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## **SCHOOL OF GRADUATE STUDIES MBA PROGRAM**

### **The impact of Working Capital Management on Firms' Profitability: *(The Case of Pharmaceuticals manufacturing firms in Ethiopia)***

**A Thesis Submitted to the School of Graduate Studies of St. Mary's University to  
Undertake a Research in Partial Fulfillment of the Requirements for the Award of the  
Degree of Master of Business Administration (MBA) in Accounting and Finance**

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**June, 2016**

**Addis Ababa, Ethiopia**

**WORKING CAPITAL MANAGEMENT AND FIRMS'  
PROFITABILITY: *THE CASE OF PHARMACEUTICALS  
MANUFACTURING FIRMS IN ETHIOPIA***

BY: Hirut Zewude

ID No: MBAAF3/0407/2006

A Thesis Submitted to Department of Accounting and Finance to Undertake a  
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Advisor: Arega Seyoum (PhD)

St. MARY'S UNIVERSITY

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# St. MARY'S UNIVERSITY

## MBA Thesis Approval Sheet

This is to the thesis entitled, the impact of working capital management on firms' profitability: the case of pharmaceuticals manufacturing firms in Ethiopia was carried out by Hirut Zewude under the supervision of Arega Seyoum (PhD), Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Business Administration (MBA) in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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# Declaration

First, I declare that this Thesis is my work and that all sources of materials used for this thesis have been fully acknowledged. This thesis has been submitted in partial fulfillment of the requirement for the Degree of Master of Business Administration (MBA) in Accounting and Finance.

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

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## ***Abstract***

*Working capital refers to the firms' investment in short term assets. Working capital management (WCM) is the management of short term financing requirements of a firm which includes maintaining optimum balance of working capital components; account receivable, inventory, and account payables and using cash efficiently for day to day operation. This study investigates the impact of working capital management on the profitability of listed pharmaceuticals manufacturing firms in Ethiopia, which are classified under pharmaceuticals category as per register book of FMHACA. The study used secondary data in the form of income statement and balance sheet which covers a period of eight years (2008-2015); panel data being collected from five manufacturing firms using purposive sampling technique. The data was analyzed on quantitative basis using Descriptive statistics, Pearson's correlation and Regression analysis. The key findings of the study were; firstly, the length of receivable collection period and day payment outstanding have a negative relationship with the profitability of listed pharmaceuticals manufacturing firms but no significant. Secondly, the length of time to which raw materials were converted to finished goods has positive insignificant effect on firms' profitability during the study period. Thirdly, the length of the time between paying labor and materials and collecting receivable has a significant positive effect on profitability of listed pharmaceuticals manufacturing firms. Fourthly, firm size and growths in sales have statistically significant positive impact on firms' profitability. Lastly, the debit ratio has a positive relationship with profitability of listed pharmaceuticals manufacturing firms but not significant during the period span of the study. Therefore, to improve the profitability of listed pharmaceuticals manufacturing firms in Ethiopia, the study recommends to financial managers, finance officers and general manager should keep their working capital at optimum level, increase sales at high rate may be by giving a reasonable time for customers to settle their credit invoice because growth in sales and firm size have significance positive impact on the profitability of listed pharmaceuticals manufacturing firms in Ethiopia. In addition, if the firm has enough space to store a stock or it incurs a minimum holding cost and higher ordering cost, the responsible person should decide to hold a large quantity of raw materials.*

**Key Words:** *Working Capital Management, Receivable Collection Period, Days Payment Outstanding, Firm Size and Growth in Sales*

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## **Acronyms and Abbreviations**

**CCC** = Cash Conversion Cycle

**DIO** = Days Inventory Outstanding

**DtR** = Debt Ratio

**DPO** = Days Payment Outstanding

**GiS** = Growth in Sales

**GOP** = Gross Operating Profit

**LnSales** = Firm Size

**RCP** = Receivable Collection Period

**SPSS** = Statistical Package for Social Science

**WCMgt** = Working Capital Management



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# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background of the Study

Working capital is the money needed to finance the daily revenue generating activities of the firm (Kesimli & Gunay, 2011). In any operating cycle, working capital transforms from the form of cash to inventory, account receivable and then back to the form of cash. With that transformation, net working capital management takes a lot of time and efforts of the firm managers. The main objective of working capital management is to maintain normal daily operational activities for the firms in order to increase the firm's performance and to reduce the firm's liquidity risk. A shortage of working capital can cause problems on the firm daily activities which will inversely affect to the firm's profitability while over investment on working capital can increase opportunity cost, especially when the firm has to use external funds to finance its working capital(Kesimli & Gunay, 2011).

