found in Addis Ababa. In doing so, sample of 19 manufacturing companies were selected from Addis Ababa and the analysis is done for five years from 2015 to 2019. Therefore the study is limited to manufacturing companies found in Addis Ababa. The location is chosen because there are a lot of companies found in the A.A than the other part of the country. Because of the significant nature of their activities, companies in financial sector, banking and finance, leasing, business services, renting and other services are excluded from the sample. The end of the research, therefore, is limited to those selected manufacturing companies in specific and could be generalized to all manufacturing companies in country. The topic used too much time and money to transfer and come up with important points.

1.7 Organization of the paper

The schedule and organization of the final report of the study was organized in five chapters. chapter 1, chapter 2, chapter 3, chapter 4, and chapter 5, the first chapter was deal with introduction, statement of the problems, objectives of the study, methods adopted, significance of the study, and scope and limitation of the study. In the second chapter, different literature that relates to the topics of the study was review and present. In the third chapter, the research design including the population and sampling procedure, data and data collection instrument, data analysis, research method adopted, Choice of Variable and Research Hypothesis, techniques used in data collection and analysis will present. Then, the fourth chapter was discuss the results and analysis of the findings or the problem of the study. Lastly, the fifth chapter was provide the conclusion and recommendation for the study according to the problem.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter deals with the literature regarding working capital management. Structurally, the chapter comprises in to ten sections. Section 2.1 and section 2.2 explain An Overview of Financial management and overview of manufacturing company in Ethiopia respectively. Under section 2.3 and 2.4 Working capital, Working capital management and their roles on companies' profitability has been elaborated. section 2.5 explain the relation between Working capital and liquidity section 2.6 examine different working capital policies 2.7 point out the effect of different industries on working capital In section 2.8 different related literatures summarizes and their result about the effect of Working capital management on profitability presented. Section 2.9 presented the summery and knowledge gap from the reviewed literature presented section 2.10 the conceptual framework has been presented.

2.2 An overview of Financial Management

Financial management is concerned with increasing funds needed to finance the company's asset and activities, allocating those scarce funds between competing uses, and ensuring that those funds are used effectively and efficiently in achieving the company's targets. Financial management also include some other aspects such as accounting information system, financial reporting and analysis, fixed asset management, capital structure management.

Financial Management is an important part of the overall management. It is concerned with the duties of the financial managers in the business companies. Effective procurement and efficient uses of finance lead to proper utilization of the finance by the business concern. Finance is the lifeblood of business organization it needs to meet the requirements of the business concern. Each and every business concern maintain adequate amount of financial management for their smooth running of the business and also maintain the business carefully to achieve the goal of the business. One of the importance's of financial management is proper use of current asset and current liability that are the most important element of Net Working capital management. The primary cause of an enterprise's failure is the poor control management of working capital internally among components. Thus, the finance manager of an enterprise must be alert to the

level of working capital changes (Brigham, E. F and Houston, J. F. 2003) from the other point of view.

2.3 Overview of Manufacturing Companies

Manufacturing Industry:-The branch of manufacture and trade based on the fabrication, processing, or preparation of products from raw materials and commodities. This includes all foods, chemicals, textiles, machines, and equipment. This includes all refined metals and minerals derived from extracted ores. This includes all lumber, wood, and pulp products.

All establishments producing clothing and fabricating products by cutting and sewing purchased woven or knit textile fabrics and related materials, such as leather, rubberized fabrics, plastics, and furs. This does not include knitting mills (see Textile Mill Products) or custom tailors and dressmakers.

All establishments producing basic chemicals, and establishments manufacturing products by predominantly chemical processes. Manufacturing is the production of goods for use or sale using machines, tools and labour. It refers to a series of human activities, from handcraft to high tech, but mostly applied to industrial production, in which raw materials are transformed into new products/finished goods on a large scale (CSA, 2012, pp 2). Manufacturing activity increased as the governments five year plans diversified the economy by encouraging agro industrial activity and by substituting domestically produced goods for imported items in 1957. In 1975, the Derg regime nationalized most of the industries in the country and it was another factor for the sector to remain at its infancy **level by** discouraging and underutilization of private investors. In 1984/85 manufacturing and handicrafts is getting encourage and together accounted the share of manufacturing has remained essentially unchanged at just GDP over the past decade. The five-year Growth and Transformation Plan that Ethiopia unveiled in 2010 presents a government-led effort to achieve the country's ambitious development goals by transforming agricultural based economy to industry, from which expansion of manufacturing is its major mission (Fantu Chekol 2001). According to World Bank report (2009), and CSA (2008). The following are the manufacturing sector classification according to Central Statistical Authority (CSA 2012):- This is a list of Manufacturing Companies, Factories and Industries in Ethiopia Adhesive and Glues (6), Agricultural Machinery / Farmer Tools (466), Agro

Industry (77), Aircraft Parts (2), Alcohol / Liquor (20), Alkyd Resin (0), Alkyd Resin / Soda Ash / Sodium Hypochlorite (1), Aluminium and PVC (23) Manufacturing of Moha Soft Drinks S.C., Manufacturing of A.A Tannary S.C., Manufacturing of Akaki Spare parts and hand tools S.C., Manufacturing of A.A bottle and Glass S.C., Manufacturing of BM Ethiopia garment and textile S.C., Manufacturing of Ethiopian Pulp & Paper S.C., Manufacturing of mugger cement S.C. Manufacturing of East cement S.C., Manufacturing of AKaki metal S.C., Manufacturing of East african bottling S.C. Manufacturing of Horizon Addis tyre (Mathador) S.C. Manufacturing of kaliti Metal Industry S.C., Manufacturing of kaliy food S.C. Pittards Products Manufacturing S.C., Manufacturing of Molamaro soft drinks s,c Tsehay manufacturing industry S.C. Manufacturing of A.A Furniture S.C.

2.4 Working Capital and Working Capital Management

2.4.1 Working Capital

Working capital management is determined endogenously by firm –specific variables such as size, age, profitability, market share (power), sales growth, operating risk and operating cash flow. On the other hand, it is determined exogenously by macroeconomic factors such as GDP, interest rate and tax rate. The ultimate goal of working capital management is to achieve an optimal level of liquidity and profitability contingent upon availability of cash, inventory and other current assets. Optimal level of working capital maximizes the firm’s value, hence a trade-off between liquidity and profitability. Working capital management (WCM) according to Smith (1987) is important and affects both liquidity and profitability of the firm. It involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). Lamberson (1995) argued that working capital management has become one of the most important issues in organizations.

Working Capital refers to money utilized by business firms in their daily activities or operations. Working capital is the available capital for conducting day-to-day operations of an organization represented by its net current assets (Adeniji, 2008). In the same vein, Akinsulire (2008), described working capital as the items that are required for the day-to-day production of goods to be sold by a companies.

2.42 Importance of Working Capital

Working Capital is a very important item of the balance sheet. Mathematically, it is given by $\text{working capital} = \text{Current Assets} - \text{current liabilities}$. Although Marx didn't mention, workers also gave credit to the firm by accepting periodical payment of wages which founded a portion of work-in-process. Guthman & Dougall (1948) defined the working capital as current asset minus current liabilities. The first and most critical use of working capital is providing the on-going investment in short term asset that the company needs to cover its daily expenditures such as payroll, vendor invoices, and inventory purchases. The business also needs working capital for prepaid business costs such as licenses, insurance policies or security deposits. Secondly, Working capital management is critical for all firms, but mostly for small firms. 3rdly, the use of working capital to improve business operations and to remain competitive, such as activities for product development or exploring new markets. In the time of high computation, firms are in need of integrating those activities in to operations on a continuous basis. Working capital is needed to sustain firm's growth. The firm is expanded not only by investing in new plants or machinery, working capital is also required to facilitate sales growth. It is because as a business growth, it requires larger investment in inventories, accounts receivable, personnel and other items to increase their sales. Additionally, those expenses are more likely to be incurred as small repeated costs rather than as large infrequent investments.

2.5 Working Capital Management

2.5.1 Definition of Working Capital Management

The management of working capital involves managing inventories, accounts receivable and payable, and cash. Implementing an effective working capital system is an excellent way for many companies to improve their earnings (Nimalathasam, 2010). Working capital management refers to all the actions and decisions of the management which affects the size and effectiveness of working capital. Working capital management requires special attention in present days when cost of capital is rising and funds are scarce. It has been generally established that the performance/profitability of a firm largely depends upon the manner of its working capital management. If a firm is inefficient in managing working capital, it will not only reduce profitability but may also lead to financial crisis. Both inadequate and excessive working capital is detrimental for a business concern. The excessive working capital can result in idle funds

which could be used for earning profit while the inadequate working capital will interrupt the operations and will also impair profitability (Chowdhary and Amin, 2007). In their studies Chen, Wang, C., M., & Jin, L. (2009) defined working capital management as making decision that affect working capital. Also Explained working capital management as the administration of all aspect of current asset and current liabilities, it includes the firms' investment in short term securities, short term assets, inventories and account receivable. The working capital meets the short-term financial requirements of a business enterprise. It is a trading capital, not retained in the business in a particular form for longer than a year. The money invested in it changes in form and substance during the normal course of business operations.

2.5.2 Importance of Working Capital Management

The subject matter of working capital management is the attainment of optimal level of cash or liquidity which represents a trade-off between current assets and current liabilities. Working capital management is very imperative because it affects the firm's risk, profitability and value (Smith 1980). Investment in working capital involves a balance/trade-off between risk and profitability because investment decision which leads to increase in profitability will be inclined to increase risk and vice versa. Efficiency in working capital management is very important for the manufacturing firms where more than half of the assets are current assets.

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

Working Capital Management:-This is a managerial accounting strategy which focuses on maintaining efficient levels of both components of working capital - current assets and current liabilities (Adeoran, Josaiah, Boson Fakunled and Imuzeze, 2012). Decisions relating to working capital and short-term financing are referred to as working capital management (Nimalathason, 2010). It is the regulation, adjustment and control of the balance of current assets and current liabilities of a firm such that maturing obligations are met, adequate amount of working capital is always required to be made available for maintaining the desired level of sales. A firm can be very profitable if it can translate cash from operations within the same operating cycle. firms which are better at managing working capital are found to be able to make counter cyclical

moves to build competitive advantage. They are also better at generating fund internally and also face lesser trouble while seeking external sources of financing.

Working capital management is an important component of the overall management of a companies (Nazir & Afza, 2008). It refers to the management of current assets and current liabilities. There are different reasons that make it an important topic of study. Maintaining high inventory levels can reduce the cost of possible interruption occurred during the production process or the cost of business loss due to the product scarcity. It can also reduce supply cost and protect against price fluctuation.

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

Working capital management is the most important decisions in knowledge of financial management. The ability of corporate for long term activity related to this subject that financial managers apply optimum management for working capital management (Mousavi&Jari, 2012). According to Mcmenamin (2005) working capital management is the management of short-term cash flows and liquidity. Working capital management is an act of planning, organizing, and controlling the components of working capital like cash, bank balance inventory, receivables, payables, overdraft, and short-term loans. From another aspect, the way Working capital management acts can have a significance impact on both liquidity and profitability of a company (Shin& soenen 1998) companies should make a good balance between these two targets.

2.5.3 Working Capital Policies

Working Capital Management formulates policies to manage and handle efficiently; for that purpose, the management established three policies based on the relationship between Sales and Working Capital. The three of working capital policies is aggressive working capital policies, moderate Working capital policy and conservative working capital policies. Aggressive Working Capital Policy is one of the most risky and profitability policies which maintain small level of Aggressive Working Capital defend the high level of sales, in the business concern during a particular period of time. Moderate Working Capital Policy refers to the moderate level of Working Capital maintenance to moderate level of sales. It means that 1% of change in

Working Capital that means Working Capital = sales. Conservative Working Capital Policy refers to reduce risk by maintaining a higher level of Working Capital. That means Working Capital Policy is preferable to meet the seasonal fluctuation of the manufacturing operation.

2.5.4 The Level of Working Capital Policy

A moderate policy would trample a middle path between the aggressive and conservative approaches. So, In order to balance the risk and return these firms are following the moderate approach. This approach is a mixture of defensive working capital policy and aggressive working capital policy. In these approach temporary current assets, assets which appear on the balance sheet for short period will be financed by the short term borrowings and long term debts are used to finance fixed assets and permanent current asset. Thus the follower of this approach finds the moderate level of working capital with moderate risk and return (Siddiquee and Khan 2008).

All approaches are shows that the working capital policies of a company can be characterized as aggressive, moderate or conservative only by comparing them with the working capital policies of similar companies. There are no absolute benchmarks of what may be regarded as aggressive or otherwise, but these characterizations are useful for analysing the ways in which individual companies approach the operational problem of working capital management.

conservative and more flexible working capital policy for a given level of turnover would be associated with maintaining a larger cash balance, perhaps even investing in short-term securities, offering more generous credit terms to customers and holding higher levels of inventory by using long term debt and equity. Such a policy will give rise to a lower risk of financial problems or inventory problems at the expense of reducing profitability because long term debt offers high interest rate which will increase the cost of financing (Cheatham 1989)

Almost the companies that are operating in an uncertain environment prefer to adopt such a policy because they are not sure about the future prices, demand and short term interest rate. In such a situation it is better to have a high level of current assets. E.g. helps to keep the higher level of inventory in the stock to meet the sudden rise in demand and to avoid the risk of stoppage in the production. This policy provides the shield against the financial distress created by the lack of funds to meet the short term liability but as we discussed earlier long term debt have high interest rate which will increase the cost of financing. Similarly funds tie up in a

business because of generous credit policy of the company also have its opportunity cost. Hence this policy might reduce the profitability and the cost of following this policy might exceed the benefits of the policy (Arnold, 2008).

An aggressive policy with regard to the level of investment in working capital means that a company chooses to operate with lower levels of inventory, trade receivables and cash for a given level of activity or sales (Cheatham 1989). According to Gallagher & Joseph (2000) an aggressive policy will increase profitability since less cash will be tied up in current assets, but it will also increase risk because the difference between short term or liquid assets and short term liabilities turns very little. Furthermore few finance managers take even more risk by financing long term asset with short term debts and this approach push the working capital on the negative side.

Managers try to enhance the profitability by paying lesser interest rate but this approach can be proved very risky if the short term interest rate fluctuates or the cash inflow is not enough to full fill the current liabilities.

Policy is adopted by the company which is operating in a stable economy and is quite certain about future cash flows. A company with aggressive working capital policy offers short credit period to customers, holds minimal inventory and has a small amount of cash in hand. This policy increases the risk of default because a company might face a lack of resources to meet the short term liabilities but it also gives a high return as the high return is associated with high risk (Vishnani& Shah, 2007).

This policy provides the shield against the financial distress created by the lack of funds and capital resource. To meet the short term liability but as we discussed earlier long term debt have high interest rate which will increase the cost of financing. Similarly funds tie up in a business because of generous credit policy of the company also have its opportunity cost. Hence this policy might reduce the profitability and the cost of following this policy might exceed the benefits of the policy.

2.52.1 Profitability and liquidity

The number of years maintaining liquidity has been one of the prime goals of the companies and financial managers because, maintaining high or low liquidity affects the profitability of

companies in an adverse manner. The profitability and liquidity, both are important goals for any companies, and to forego one goal at the cost of other can create serious problems for the firm. Profitability is a long term goal for any firm because it is required for the survival of the firm and firm will not continue to exist without profits. On the other hand liquidity is relatively shorter term goal which needs to be addressed to protect the companies from bankruptcy (Scharf 1984). Different authors addressed this issue of maintaining a trade-off between these two conflicting goals of profitability and liquidity but only gave a general approach to solve the problem. Walker (1964) stated that increased investment in working capital is associated with reduce risk of inadequate liquidity, risk of lesser inventory for sales and risk of not granting credit for sales and production of the companies.

If the companies reduce investment in working capital, it will increase the above mentioned risks. Increased risk also increases profitability of the firm as the decreased investment in working capital can be used for some productive use. Weston and Brigham (1975) also discussed this trade off issue and suggested that investment in working capital should be made till that time marginal return are more than cost of invested capital. And working capital financing should be used instead of long term financing as long as their use does not increase firm's cost of capital. The study conducted by Walker (1964) also encouraged the use of more working capital assets but emphasized on the risk involved as the major determinant of degree of working capital investment.

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

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

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

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

The profitability liquidity trade-off is important because if working capital management is not given due considerations then the firms are likely to fail and face bankruptcy (Kargar & Blue menthal 1994). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets Eljelly (2004). Smith, (1979) emphasized that profitability and liquidity comprised the salient goals of working capital management. Therefore, in the next portion of this chapter, we present the studies specifically on the relationship between working capital management and the profitability of a companies.

2.52.2 Working Capital Management and Profitability

Profitability can be termed as the rate of return on investment, if there is an unjustifiable over investment in working capital then, this would negatively affect the rate of return on investment Vishnani & Shah, (2007). Therefore the basic purpose of managing working capital is controlling of current financial resources of a firm in such a way that a balance is created between profitability of the firm and risk associated with that profitability (Ricci & Vito 2000).

As stated by Siddiquee and Khan (2008) it has been observed that, firms which are better at managing working capital are more profitable. They are also better at generating fund internally and also face lesser trouble while seeking external sources of financing.

Short-term assets and liabilities are important components of total assets and need to be carefully analyzed. Management of these short-term assets and liabilities warrants a careful investigation since the working capital management plays an important role in a firm profitability and risk as well as its value (Smith, 1980).

Recent works of Deloof, (2003); Howorth and Westhead, (2003) and Afza and Nazir, (2008), state that firms try to keep an optimal level of working capital that maximizes their value.

As explained on Dupont model indicates by Brealey et.al (2006), there is a relationship between working capital and profitability of a firm.

Here ROA can be defined as: $\frac{\text{net income}}{\text{sale}} \times \text{total asset}$

In this formula, net income per sales is usually called net operating profit margin and sales per total asset the asset turnover. The total asset includes fixed asset and current asset. As defined previously, current asset consist of gross working capital, thus by reducing the amount of capital invested in the working capital, the company can effectively increase their asset turnover ratio, which intern increase ROA.

2.52.3 Industry Effects on Working Capital

According to Mohammad (2011) Proper estimation of working capital actually required is a difficult task for the management because amount of working capital varies across industries over the periods depending upon the nature of industry, scale of operation, production cycle, credit policy, availability of raw materials, etc.

As the need and policies vary heavily from industry to industry. Weinraub & visschr (1998) study the different strategy employed by companies to manage their working capital (aggressive, moderate or conservative) across different industries, their purpose was to find out industries that tend to have aggressive investment and financing strategy.

Moyer, Mcguigan and Kretlow (1995) found that working capital consists of a large portion of a firm's total investment in assets, 40 present in manufacturing and 50% - 60% in retailing and wholesale industries respectively. The study conducted by Hawawini, L et.al (1986) studies the investment needed in working capital per industry.

They use the working capital requirement as a measure for the investment in working capital. They find significant industry difference in working capital needs. For example airline industry has a negative working capital requirement which means that they actually make money from their investment in working capital.

2.53 Empirical Review

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

Empirical results show that ineffective management of working capital is one of the significant factors causing industrial sickness. Modern Financial management aims at reducing the level of current assets without ignoring the risk of stock outs. Efficient management of working capital is thus an important indicator of sound health of an organization which requires reduction of unnecessary blocking of capital in order to bring down the cost of financing (Arshad 2013). Deloof (2003), Surveyed on Belgian Firms to find out whether the working capital management affects profitability, using correlation and regression tests he found a significant negative relationship between corporate profitability and number of days accounts receivable, inventories and accounts payable of Belgian firms. On the basis of these he suggested that manager could increase corporate profitability by reducing the number of day's accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills. Arshad (2013) conducted a study to find out the relationship between working capital management and profitability of Pakistan cement sector. The research adopted quantitative method of research approach to test a research hypothesis.

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

In their study Falope and Ajilore (2009) present empirical evidence about the effects of working capital management on firms' profitability by using secondary data sources from annual reports and financial statements of 50 non-financial firms listed in Nigerian Stock Exchange for the time period 1996-2005. The dependent variable, firms' profitability, was measured by return on assets. The independent variables, number of days of accounts receivable, number of days of inventory, number of days of accounts payable and cash conversion cycle were used to measure working capital management. Size (defined as logarithm of assets), sales growth, debt and economic cycle (annual GDP growth rate) were also used as control variables. The study utilized panel data econometrics in a pooled regression with fixed effect models, where time series and cross-sectional observations were combined and estimated. Significant negative relationship was found between profitability and average collection period, inventory turnover in days, average payment period and cash conversion cycle. According to the researchers, a negative relationship between number of days of accounts payable and profitability was consistent with the view that less profitable firms wait longer to pay their bills. In this case, profitability affects the account payables and vice versa. Furthermore, the study found no significant variations in the effects of working capital management between large and small firms. Finally, the researchers were suggested that managers can create value for their shareholders if they manage their working capital in more efficient ways by reducing the number of days of accounts receivable and inventories to a reasonable minimum.

In his study Tufail (2008) investigated the impact of working capital policies on profitability. Return on assets was used as a measure of profitability. Current assets to total assets ratio was used to compute the investment policy of working capital management, and to determine

Financing policy of working capital management current liabilities to total assets ratio is used. Other variables that are used in the study are quick ratio, debt to equity ratio and size of the firms. Secondary data of 117 textile firms listed on Karachi stock exchange was taken for a period of six years i.e. 2005-2010. Results of the regression analysis show that aggressiveness of working capital management policies is negatively associated with profitability. Moreover liquidity and size of the firm have positive relation profitability whereas debt to equity ratio is negatively correlated with profitability.

Weinraub and Visscher (1998) study the issue of aggressive and conservative working capital policies on 126 industrial firms from 10 diverse industrial groups by using quarterly data from a period of 1984 to 1993. Their objective was to observe the differences in working capital policies as well as the long term stability of working capital policies over time. Current assets to total assets ratio and current liabilities to total asset ratio were used as proxies of working capital investment and financing policies respectively. They conclude that significant and negative relationship between industry working capital investment and financing policies. It indicated that when relatively aggressive working capital investment policies were followed, they were balanced by relatively conservative working capital financing policies.