Managing working capital, which includes a current asset and liability management, is one of important functions of corporate financial management, and company executives have to make this decision on a daily basis (Ross, Westerfield, Jordan, 2010). Working capital relates to account receivable, inventory, account payable, which are key components of operating activity. Managers can improve firms' profitability by shortening receivable conversion period and inventory conversion period (Mansoori and Muhammad, 2012).

This paper demonstrates the impact of working capital management on firms' profitability in the case of pharmaceuticals manufacturing firms in Ethiopia. It also provides an overall concept of effective working capital management with its component and conceptual framework (which are dependent and independent variables) in pharmaceuticals manufacturing sectors to stakeholders.

## 1.2 Statement of the Problem

One of the major objectives of working capital management is to ensure that firms have sufficient, regular and consistent cash flow to fund their day to day activities (www.cleverism.com). In a manufacturing firm, the amounts invested in working capital are often high in proportion to the total assets in used. Therefore, efficient working capital management could enable firms in sustaining growth which, in turn leads to strong liquidity and profitability for ensuring effective and efficient customer services. However, excessive working capital also implies excessive debtors and defective credit policy which may cause higher incidence of bad debts. When there is a redundant working capital, it may lead to unnecessary purchasing and accumulation of inventories causing more chances of theft, waste and losses. On the other hand for inadequate working capital, the firm cannot pay day-to-day expenses of its operations and it creates inefficiencies, increases costs and reduces the profits of the business (Horne and Wachowicz, 2000).

In general, companies try to keep an optimal level of working capital that maximizes their value. Some firms try to increase their profits at the cost of liquidity which can bring serious problems to them. Therefore, there must be a trade-off between profitability and liquidity of the firms. The fact that an organization makes profits is not necessarily an indication of effective management of its working capital because a company can be endowed with assets and profitability but short of liquidity if its assets cannot readily be converted into cash. As such, there will be shortage of cash available for the firm's utilization as at when due. Such an organization may run into debts that could affect its performance in the long run because the smooth running of operations of the organization comes to a sudden halt and it will not be able to finance its obligations as at when due. Again, some managers do neglect the organization's operating cycle thereby having longer debtors' collection period and shorter creditors' payment period. Because of these, financial managers must give more attention to working capital; to have optimum level of working capital and know to what extent management of working capital can affect firm's profitability.

Different researchers found out the relationship between working capital management and firms' profitability in different economic environment. For instance, Zubair Arshad and Muhammed Yasir Gondal (2013) had attempted to study the impact of the relationship between working

capital management and profitability of Pakistan cement sector. Findings of the study showed that there is significant negative relationship between them.

T.A.N.R. Jayarathne (2014) investigated that impact of working capital management on profitability evidence from listed companies in Sri Lanka. The findings suggested that the profitability is negatively associated with the account receivable period, inventory turnover period, and cash conversion cycle. In addition the study found that the profitability is positively associated with account payable period.

In Ethiopian context, Wobshet Mengesha (2014) examined the impact of working capital management on firms' performance by using audited financial statements of a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The results indicated that longer accounts receivable and inventory holding periods are associated with lower profitability and significant negative relationship between cash conversion cycle and also no significant relationship between cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on invested capital has been observed. On the other hand, findings show that account receivable period, inventory conversion period and account payable period have a highly significant negative relationship with return on asset. However, this study conducted in metal manufacturing companies in Addis Ababa, doesn't show the impact of working capital management on pharmaceuticals manufacturing firms' profitability.

There is no studies has been conducted on pharmaceuticals manufacturing firms in Ethiopia. Therefore, this study tries to analyze to what extent working capital management affects profitability of pharmaceuticals manufacturing firms in Ethiopia which are listed under pharmaceuticals category.