Most of the empirical studies regarding working capital management and profitability relationship support the traditional belief that reducing current assets proportion in total assets, would positively affect the profitability of firm (aggressive policy).

Bhunja (2012) was examines the relationship between the working capital management and profitability of Indian private sector small-medium steel companies.

Working capital management and profitability indicators over the period from 2003 to 2010 was modelled as a linear regression system in multiple correlation and regression analysis. The study shows a small relationship between working capital management, including working capital cycle and profitability. Multiple regression tests confirm a lower degree of association between the working capital management and profitability. They conclude that liquidity position has no impact on profitability. The study concluded that there is no association between debt financing and profitability and working capital management and working capital cycle has no impact on profitability.

in his study Padachi (2006) try to analyse the impact of working capital management on firms' performance for a sample of 58 Mauritian Small Manufacturing Firms operating in five major industry groups (food and beverages, leather garments, paper products, prefabricated metal products and wood furniture) by using panel data analysis for the period 1998 – 2003. The regressions were include the ratio of current liabilities to total assets to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive. Sales a proxy for size (the natural logarithm of sales), the gearing ratio (financial debt/total assets), the gross working capital turnover ratio (sales/current assets) and the ratio of current assets to total assets

were included as control variables in the regressions. The regression results showed that high investment in inventories and receivables is associated with lower profitability.

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

Profitability measured by the net operating profit for a sample of 30 firms listed on Nairobi Stock Exchange (NSE) for the periods 2003 to 2008. Both the pooled OLS and the fixed effects regression models were used. The result of the study shows that (1) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability. This means that more profitable firms take the shortest time to collect cash from their customers; (2) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability. This means that firms which maintain sufficiently high inventory levels reduce costs of possible interruptions in the production process and loss of business due to scarcity of products. This reduces the firm supply costs and protects them against price fluctuations; (3) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability. This means that the longer a firm takes to pay its creditors, the more profitable it is. Based on the findings, the management of a firm can create value for their shareholders by increasing inventories to a reasonable level, taking long to pay creditors to the optimum level and reducing the cash conversion cycle to its minimum.

The study by Kaddumi (2012) reviled the effect of working capital management on performance. The study utilizing unbalanced data for a sample of 49 Jordanian Industrial corporations listed at Amman Stock Exchange - 2005 to 2009. He used two alternative measures of profitability as proxy for the performance and five proxies for the Working Capital Management. Twenty models panel data cross-sectional time series have been tested by employing two regression models; the Fixed-Effects Model and the Ordinary Least Squares Model. The findings of the

study were significantly consistent with the view of the traditional working capital theory. The researcher suggests that working capital management and performance are positively correlated. The regression result also shows that Jordanian industrial firms follow a conservative investing policy and less aggressive financing policy.

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

Lazaridis and Tryfonidis (2006) investigated the relationship between working capital management and corporate profitability using quarterly data of 131 firms listed at Athens Stock Exchange of Greece. Cash conversion cycle has been used as a measure of working capital management whereas gross profit has been taken as profitability measure. The size of the firms as measured by natural logarithm of sales, financial debt of firm and fixed financial assets to total assets ratio were used as control variables. Pearson correlation analysis showed a negative relationship of gross profit with cash conversion cycle, number of days of accounts receivables and inventory and there is a positive relationship between gross profit and number of accounts payable days. In order to validate the robustness of correlation results, four regressions were run the results provides that cash conversion cycle, number of days accounts receivables and inventory were negatively related with gross profit while the number of days accounts payables were positively related to gross profit. All results were statistically significant at 1 percent level of significance indicating that managers can create profits by keeping current assets and current liabilities to an optimal level.

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

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

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

Ganesan (2007) tried to examine the working capital management efficiency of firms from telecommunication equipment industry in India. The relationship between working capital management efficiency and profitability is examined using correlation and regression analyses. Working capital management efficiency was measured by day's sales outstanding, day's inventory outstanding and day's payable outstanding. Days of working capital was also use as a comprehensive measure. The firm's profitability was measured using the operating income plus depreciation related to total assets. This measure is indicator of the raw earning power of the firm's assets. Another profitability measure used for this analysis was the operating income plus depreciation related to the sales. ANOVA analysis was done to study the impact of working capital management on profitability. Using a sample of 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001-2007, this study found evidence that even though "days working capital" is negatively related to the profitability, it was

not significantly impacting the profitability of firms Intel communication equipment industry. Samiloglu and Demirgunes (2008) investigated the effect of working capital management on firms' profitability for a sample of manufacturing firms listed in Istanbul Stock Exchange (ISE) for the period 1998-2007. The data was taken from the quarterly financial statements of the sampled firms from ISE database and 5,843 firm quarter data was used. The dependent variable, firm profitability, was measured by return on assets.

Accounts receivable period, inventory period and cash conversion cycle were used as proxies for working capital management policies. Like other many working capital literatures, firm size, firm growth, leverage and fixed financial assets were used as control variables. The data has been analysed under a multiple regression model. The empirical results of the study showed that accounts receivable period, inventory period and leverage significantly negatively affect profitability of the sample firms, while firm growth (in sales) significantly and positively. However, it was also concluded that cash conversion cycle, size and fixed financial assets have no statistically significant effects on profitability of the sampled firms. Wang (2002) who analysed a sample of Japanese and Taiwanese firms, both emphasized that the way the working capital is managed has a significant impact on the profitability of firms and increase their profitability by reducing number of days, accounts receivable and reducing inventories. A shorter Cash Conversion Cycle and Net Trade Cycle are related to better performance of firms.

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

In their study shin and Soenen (1993) on large sample and with longer time period, examined the relationship between aggressive working capital management and profitability of United States firms. Cash conversion cycle (CCC) has been taken as a measure of working capital management, where a shorter cash conversion cycle represents the aggressiveness of working capital management whereas pre-tax return on assets and equity has been used as profitability.

The data has been collected for a period of twenty-four years from 1974 through 1993 for 2,718 firms. The relationship between the cash conversion cycle and profitability measures has been

tested through cross sectional regression analysis. The results indicated a significant negative relationship between the cash conversion cycle and profitability indicating that more aggressive working capital management is associated with higher profitability. The shorter the cash conversion cycle leads to greater the return on assets and return on equity.

The issue of aggressive and conservative working capital policies on empirical basis has been discussed by Weinraub and Visscher (1998) who analysed working capital policies of 126 industrial firms from 10 diverse industrial groups using quarterly data for a period of 1984 to 1993. The primary objective was to observe the differences in working capital policies as well as the long term stability of working capital policies over time. Current assets to total assets ratio and current liabilities to total asset ratio were used as proxies of working capital investment and financing policies respectively. Analysis of Variance (ANOVA) and Tukey's HSD (honestly significant difference) tests clearly indicate significant differences in working capital policies across various industries. Rank order correlation analysis confirmed the stability of these policies over ten year period of time. Furthermore, the negative relationship between industry working capital investment and financing policies indicated that when relatively aggressive working capital investment policies were followed, they were balanced by relatively conservative working capital financing policies.

Afza and Nazir (2007) investigated the relationship between the aggressive/conservative working capital policies for seventeen industrial groups and a large sample of 263 public limited companies listed at Karachi Stock Exchange for a period of 1998-2003. Using ANOVA and Least Significant Difference (LSD) test, the study found significant differences among their working capital investment and financing policies across different industries.

Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the period of study. The aggressive investment working capital policies were accompanied by aggressive working capital financing policies.

Finally, ordinary least square regression analysis found a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. These results were further confirmed by Afza and Nazir (2008) on a longer period of time (i.e. 1998-2005). Sen and Oruc (2009) in their study aimed to determine the relationship between efficiency levels of working capital management and return on total assets

of 49 production firms being traded in ISE (Istanbul Stock Exchange) by using 3 month-table data of 15 year (i.e. 1993-2007) for the total of 60 periods.

They tried to explain the relationship between different indicators of efficiency in working capital management (cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period) and return on total assets through two models. The results, in terms of both models, in all the firms involved in the study there is significant negative relationship between cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period and return on total assets.

2.54 Summery and Knowledge Gap

From the result of literature review there is ambiguity regarding the appropriate variables as well as on the direction of the effect of different components on profitability and a lot of scholars provided much descriptive and empirical evidence on financial management practices, it appears that there are still some gaps in the literature which need to be the area.

1st; there is no agreement on the sign of relationship between the above mentioned variables and their impacts on profitability. If we take cash conversion cycle as an example, some of literature suggests that cash conversion cycle (a comprehensive measure of working capital management) is positively related to firm profitability: Blinder and Maccini (1991) shows that longer cash conversion cycles increase the firm's profitability. The other strands of literature, however, suggest that shorter cash conversion cycle increases the firms' profitability Wang (2002), Shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009). On the other hand other researchers like (Bhunia, 2012), Samiloglu and Demirgunes (2008), Amarjit Gill, (2010) concluded that there is no significant relationship between the two. We can see it from the above mentioned literatures there is no consensus on the nature of relationship between the variables.

2nd; As Demircuc-Kunt and Maksimovic (2002) indicated, firms operating in countries with more developed banking systems grant more trade credit to their customers, and at the same time they receive more finance from their own suppliers. With limited access to the long-term capital markets, Working capital management is importance to developing countries. This suggests that in developing countries manufacturing firms have fewer alternative sources of external finance available, which makes them more dependent on short-term finance. But Studies that

investigated the association between profitability and working capital management practices on manufacturing firms from the perspective of developing countries are rare.

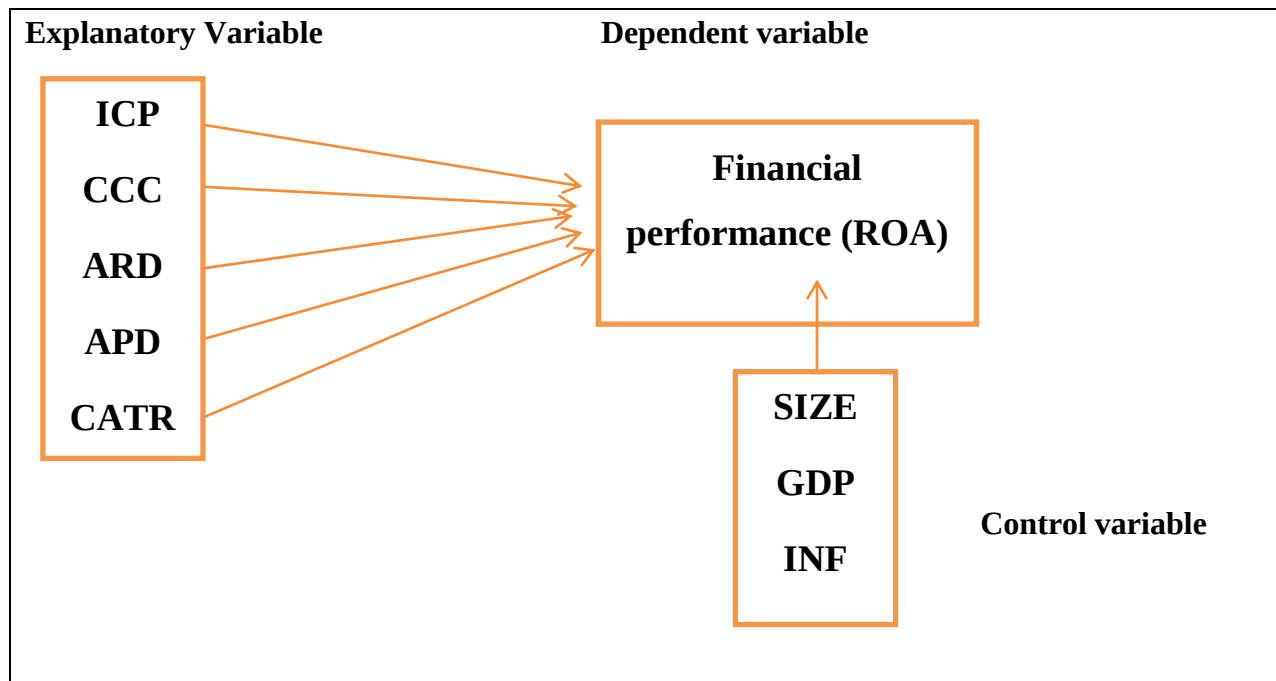
3rd; in case of our country there are few literatures like EphremW, (2011), Getachew.J and Natarajan ,V.(2013.), Wobshet Mengesha, (2014) who try to identify the impact of working capital management on the performance of the firm. To identify this relationship those previous studies use dependant variable like Cash conversion cycle, Accounts receivable period, inventory conversion period and accounts payable period are used as independent working capital variables. Thus, here in this study include some additional dependent variables that was not included in those previous studies but which is believed to have some impact on the firm's profitability, The Variable CATAR has been included examine the effect of working capital investment policy on firms' profitability. And CLTAR is also included to determine the effect of working capital financing policy on firms' profitability.

Finally; to the knowledge of the researcher the empirical studies on the area working capital and profitability in case of manufacturing share company in Addis Ababa was not done. This study therefore, seeks to contribute to this research gap and identify which variables of working capital have a significant effect on the profitability of manufacturing share companies that is located in Addis Ababa.

2.55Conceptual Framework

After the carful study of literature review the following conceptual model is adapted with some modification to illustrate the the relationship between working capital management measures and profitability of firms.

Figure 0-1 Conceptual framework



Source: researcher own

The above conceptual frame work of the study reveals that the dependent, independent & control variables. Variable used as a dependent variable is return on asset independent variables are account receivable period, account payable period, inventory conversion period, cash conversion period and control variables are Inflation, GDP and firm size.

CHAPTER THREE:

3. METHODOLOGY OF THE STUDY

3.1 INTRODUCTION

In this chapter, the study concentrates on the methodology that is adopted throughout the study. It includes the research design proposed to analyse the effect of working capital management on Ethiopian manufacturing companies profitability, the type of population and data used and the type of sampling design employed to collect the data, the methods to be employed to run the data and the model specifications.

3.2 Population and Sampling Procedure

Target populations of the study are all manufacturing companies in Ethiopia. According to Fair trade Foundation (2013) in Ethiopia plays vital role in economic growth. The economy which has a profitable in manufacturing sector is better able to contribute to the stability of the economy. The population of study was comprise 64 manufacturing companies in Addis Ababa Ethiopia. In Addis Ababa City Administration is found to be convenient to obtain the required data with the limited time and fund and selecting only manufacturing share companies also helps to avoid bias. The purposive sampling method used is due to the following requirements. The study first selects companies that are engaged only in manufacturing sector from the business classification, i.e. agriculture, industry and service. This helps to avoid bias that may result from industrial classification since firms operating in different industries have different decision criteria in selecting sources of funds needed for executing investment opportunities and have different working capital requirements. To mitigate this problem the researcher limited the study population only to those companies engaged in manufacturing industry. The other criterion used in selecting sample units to be included in the study was holding a complete 5 years financial statement data which is from 2015 to 2019. The reason for selecting to this period is due to the latest data for the investigation available for these periods.

Therefore, According to CSA (2014) there are 64 manufacturing companies in Addis Ababa, and the data set consist of 19 manufacturing companies in Addis Ababa which is 30% of the population. Since some companies whose data not available for the entire study period or whose financial years were not uniform and some of the companies have started their operation after the

year 2010 G.C. further increment of sample size become impossible. All the data were collected on annual base and the figures for the variables were on June 30 of each year under study.

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

Sampling design According to Kothari (2004) a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure, To achieve the objective of this study, Explanatory research design was adopted Saunders, Lewis, and Thornhill (2007) suggest an explanatory study type of research design for those researches that establish cause and effect relationship between variables. Therefore, since this study examines the effect of working capital management on profitability it is an appropriate design. Besides, this study uses quantitative research approach to examine a stated objective. According to Kothari (2004) quantitative research approach involves the generation of data in quantitative form which can be subjected to quantitative analysis in a formal and rigid fashion. A sample is a portion of the population that infer about the population. However, it is important that the sample be representative of the population from which it was selected. The population of this study was manufacturing companies in Addis Ababa, from 2015 to 2019. Working capital management in 64 manufacturing companies to be obtain sufficient. Therefore, out of the 64 manufacturing companies the researcher randomly selected 19 manufacturing companies as sample size because the researcher believed that given the nature of the study.

3.3 Research Design

The study adopted a mixed research design which is a combination of qualitative and quantitative design. The following section will present a detail of each methods with their data type, data source, data collection method, Sampling frame, sample size and sample selection.

3.4 Research Methods Adopted

As noted by Kothari (2004) data has to be analyzed in line with the purpose of the research plan after data collection. Accordingly, secondary data will analyze to determine its suitability, reliability, adequacy, and accuracy. Analysis of data was undertaken to show the effects of explanatory variables in the dependent variable. Data analysis was carry out based on descriptive analysis, correlation analysis and regression analysis. As noted by McKerchar, 2008 (cited in Yesegat, 2009), the choice among the three research approaches is guided by mainly the research problem apart from the underlying philosophy of each research methods.

In this study Quantitative methods approach will be applied to meet the overall objective of the study and to answer research hypothesis under it. In quantitative analysis, here, First: The researcher used correlation to measure the degree of association between different variables under consideration. Second: Regression analysis has been conducted to estimate the causal relationships between the chosen dependent and independent variables.

3.5 Data and Data Collection

To achieve the objective the study uses panel data of manufacturing companies for five years from 2015-2019. Panel data which combine the features of both time series and cross sectional data. According to Shah and Khan (2007), panel data follows a given sample of individuals over time, and thus provides multiple observations on each individual in the sample. They also noted that panel data provides information on a number of statistical units for a number of years. Furthermore, they noted that “panel data usually provides the researcher a large number of data points, increasing the degree of freedom and reducing the collinaerity among explanatory variables and therefore, it improves the efficiency of econometric efficiency”. Also according to Brooks (2008), the major benefits of using penal data is, more useful in studying the dynamics of adjustment, and it is better able to identify and measure effects that are simply not detectable in pure cross-sections or pure time series data. Moreover, many variables can be more accurately measured at the micro level and biases resulting from aggregation over firms or individuals are eliminated. To gather the necessary data copies of audited financial statements in the form of income statement and statement of financial position over the period of five years has been used. Most of the required data obtained from the financial statements submitted to the Ethiopian Revenues and Customs Authority (ERCA). However, due to incompleteness of data obtained from ERCA some of the data used obtained directly from the respective companies

Research conducted by using appropriate data collection instruments will increase the credibility and value of research findings (Koul 2006). The study employed strategies of inquiry that involve collecting data especially to be the best understand research problem. The data collection also involved gathering both numeric information (document review) as well as text information finally the database represented both quantitative and qualitative information.

3.6 Analysis Technique

As noted by Kothari (2004) data has to be analyzed in line with the purpose of the research plan after data collection. Accordingly, secondary data will analyze to determine its suitability, reliability, adequacy, and accuracy. Analysis of data was undertaken to show the effects of explanatory variables in the dependent variable. Data analysis was carry out based on descriptive analysis, correlation analysis and regression analysis To test the proposed hypotheses, statistical analyses carried out using the following methods and the E – views 9 software has been used to analyze financial data.

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

3.7 Variable Choice and Research Hypothesis

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

3.8 Dependent Variable

3.8.1 Return on Assets (ROA):

The study was taking ROA as dependent variable. It is attempting to measure the overall return the firm is generating on the amount of money invested in its assets (Brigham & Houston, 2008). The reason for choosing this variable is that the ROA represents the ratio of how much a firm has earned on its asset base (Melicher & Leach, 2009) and it indicates how effectively the assets are managed to generate revenue besides profitability is best measured by ROA (Tan et al. as cited in Abebe, 2014) and according to Padachi (2006) ROA is a better measure since it relates the profitability of the company to the asset base. ROA has been used as dependent variable by Karaduman et al, 2004; Teruel and Solano, 2007; Padachi, 2006; Abera, 2010; Kaddumi and Ramadan, 2010; Karaduman, Akbas, & Ozsozgun, 2010; Soekhoe, 2012; Arunkumar and Ramanan, 2013; Makori, 2013; and Hina, 2014. To establish a true relationship between the operating “success” or “failure” of firms and working capital policies and to avoid the effect of tax incentives (if available), Earning before Interest and Tax (EBIT) was used as a base to calculate return on assets, (Abera, 2010; Teruel & Solano, 2007; Mengesha, 2014; and Makori, 2013). The major difference between ROA and ROE is that the ROA remain unaffected by the companies’ choice of structure-the choice of using debt versus equity to fund operation. The higher the return on assets indicates that the firms are effective enough in generating profit from its available and the reverse is true for decrease in return on assets.

ROA is calculated by the following formula:-

$$ROA = \frac{EBIT}{TA}$$

Where; ROA: Return on Asset;

EBIT: Earnings before Interest and Taxes;

TA: Total Assets

3.8.2 Independent Variables and Their Respective Hypothesis

The working capital measure by the Cash conversion period (CCP), Accounts receivable period (ARP), inventory conversion period (ICP), accounts payable period (APP) and Current Assets to Total Assets Ratio (CATAR) used as compressive measures of working capital investment policy.

1. Accounts Receivable period (ARP)

Also called the “average collection period” (ACP) is used to appraise accounts receivable, and it is calculated by dividing accounts receivable by average daily sales to find the number of days’ sales that are tied up in receivables. Thus, the average collection period represents the average length of time that the firm must wait after making a sale before receiving cash, Deloof (2003), Padachi (2006), Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006), Sen and Oruc (2009), Falope and Ajilore (2009) all point out negative relation between account receivables and firms profitability. Which is the average collection period (Brigham & Houston, 2008).

The formula to calculate ARP is:

$$ARP = \frac{\text{Account receivable}}{\text{Sales}} * 365 \text{ Days}$$

2. Inventory Conversion Period (ICP)

Also called Average number of days inventory. Inventory conversion period tells how quickly, on average, inventory goes from being purchased to being sold. This calculation is important because it helps a business owner understand how quickly needs to purchase new inventory. It is also important because it is part of the cash conversion cycle. Inventory conversion period calculated by dividing inventory to cost of goods sold per day (Brigham & Houston, 2009) and The reason for this could be tied up of more funds and/or deterioration and obsolescence of inventory due to longer inventory period leads to lower profitability.(Deloof, 2003), Padachi (2006), Teruel and Solano (2007), Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006),The formula to calculate ICP is:

$$ICP = \frac{\text{Ending inventories}}{\text{Cost of goods sold}} * 365 \text{ days}$$

3. Accounts Payable Period (APP)

Accounts payable payment period measures the average number of days it takes an entity to pay its suppliers also examines the relationship between credit purchases and payments for them. To calculate this ratio, the average accounts payable are divided by the average daily cost of sales in

the period. The average cost of sales can be determined by dividing the cost of sales for the period the number of days in the period (Brigham & Houston, 2008). Account payable is an interest free form of short term financing and many companies use them to the last day possible before payment is due. Positive relationship between accounts payable period and profitability can be explained by the increased availability of funds caused by the delayed payment of accounts payable because such funds can thus be used for productive purposes that can increase profitability. (Arshad, 2013, Lazaridis and Tryfonidis (2006).

The formula to calculate APP is:

$$APP = \frac{\text{Account Payable}}{\text{Cost of Sales}} * 365 \text{ days}$$

4. Cash Conversion Cycle (CCC)

The cash conversion period is a popular measure of the working capital management. It measures the number of days in average between the purchases of raw material until the firm receives money for their finished sold product (Deloof, 2003). The reason to choose the CCP is because, according to Tereul and Solano (2007), the decision of how much to invest in customer and inventory accounts, and how much credit to accept from suppliers are reflected in the CCP. This measure is determined by the following equation. In their studies Wang (2002), Shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009) examined the empirical relationship between CCC and ROA show a significant and negative relationship.

The formula to calculate CCC is:

$$CCC = [ARP + ICP - APP]$$

Where: CCC: cash conversion cycle;

ARP: Account receivable Periods;

ICP: Inventory conversion period;

APP: Accounts payable Periods;

5. Current Assets to Total Assets Ratio (CATAR)

The above four measurements of working capital assets management policy, namely accounts receivable period, inventory holding period, accounts payable period and cash conversion cycle, indicate how efficient are firms in managing their collection, inventory and payment policies. Investment in working capital assets, however, is broader than managing collection, inventory and payment policies. It also includes management of cash and other short term assets. For this reason, we need to have another comprehensive measurement of working capital investment policy which is Current Assets to Total Assets Ratio.

This ratio is used to find out the investment policy of working capital adopted by the firms under consideration. This investment policy can be of two types, first is the aggressive policy and second the conservative policy. In aggressive investment policy of working capital, less investment is made in the form of current assets as compared to fixed assets to get more returns. On the other hand, in conservative investment policy of working capital, more investment is placed in the form of current assets as compared to fixed assets. Aggressive investment policy allows getting more profits through investing major portion of resources in fixed assets. Conservative investment policy helps to avoid the risk of bankruptcy. A lesser value of Current assets to total assets ratio demonstrates more aggressive policy. Wang (2002), shin and Soenen (1993), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009) have been used this ratio as an independent variable to find the impact of working capital management on profitability. They all suggested that this ratio has a negative relationship with profitability. In finance literature, there is a long argument on the determinants and the risk/return tradeoff between the different working capital policies. More aggressive working capital policies are associated with higher return and higher risk while conservative working capital policies are concerned with the lower risk and return. So, in this study as well an inverse relation is expected between profitability and current assets to total assets ratio.

H5: there is a strong negative relation between CATAR and firms profitability of the firm

The formula to calculate CATAR is: $CATAR = \text{Current Asset} / \text{Total asset Ratio}$.

$$\text{Current Asset to total Asset Ratio (CATAR)} = \frac{\text{Current Asset}}{\text{Total Asset Ratio}}$$

3.8.3 Control Variables

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

Table 0-1 Dependent Independent and control variables

Dependent variable	Return on asset (ROA)
Independent/explanatory variables	Account receivable Period (ARP)
	Inventory conversion period (ICP)
	Account Payable Period (APP)
	Cash conversion cycle (CCC)
	Current Asset to Total Asset Ratio (CATAR)
Control variables	Size (log of total Asset)
	GDP
	Inflation

3.8.4 Model Specification

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

$$ROA_{it} = \beta_0 + \sum \beta X_{it} + u_{it}$$

Where:

ROA_{it}: Return on Asset of firm i at time t.

β_0 : The intercept of equation;

β_i : Coefficients of X_{it} variables;

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

u_{it} : The error term;

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

$$ROA_{it} = \beta_0 + \beta_1 ARP_{it} + \beta_2 APP_{it} + \beta_3 ICP + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 DROA113 + \beta_7 DROA1115 + \beta_8 LOS_{it} + \beta_9 GDP_{it} + \beta_{10} INF_{it} + u_{it}.$$

Where:

β_0 : The intercept of equation;

ROA: the return on assets;

ARP: accounts receivable Periods;

APP: accounts payable Periods

ICP: inventory Conversion Periods;

CCC: Cash Conversion Cycle;

CATAR: current asset to total asset ratio;

LOS: Natural logarithm of total asset;

GDP: gross domestic product;

INF: inflation;

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

Table 0-2: explanatory variables and their expected effect on the dependent variables

RAO	Return on asset (ROA)	
-----	-----------------------	--

ARP	Account receivable Periods (ARP)	Negative
ICP	Inventory conversion periods(ICP)	Negative
APP	Account Payable Periods (APP)	Positive
CCC	Cash Conversion Cycle (CCC)	Negative
CATAR	Current Asset to Total Asset Ratio	Negative
	Size (log of total Asset)	
	GDP	
	Inflation	

3.8.5 Ethical clearance

For data collection procedure the Ethical clearance will be obtained from wolkite university institution ethical review board committee and the data collection will be conducted from the respective companies.

3.8.6 Expected Result

This paper pursues direction from the prior studies and recommends to determinant of effective working capital management evidence from Ethiopia manufacturing companies .Which can be used as an alternative approach to enrich their financial performance and outreach. The study will argues that effective working capital management which maintain good manufacturing companies practices will be financially and socially sustainable.

CHAPTER FOUR

4. DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter deals with the presentation of the results and analysis of the study and various indicators for performance of manufacturing companies and their respective working capital variables. The research has employed 10 variables for the analysis purpose, 8 independent and control variables and one dependent profitability measurement variable. 5 independent variables

are proxies for working capital investment and financing policies of the sample firms. Other three variables (firm size as measured by the natural logarithm of total asset inflation made by consumer price index and the GDP growth rate of our country are independent control variables.

4.2 Descriptive Statistics

This section presents the descriptive statistics of dependent, independent variables, and control variables used in the study for the sugar manufacturing companies. The dependent variables used in the study was ROA and while the independent variables were Cash conversion period (CCP), Account receivable period (ARP), Account payable period (APP), Inventory conversion period (ICP), current asset total asset ratio (CATAR) and the control variables. In this section the results from descriptive statistics are discussed. Descriptive analysis shows the average, and standard deviation of the different variables of interest in the study. It also presents the minimum and maximum values of the variables which help in getting a picture about the maximum and minimum values a variable can achieve.

Table 0-1 Presents descriptive statistics for manufacturing firms in Addis Ababa for a period of five years, from 2015 to 2019

	ROA	ICP	CCC	APP	ARP	CATAR	FIRM SIZE	INF	GDP
Mean	1.236405	1.332011	3127882.	1971164.	5099044.	53412340	6.217756	133736.8	3015911.
Median	1.176471	1.086063	15002.50	954121.0	926200.0	1150000.	6.060698	91000.00	2800000.
Maximum	3.598247	4.445607	1.15E+08	26769551	1.42E+08	1.07E+09	9.028808	350000.0	6280000.
Minimum	0.030462	0.069295	-19790861	95000.00	120000.0	143242.0	5.156070	48000.00	1540.000
Std. Dev.	0.733469	1.014956	17854668	4340593.	20284444	2.22E+08	0.725133	87282.16	1572779.
Skewness	0.788186	1.154765	5.447370	4.885430	5.412978	4.039760	2.862654	1.120906	0.634753
Kurtosis	3.532391	3.718183	33.12202	26.27684	32.53159	17.41440	11.72747	3.039057	2.515931
Jarque-Bera	10.95820	23.15511	4061.374	2522.571	3916.043	1080.837	431.2520	19.89952	7.306953
Probability	0.004173	0.000009	0.000000	0.000000	0.000000	0.000000	0.000000	0.000048	0.025901
Sum	117.4585	126.5410	2.97E+08	1.87E+08	4.84E+08	5.07E+09	590.6868	12705000	2.87E+08
Sum Sq. Dev.	50.56985	96.83266	3.00E+16	1.77E+15	3.87E+16	4.63E+18	49.42694	7.16E+11	2.33E+14
Observations	95	95	95	95	95	95	95	95	95

Source:-researcher's computation using Eviews-9

as it is displayed in table 4.1 the mean value of firms return on asset is 123 percent of total assets. The higher the return on assets indicates that the firms is effective enough in generating profit from its available assets and the reverse is true for decrease in return on assets. The standard deviation is 0.733469 it means that value of profitability can deviate from mean to both sides by 73.3 percent. Its minimum value is 0.030462 while the maximum value is 3.598247. Likewise, the Accounts receivable period, a measurement for collection policy, is averaged to 50 days for the sampled firms. This average of the account receivable period shows that, firms in the sample wait 50 days on average to collect cash from credit sales. The Account receivable period can

vary by 20 days to both sides of the mean value. The minimum and the maximum Account receivable period for the sampled firms are 0 and 430 days respectively. The minimum value of zero means the firm didn't use account receivable at all or a firm use cash to sell its product. The Mean value of Inventory conversion days is 254.03 days. This means, firms in the sample needs on average 254.03 days to sell inventory. As it is shown in the above table, the standard deviation of inventory holding period is 152.22 days. To the sample firms the inventory holding period ranges between zero and 755 days of minimum and maximum values respectively. The Mean value of Accounts payable period as a proxy for payment policy is 66.53 days with the standard deviation of 137.38 days. The minimum and maximum period ranges between 0 zero and 758 days. In addition to the above three specific variables, other two variables cash conversion cycle (CCC) and current asset to total asset ratio (CATAR) are used as comprehensive measures of the efficiency of working capital asset management/investment policy.

The Mean time for converting inventory to cash is 312 days with the standard deviation of 178 days. The minimum value of -197.91 days shows a firm records a large inventory turn-over and/or cash collections from credit sales before making a single payment for credit purchases. It means that the accounts receivable period and/or the inventory holding period are very short and/or the accounts payable period of the firm is very long. On the other hand, the maximum time for cash conversion period is 1150 days which is a very long period and it shows that a firm records a large inventory turn-over and/or cash collections from credit and/or shortest payment period for credit purchases. It means the accounts receivable period and/or the inventory holding period are very long and/or the accounts payable period of the firm is very short. The other comprehensive measure of working capital investment policy used is the proportion of current assets to the total assets ratio of firms. It measures the firms' degree of aggressiveness /conservativeness in working capital investment. The lower the amount of the investment in current assets, the more aggressive is the firm in working capital investment. Because when the current asset is low, the risk would be high because of liquidity problem, and the return also high. Here, the sample firms have on average about 53.4% of the total assets in current form.

To control the size effect, firm size as natural logarithm of total asset is used as a control variable. The mean value of natural logarizm of total asset is 6.217756. While the standard

deviation is 0.725133. The maximum value of natural logarithm of total asset for a companies in a year is 9.028808 and the minimum is 5.156. The other control variable is GDP which has annual average growth rate of Ethiopia is 10.16 percent with a standard deviation of 15 on the study period. The lower and higher annual GDP growth rates during the study period are 8.7 percent and 11.4 percent respectively. Inflation was used as a control variable in the study and has a mean value of 133736.8 for the study period. The lower and higher inflation rates during the study period are 350000.0 and 48000.00.

4.3 Correlation Analysis

To the regression result, it is important to check the correlation between different variables on which the analysis is built. Correlation is a way to index the degree to which two or more variables are associated with or related to each other. Table: 4.2 presents the result of the correlation analysis of Profitability Measure of return on asset with inventory holding period, account receivable conversion period, accounts payable period, cash conversion cycle current asset to total asset ratio and current liability to total asset ratio, GDP, firm size, and inflation.

Table 0-2: Correlation among Explanatory Variables

	ROA	INF	ICP	GDP	FIRM_SIZE	CCC	CATAR	ARP	APP
ROA	1								
INF	-0.0743554470	1							
ICP	0.1218504384	0.200229424	1						
GDP	0.3556945365	-0.201079448	-0.2019675	1					
FIRM_SIZE	-0.578741842	0.037539546	-0.02215816	-0.213277150	1				
CCC	-0.034943670	-0.252162745	0.00470883	0.2324228237	0.1208594962	1			
CATAR	-0.3716188920	-0.086756359	-0.25130981	-0.051301923	0.9073755688	0.199355106	1		
ARP	-0.0374201751	0.088327184	0.1176333	-0.32556028	-0.18057787	-0.338791418	-0.168564	1	
APP	-0.331991301	-0.105096177	-0.2387976	-0.062769300	0.7475640543	0.196066428	0.813942519	-0.15271	1

Source: researcher's computation using Eviews-9

Correlation analysis in table 4.2 reveals that there exist negative relationships between account receivable period and profitability measures of return on asset. The implication of this relationship may because of, the collection of receivables in a short period of time may help firms to reduce the probability of uncollectable from default and in addition to that firms can invest the money on other profitable operation, so that it would increase the profit. The correlation analysis also shows that, the relationship between Average inventory days and profitability measures is negative this relationship may exist because in the case of a sudden drop in sales accompanied with a mismanagement of inventory will lead to tying up excess capital at

the expense of profitable operations. The correlation between account payable Periods and the Return on asset show a positive relationship this relation exist because in this case firms make delayed payment it helps to get interest free money to invest on some other profitable operation.

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

4.4 Testing Assumptions of Classical Linear Regression Model (CLRM)

Before the regressions were run tests for fulfillment of basic CLRM assumptions are tested. In order to draw correct estimation, using regression model to analyze the data requires certain assumptions to be fulfilled. The data sets have been tested. Models had normality problem (Observations that are very extreme compared to other observations) that may cause problems in estimating the regression coefficients and some correction actions have been taken. To mitigate this normality problem researcher used dummy variables to remove big outliers in the data that was appeared in a company's at 2015 and at 2019.

4.4.1 Test for weather average value of the error term is zero

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

4.4.2 Test for Autocorrelation

The other Assumption of classical linear regression model is Autocorrelation. The diagnostic test for CLRM assumption of no autocorrelation was tested by this study. According to Gujarati, (2004) the assumption of no autocorrelation between the disturbances assumes that given any two X values, X_i and $X_j (i \neq j)$, the correlation between any two u_i and $u_j (i \neq j)$, is zero. According to Chris Brooks (2008) it is assumed that the errors are uncorrelated with one another. If the errors are not uncorrelated with one another, it would be stated that they are 'autocorrelated' or that they are 'serially correlated. This assumption was tested by Durbin Watson (DW) test of autocorrelation. Durbin-Watson (DW) is a test for first order autocorrelation. I.e. it tests for a

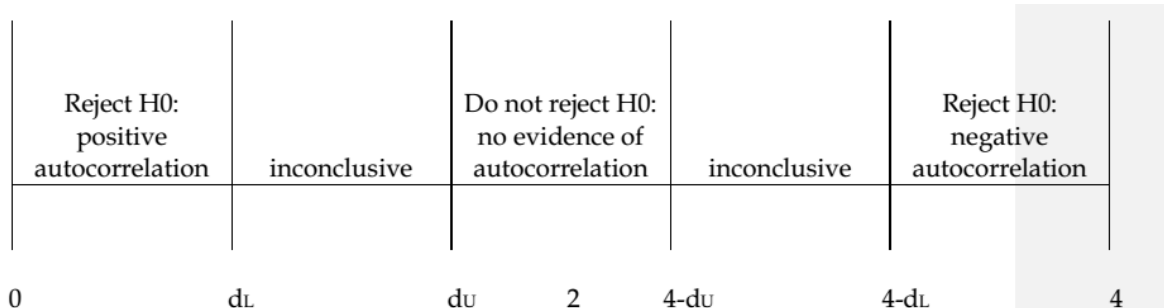
relationship between an error and its immediate previous value. One way to motivate the test and to interpret the test statistic would be in the context of a regression of the time error on its previous value $u_t = \rho u_{t-1} + v_t$

Where: $v_t \sim N(0, \sigma^2 v)$ and ρ is the coefficient of autocorrelation. The DW test statistic has as its null and alternative hypotheses. Under the null hypothesis, the errors at time $t-1$ and t are independent of one another (the errors at time $t-1$ and t are uncorrelated), and the alternative hypothesis says the errors at time $t-1$ and t are independent (the errors at time $t-1$ and t are serially correlated). Therefore

- $H_0: \rho = 0$ (no autocorrelation)
- $H_1: \rho \neq 0$ (autocorrelation)

DW has 2 critical values: an upper critical value (d_U) and a lower critical value (d_L), and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected! The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 4-1.

Figure 0-1: Rejection, non-rejection, and inconclusive regions for DW test



According to Brooks (2008) the following is the decision rule to reject and not to reject the null hypothesis:-

- ⇒ null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value d_L ; the null hypothesis is also rejected and the existence of negative autocorrelation presumed if DW is greater than 4 minus the lower critical value d_L ;
- ⇒ The null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value d_U and 4 minus the upper critical value d_U .

⇒ The null hypothesis is neither rejected or fails to be rejected if DW is between lower critical value dL and the upper critical value dU or if DW is in between 4 minus the upper critical value dU and 4 minus the lower critical value DL.

The DW test table value of dL, dU, 4-dU and 4-dL at N 95, and K 8 for this study is presented graphically below.

Figure 0-2 DW test result

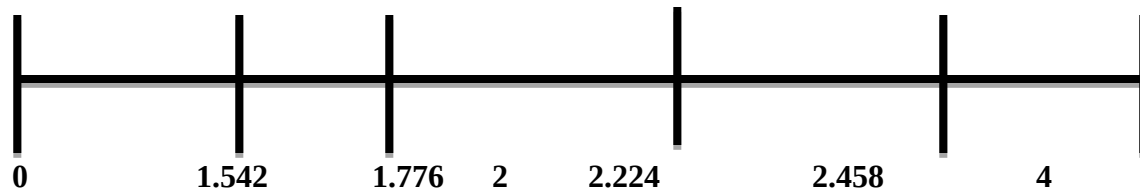


Table 0-3: DW test result test of autocorrelation

Test	DW test statistics
DW result	1.253540

$1.253540 < 1.542(dL)$, Du it is in the reject regime.

Source: Output of Eviews-9

The DW test statistic value for models was 1.253540 for a total observation of 95 was used in the model with independent variable. Thus the decision values for the test are $dL = 1.542$, $du = 1.776$, $4-dU = 2.224$ and $4-dL = 2.458$. The DW test statistics for the model is 1.25354 lies between dL which is 1.542 and du which is 1.776 critical values. So, the null hypothesis of no autocorrelation is within the inconclusive region. Therefore, there is no significance evidence for the existence of autocorrelation in the study.

4.4.3 Test for Normality

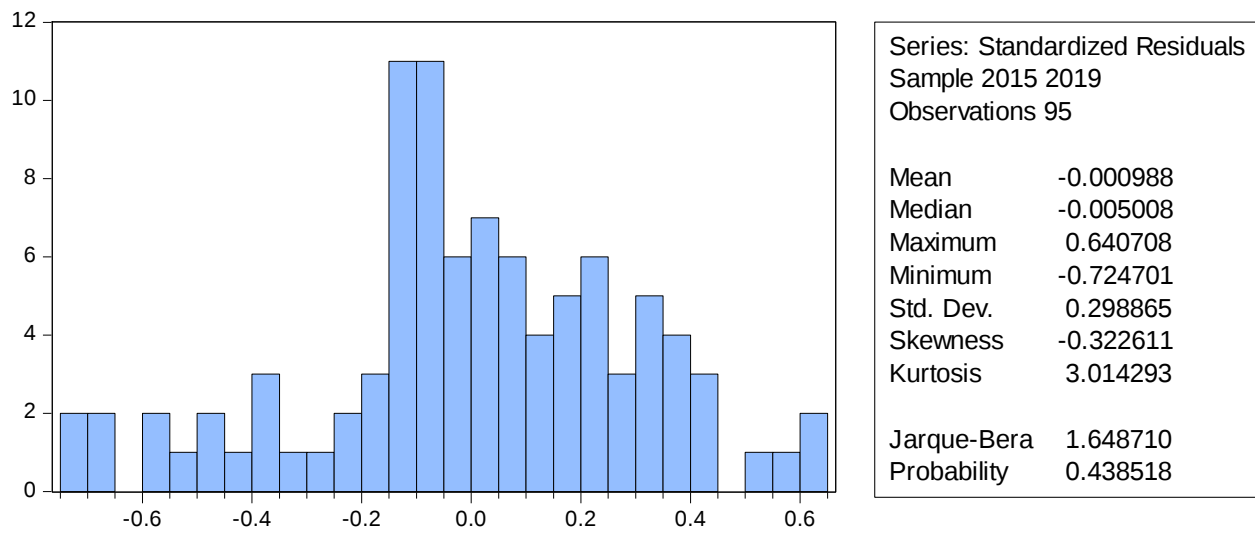
This test is performed to confirm the assumption of CLRM which states that the disturbances terms are normally distributed. One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments, the mean and the variance, (Brooks 2008). According to the same author, if the residuals are normally distributed, the histogram should be bell-shaped and the Bera-Jarque statistic would not be significant. This means if the p-

value is bigger than 0.05 the null hypothesis of normality should not be rejected at a 5% level of significance.

Figure 0-3 Normality test

H0: Residuals are normally distributed

H1: Residuals are not normally distribute



The above figure 4-3 shows that the p-value of the BJ test is 0.438518 as a result we fail to reject the null hypothesis for residual normality. It indicates the residual value is normally distributed.

4.4.4 Test for homoscedasticity

The test of heteroscedasticity is conducted in this study to know whether the variance of the error term is constant or varying. This theoretically assumed that the variance of the error term is assumed to be constant or $\text{var}(\epsilon_t) = \sigma^2$, also known as homoscedasticity assumption. Heteroscedasticity arises as a result of the presence of outliers. The inclusion or exclusion of such observations, especially when the sample size is small, can substantially alter the results of regression analysis. The standard errors and t statistics are justified only as the sample size becomes large, even if the CLRM assumptions are true. With small sample sizes, the t statistics can have distributions that are not very close to the t distribution, and that could throw off our inference.

The distribution of one or more repressors' included in the model is another source of heteroscedasticity. Even sometimes incorrect data transformation, incorrect functional form

(linear or log-linear model) is also the source of heteroscedasticity. There are many ways of testing heteroscedasticity tests of problem, like the White (1980), and Breash Pagan.

This assumption requires that the variance of the errors be constant. If the errors do not have a constant variance, we say that they are heteroscedastic. To check this assumption Breusch-Pagan-Godfrey was conducted for the model (see table 4-4).

Table 0-4: Heteroscedasticity test

H₀: The variance of the error is Homoscedastic

H₁: The variance of the error is Heteroscedastic

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.706403	Prob. F(7,87)	0.1179
Obs*R-squared	11.46859	Prob. Chi-Square(7)	0.1194
Scaled explained SS	16.91189	Prob. Chi-Square(7)	0.0180

Source: Eviews-9 test result summary

The above table 4-5 stated that in the model there is no problem of heteroscedasticity or the error variance is constant since the p-value is not significant, meaning that the p-value is **0.1179** which is greater than 5%. This means the null hypothesis was not rejected which says that the error variance is constant or homoscedastic.

4.4.5 Model Selection Test: Random Verses Fixed effect Model

According to Brooks (2008), the simplest types of fixed effects models allow the intercept in the regression model to differ cross-sectional but not overtime, while all of the slope estimates are fixed both cross-sectional and over time. The random-effects approach proposes different intercept terms for each entity and again these intercepts are constant over time, with the relationships between the dependent and independent variables assumed to be the same both cross-sectional and temporally.

To choose fixed or random-effect model a formal test so-called Hausman test was used based on the null hypothesis in favor of random effect model estimator or the hypothesis states as:

- ✓ H₀: Random effect model is appropriate and
- ✓ H₁: The random effect model is not appropriate or the FE model is appropriate.

The decision rule is when the $\text{prob} > \chi^2$ or the P-value is greater than the given level of significance (usually 5%), then we fail to reject the null hypothesis (H_0), thus random effect model is appropriate. On the other hand, if the P-value is less than a given level of significance or 5% we reject the null or the fixed effect model is appropriate (Woodridge, 2006).

Table 0-5: Hausmann Test Result

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	10.023447	8	0.2634

Source: Own Computations, by using Eviwe-9

Table 4-5 above shows that the Hausman specification test, the P-value of a model is 0.2634, which is greater than a 5% level of significance. Hence, the null hypothesis of the random effect model is appropriate can't rejected at 5 percent of a significant level. This implies that the random effect model is more appropriate than the fixed effect model.

4.5 Regression Results and Discussion

After analyzing the assorted econometric issues that were presented and discussed, and based on this estimation technique which results in consistence and unbiased estimator is used. Thus the random effect estimation technique is more appropriate to analyze and discuss in the analysis determinants of effective working capital management as the estimation technique yields efficient and consistent result.

The operational panel regression model used to find the significant factors of financial performance of measured by Return on Asset (ROA) was:

$$ROA_{it} = \beta_0 + \beta_1 ARD_{it} + \beta_2 APD_{it} + \beta_3 ICP + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 DROA113 + \beta_7 DROA1115 + \beta_8 LOS_{it} + \beta_9 GDP_{it} + \beta_{10} INF_{it} + \text{uit.}$$

Table 0-6: Random effect model regression result

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 06/03/21 Time: 22:00
Sample: 2015 2019
Periods included: 5
Cross-sections included: 19
Total panel (balanced) observations: 95
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CATAR	4.74E-09	7.66E-10	6.195083	0.0000
CCC	5.50E-09	2.57E-09	2.142101	0.0350
ICP	0.319999	0.061991	5.162004	0.0000
FIRM_SIZE	-2.052455	0.216057	-9.499587	0.0000
GDP	-8.68E-08	6.14E-08	-1.415144	0.1606
INF	-7.65E-07	1.19E-06	-0.645341	0.5204
APP	7.15E-09	1.25E-08	0.573799	0.5676
ARP	5.48E-09	2.54E-09	2.154722	0.0339
C	13.65141	1.370018	9.964406	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			0.390120	0.6590
Idiosyncratic random			0.280660	0.3410
Weighted Statistics				
R-squared	0.570867	Mean dependent var		0.378677
Adjusted R-squared	0.536339	S.D. dependent var		0.415607
S.E. of regression	0.282998	Sum squared resid		6.967644
F-statistic	16.53349	Durbin-Watson stat		1.253540
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.627486	Mean dependent var		1.236405
Sum squared resid	18.83800	Durbin-Watson stat		0.463649

All the sign of coefficient for the explanatory valid were against the logic of working capital management variables were respected to have negative sign except APP.

One more test left Brush pagan LM test TO see little RE or pocked OLS would be appropriate.

4.5.1 The adjusted R^2 determination and coefficient R^2

As shown from the above table 4-8 the R^2 and Adjusted R^2 values of the model was of 0.570867 and 0.536339 respectively the result indicates that about 53.6 % of the variability in the dependent variable ROA is explained by the independent variables used in the model.

The remaining 44% of the variability in the dependent variable is left unexplained by the independent variables used in the study. This means that the remaining 44% of the changes were explained by other variables that are not included in the model.

By using Random-effect regression model the value of F-statistic is 16.53349 and the probability of not rejecting the null hypothesis that there is statistically significant relationship existing between the dependent variable (ROA) and the independent variables, Prob (F-statistic) is 0.000000 indicates that the overall model is significant at 5% and that all the independent variables are significantly influenced the dependent variable which is ROA.

4.5.2 Summary of Result Interpretation

The established regression equation is:-

$$\text{ROA} = 13.65141 + 5.48\text{ARP} + 7.15\text{APP} + 4.74\text{CATAR} + 5.50\text{CCC} + 0.31999\text{ICP} \\ - 2.052455\text{FIRM}_{\text{SIZE}} - 8.68\text{GDP} - 7.65\text{INF}$$

The results of this regression indicate that the coefficient of account payable Period is positive and it is insignificant at p-value of 0.5676. In conformity not true. And the here is positive with the initial hypothesis which states that there is significant negative relationship between inventories holding period and profitability of firms. Coefficient of Inventory Holding Period is positive and p-value of 0.0000 attached to the test statistic. Opposed from the initial hypothesis the result of the regressions analysis shows that Account Payable days has no significant impact on firms' profitability even at 10% level of significance.

In the regression model, the beta coefficient of Cash Conversion Cycle is 5.50 and the p-value of 0.0350 attached to the test statistic shows that this hypothesis significance at 5% level.

Opposite to the research hypothesis, the regression output shows that the β coefficient of current assets to total assets ratio (CATAR) is positive and the p-value shows 0.0000 significant at 10 percent level.

4.5.3 Discussion of the Regression Result

4.5.3.1 Inventory Holding Period and Profitability (ICP)

According to the table the result from this study is in line with the initial hypothesis which states that there is significant negative relationship between inventory holding period and profitability

of firms. Coefficient of Inventory Holding Period is 0.31999 and positive and p-value of 0.0000 attached to the test statistic shows that the variable is significant at 10% level. This result is in line with the findings of Deloof (2003), Padachi (2006) Teruel and Solano (2007) Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006), Sen and Oruc (2009), Falope and Ajilore (2009), all points out that the companies with low inventory conversion period have more efficient working capital management. The implication is that the increase or decrease inventory holding period will significantly and positively affect the profitability of the Companies.

4.6.3.2. Accounts Receivable Period and Profitability (ARP)

The regression result on table State that In line with the initial hypothesis, the results of this regression indicate that the coefficient of account receivable days is positive and p-value of 0.0339 attached to the test statistic shows significance at 10% level. It implies that the increase or decrease in the number of days taken by firms to collect cash will significantly and positively affect profitability of the firm. The reason may because if a firm collects its accounts receivable quickly, the fund will be available for productive usage. In this sense, the positive relationship between accounts receivable period and firms' profitability is consistent with the view that the lesser the time it takes customers to pay their bills, results more cash available to replenish the inventory, this intern leads to more sales which ultimately results in an increase in profitability. The result is basically consistent with the findings of Padachi (2006), Samiloglu and Demirgunes (2008), Lazaridis and Tryfonidis (2006), Sen and Oruc (2009).

4.6.3.3. Accounts Payable Period and Profitability

Account payable period opposed from the initial hypothesis, the result of the regressions analysis has positive and the p-value is 0.5676 the result indicate that APD has no significant impact on firms' profitability even at 10%. The result is basically consistent with the findings of Rafuse, (1996) who founds insignificant relationship between accounts payable period and profitability. The researcher accepts these results for two reasons. First, in the literature of working capital, research findings indicated both negative and positive significant relationships between accounts payable period and profitability of firms. A positive significant relationship between accounts payable period and profitability can be explained by the increased availability of funds caused by the delayed payment of accounts payable. Such funds can thus be used for productive purposes that can increase profitability.

4.6.3.4. Cash Conversion Cycle and Profitability (CCC)

A popular measure of Working Capital Management (WCM) is the cash conversion cycle (Deloof, 2003). The beta coefficient of Cash Conversion Cycle shows a positive and the p-value is 0.0350 attached to the test statistic shows the significance of the variable at 5% level of significance.

The study finding is agree with some previous findings of Wang (2002), Lazaridis and Tryfonidis (2006), Falope and Ajilore (2009). The implication is that the increase or decrease in cash conversion cycle will significantly and positively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher will be the profitability and vice versa. As stated earlier, cash conversion cycle is an additive function of accounts receivable period, inventory holding period and accounts payable period.

4.6.3.5. Current Assets to Total Assets Ratio and Profitability

Opposite to the research hypothesis, the regression output shows that the β -coefficient of current assets to total assets ratio (CATAR) is positive (4.74) and significant (p-value is 0.0000) at 10 percent level. The finding of this study agrees with some previous findings of Tufail, 2008; Kaddumi, 2012; Afza and Nazir 2007. The positive coefficients of current assets to total assets ratio indicates a negative effect of the degree of aggressiveness of working capital investment policy on firms' profitability. It means that as current assets to total assets ratio increases, degree of aggressiveness decreases, and hence firms' profitability increases. Accordingly, aggressiveness in working capital investment policy affects the profitability of manufacturing companies negatively.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this research was to examine the effects of working capital management on profitability within Ethiopian sugar manufacturing companies. Based on the finding of the study conclusions were drawn and possible recommendations were forwarded. The chapter contain the conclusions, recommendations, and further research areas based on the findings of the study. Accordingly, this chapter is organized into three sub-sections. The first section deals with the conclusion and the second section presents the recommendations and the last section presents further research areas and problems based on the researcher.

Conclusion is not summarized what has been done mandatory .It should Capability draw conclusion about the research for section /specific objective/the six specific objective you set in chapter one.

5.1Conclusions

Working Capital Management is an important component of corporate financial management and it refers to management of current assets and current liabilities. Its management affects the profitability of the companies. To achieve the objective of the study data was analyzed on quantitative basis using descriptive statistics, Pearson's correlation and OLS regression analysis the research originated from the researcher's aim of to examine the relationship between working capital Management and profitability of manufacturing companies in Addis Ababa. The study was carried out by constructing a balanced panel regression model based on random-effects estimates of the secondary data obtained from the financial statements, mainly annual audited report of the 19 manufacturing companies in A.A under the study which covered the period from 2015 to 2019 has been used to conduct the study.

The data was analyzed and interpreted descriptively and quantitatively. The research used return on assets as, dependent profitability variable. Accounts receivable period, inventory holding period and accounts payable period were used as independent working capital investment policy variables. Moreover, cash conversion cycle and current assets to total assets ratio has been used as comprehensive measures of working capital investment policy. In addition, the study used firm size measured by logarithm of total asset, annual GDP growth rate and inflation rate as control variables.

Based on the descriptive statistics the mean value financial performance of manufacturing firms was 1.236405 measured by return on asset. Whereas the independent variables:- mean value of ICP users is 1.332011, CCC mean value 3127882, APP mean value 1971164, mean value of ARP 5099044 , mean value of CATAR 53412340 and Firm size has a mean value of 6.2177, and INF and GDP mean value is 133736.8 and 3015911 respectively.

R^2 and Adjusted R^2 values of the model was of 0.570867 and 0.536339 respectively the result indicates that about 53.6 % of the variability in the dependent variable ROA is explained by the independent variables used in the model. The remaining 44% of the variability in the dependent variable is left unexplained by the independent variables used in the study.

By using Random-effect regression model the value of F-statistic is 16.53349 and the probability of not rejecting the null hypothesis that there is statistically significant relationship existing between the dependent variable (ROA) and the independent variables, Prob (F-statistic) is 0.000000 indicates that the overall model is significant at 5% and that all the independent variables are significantly influenced the dependent variable which is ROA.

The result from this study is in line with the initial hypothesis which states that there is significant negative relationship between inventory holding period and profitability of firms. Coefficient of Inventory Holding Period is 0.31999 and positive and p-value of 0.0000 attached to the test statistic shows that the variable is almost significant at 10% level.

In line with the initial hypothesis, the results of this regression indicate that the coefficient of account receivable days is positive and p-value of 0.0339 attached to the test statistic shows significance at 10% level. It implies that the increase or decrease in the number of days taken by firms to collect cash will significantly and positively affect profitability of the firm.

Opposed from the initial hypothesis, the result of the regressions analysis has positive and the p-value is 0.5676 the result indicate that APP has no significant impact on firms' profitability even at 10%.

The beta coefficient of Cash Conversion Cycle shows a positive and the p-value is 0.0350 attached to the test statistic shows the significance of the variable at 5% level of significance.

Opposite to the research hypothesis, the regression output shows that the β -coefficient of current assets to total assets ratio (CATAR) is positive (4.74) and significant (p-value is 0.0000) at 10 percent level. The finding of this study agrees with some previous findings of Tufail, 2008; Kaddumi, 2012; Afza and Nazir 2007.

5.2 Recommendation

Since the result of the regression have wrongly interpreted and recommendation have forwarded on the lesson of the wrong interpretation will not be helpful.

The study recommends that in order to increase profitability of manufacturing companies. The problem of this study are helpful for the financial managers of the manufacturing companies and it provide the information regarding to the management of short-term capital and also inform them about the management policies used by their peers. The information is useful for maintaining a strong competition and improving own association.

Management of Cash conversion cycle is an important factor in working capital management, and managers of the firms should apply suitable Cash conversion cycle procedures and control mechanism. Result shows there is a positive relationship between cash conversion cycle and return on assets (ROA). Managing cash conversion cycle efficiently, means efficient management of these three items (ARP, ICP, and APP); therefore, the researcher recommended that, manufacturing companies must try to keep these numbers of days to minimum level by developing a clear procedure for collecting the receivables and managing their inventories. If a firm collects its accounts receivable fast the fund will be available for other productive usage.

In addition to that the collection of receivables in a short period of time may help firms to reduce the uncollectable from default. Good customers in temporary complexity should be treated differently from habitual defaulters; otherwise firms may lose their loyal customers. In addition, if managers reducing stock it produce major financial advantages by improving cash flows, reducing operational level costs of inventory (decreasing CCC). Moreover the researcher recommends that marketing, purchasing and manufacturing departments should have to create strong linkage and communications.

The study found positive and a significant relationship between current asset to total asset ratio and firm's profitability, which means conservativeness in working capital management

investment policies, increases firm's profitability. This is due to adequate investment in current assets increases the solvency, which intern protects bankruptcy. Thus, the researcher recommends that manufacturing share companies use more conservative way of investing. Specially the companies that are operating in an uncertain environment better to adopt such a policy because they are not sure about the future prices demand and short term interest rate. In such a situation it is better to have a high level of current assets. Conservative working capital policy for a given level of turnover would be associated with maintaining a larger cash balance, perhaps even investing in short-term securities.

A firm even to reduce the investment in fixed assets by renting or leasing plant and machinery this may increase the CATAR and intern increase profitability. Furthermore; the researcher recommends that, the financial managers of manufacturing firms should follow aggressive financing. By financing long term asset with short term debts such as trade credit and short term bank loan, managers could enhance the profitability by paying lesser interest rate but this approach can be proved very risky if the short term interest rate fluctuates or the cash inflow is not enough to fulfill the current liabilities. Especially Such a policy is better to adopt by the companies which is operating in a stable economy and is quite certain about future cash flows. It gives a high return as the high return is associated with high risk.

5.3 Further Consideration

This study has opened many avenues for future research especially in context of our country. There are several capacity avenues for future research and providing in working capital management.

Since there is in general lack of working capital studies in case of manufacturing share companies in Ethiopia, this study can be extended by using more data from a cross-section of Ethiopian manufacturing S.C. This may improve current understanding of the working capital management and associated performance in developing countries.

the future research can be extended in the area of working capital management is, the working capital practices followed in different sectors using the primary data collected directly from the financial managers of different firms. Such type of study will provide a fresh understanding of respective managers that how they perceive and manage the working capital of the

manufacturing companies. Therefore, this study can be extended by including some other variables in the model and the time period.

Another important area is the working capital management for the financial sectors. This is again an area where studies needed to be undertaken because the working capital requirements for the financial sectors are different from those of the non-financial or manufacturing sectors.

The other study area of consideration for further study for the proposed study is that the data used here is only 5 years due to the limitation of lack of availability of data. the results estimated from this study should be evaluated keeping in mind that there could be many other dependent and independent variables as well besides the variables mentioned above, that can explain working capital management and profitability correlation and this study is limited only to the effect of selected variables in measuring the efficiency of working capital management.

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Appendix-1 Housman test result

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	10.023447	8	0.2634

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
	-			
INF	0.474845	-0.433053	0.049206	0.8506
	-			
ICP	0.059599	-0.060302	0.004621	0.9917
GDP	1.606326	0.793019	4.795807	0.7104
	-			
FIRM_SIZE	1.064131	0.021656	0.426924	0.0966
CCC	1.998408	2.455219	0.473650	0.5068
CATAR	0.000000	-0.000000	0.000000	0.0588
ARD	0.024718	0.050753	0.000188	0.0573
APD	0.000000	-0.000000	0.000000	0.3996

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 07/19/21 Time: 01:30
Sample: 2015 2019
Periods included: 5
Cross-sections included: 22

Total panel (unbalanced) observations: 95

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.790388	3.833188	2.554111	0.0130
INF	0.474845	0.305030	-1.556715	0.1244
ICP	0.059599	0.079228	-0.752249	0.4546
GDP	1.606326	2.197412	0.731008	0.4674
FIRM_SIZE	1.064131	0.655679	-1.622945	0.1094
CCC	1.998408	0.936259	2.134460	0.0366
CATAR	1.85E-07	1.44E-07	1.279985	0.2051
ARD	0.024718	0.016338	1.512939	0.1351
APD	4.21E-09	1.04E-07	0.040401	0.9679

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.697303	Mean dependent var	3.993779
Adjusted R-squared	0.562254	S.D. dependent var	0.460859
S.E. of regression	0.304915	Akaike info criterion	0.714525
Sum squared resid	6.043273	Schwarz criterion	1.521012
Log likelihood	3.939931	Hannan-Quinn criter.	1.040406
F-statistic	5.163325	Durbin-Watson stat	1.858764
Prob(F-statistic)	0.000000		

Cross-section random effects test equation:

Dependent Variable: ROA

Method: Panel Least Squares

Date: 06/03/21 Time: 21:46

Sample: 2015 2019

Periods included: 5

Cross-sections included: 19

Total panel (balanced) observations: 95

WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.49622	1.590984	9.111477	0.0000
CATAR	2.65E-09	5.48E-09	0.482925	0.6307
CCC	2.66E-09	7.80E-09	0.340613	0.7344
ICP	0.355449	0.068917	5.157620	0.0000
FIRM_SIZE	-2.033203	0.246943	-8.233485	0.0000
GDP	-4.14E-07	2.05E-07	-2.013951	0.0479
INF	NA	NA	NA	NA
APD	3.48E-09	1.43E-08	0.243595	0.8083

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.890964	Mean dependent var	1.236405
Adjusted R-squared	0.853581	S.D. dependent var	0.733469
S.E. of regression	0.280660	Akaike info criterion	0.517591
Sum squared resid	5.513913	Schwarz criterion	1.189663
Log likelihood	0.414450	Hannan-Quinn criter.	0.789158
F-statistic	23.83301	Durbin-Watson stat	1.477227
Prob(F-statistic)	0.000000		

Appendix-3 Test of hetroskedastics

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.706403	Prob. F(7,87)	0.1179
Obs*R-squared	11.46859	Prob. Chi-Square(7)	0.1194
Scaled explained SS	16.91189	Prob. Chi-Square(7)	0.0180

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/03/21 Time: 21:14

Sample: 1 95

Included observations: 95

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.153815	0.979101	2.199787	0.0305
ARD	-2.94E-09	1.55E-08	-0.189674	0.8500
CCC	3.59E-09	1.50E-08	0.240000	0.8109
ICP	-0.016551	0.050596	-0.327120	0.7444
CATAR	7.27E-10	5.89E-10	1.233682	0.2206
FIRM_SIZE	-0.313727	0.161593	-1.941466	0.0554
GDP	-1.78E-08	2.82E-08	-0.630147	0.5303
INF	2.41E-07	5.17E-07	0.465320	0.6429

R-squared	0.120722	Mean dependent var	0.194836
Adjusted R-squared	0.049976	S.D. dependent var	0.367306
S.E. of regression	0.358011	Akaike info criterion	0.863944
Sum squared resid	11.15092	Schwarz criterion	1.079007
Log likelihood	-33.03732	Hannan-Quinn criter.	0.950845
F-statistic	1.706403	Durbin-Watson stat	0.848877
Prob(F-statistic)	0.117929		