### **1.3 Basic Research Questions**

The study was guided by the following specific research questions:-

- i) What is the relationship between Working Capital Management and Profitability of pharmaceuticals manufacturing firms in Ethiopia over the period of eight years (2008-2015)?
- ii) What is the effect of cash conversion cycle on profitability of pharmaceuticals manufacturing firms in Ethiopia?
- iii) How does inventory conversion period affect profitability of pharmaceuticals manufacturing firms in Ethiopia?
- iv) What is the effect of Account Receivable Period on profitability of pharmaceuticals manufacturing firms in Ethiopia?
- v) How does Account Payable Period affect profitability of pharmaceuticals manufacturing firms in Ethiopia?

### **1.4 Objectives of the Study**

The study has the following general and specific objectives.

#### ***1.4.1 General Objective***

The main objective of this study was to examine the impact of working capital management on the profitability of pharmaceuticals manufacturing firms in Ethiopia.

#### ***1.4.2 Specific Objectives***

Specifically, the study aimed:

- To find out the effect of cash conversion cycle on profitability of pharmaceuticals manufacturing firms in Ethiopia.
- To evaluate the influence of inventory conversion period on profitability of pharmaceuticals manufacturing firms in Ethiopia.
- To examine the effect of receivables collection period on profitability of pharmaceuticals manufacturing firms in Ethiopia.
- To analyze the effect of Days Payment Outstanding on the profitability of pharmaceuticals manufacturing firms in Ethiopia.

## 1.5 Hypotheses

Since the objective of this study was to examine the impact of working capital management on firms' profitability, the study identified the following testable hypotheses (the Null Hypotheses  $H_0$  versus the alternative Hypotheses  $H_1$ ).

- I.  **$H_0$ :** There is no significant impact of receivables collection period on profitability in the pharmaceuticals manufacturing firms in Ethiopia.  
 **$H_1$ :** There is significant impact of receivables collection period on profitability in the pharmaceuticals manufacturing firms in Ethiopia.
- II.  **$H_0$ :** There is no significant impact of inventory conversion period on profitability in the pharmaceuticals manufacturing firms in Ethiopia.  
 **$H_1$ :** There is significant impact of inventory conversion period on profitability in the pharmaceuticals manufacturing firms in Ethiopia.
- III.  **$H_0$ :** There is no a significant impact of Days Payment Outstanding on profitability in the pharmaceuticals manufacturing firms in Ethiopia.  
 **$H_1$ :** There is a significant impact of Days Payment Outstanding on profitability in the pharmaceuticals manufacturing firms in Ethiopia.
- IV.  **$H_0$ :** There is no a significant impact of cash conversion cycle on profitability in the pharmaceuticals manufacturing firms in Ethiopia.  
 **$H_1$ :** There is a significant impact of cash conversion cycle on profitability in the pharmaceuticals manufacturing firms in Ethiopia.

## 1.6 Significance of the Study

The purpose of the study was to evaluate the impact of working capital management on profitability of pharmaceuticals manufacturing firms listed in Ethiopia. The findings of the research helps to the owners and managers of these manufacturing firms to understand the proper working capital management practices and use working capital efficiently to increase profitability of their firms. The study is also useful in creating the awareness of how to maintain



the available fund and set efficient level of working capital to all pharmaceuticals manufacturing firms' financial managers and accountants.

In addition, it provides an overall concept of effective working capital management with its components and conceptual framework (which are dependent and independent variables) in pharmaceuticals manufacturing sectors to academic researchers, policy makers, professionals and to other stakeholders.

## **1.7 Scope of the Study**

The study focused only on the impact of working capital management and its main components on firms' profitability specifically pharmaceuticals manufacturing firms operating in Ethiopia which are grouped under pharmaceuticals category according to FMHACA registration book. The dependent variable used in this study was profitability of the firm, defined as the gross operating profit (GOP) and the independent variables used were working capital management measured by Inventory conversion period, Receivables collection period, Days payment outstanding and cash conversion cycle. But, there could be other dependent variables which measure profitability of firms. In addition, the study doesn't include other firms that are out of pharmaceuticals category and other industries. The study was conducted based on secondary data which is in the form of audited financial statements of selected pharmaceuticals manufacturing firms over a limited period of eight years from 2008 to 2015 financial report.

## **1.8 Limitations of the Study**

The findings of this study could only be generalized to the pharmaceuticals manufacturing firms in Ethiopia which are under the category of pharmaceuticals according to register book of FMHACA. Therefore, the findings will not be applicable to other firms that are not categorized under pharmaceuticals column in the FMHACA register book. In addition, the sample size was small, i.e., out of ten pharmaceuticals manufacturing firms (since APF and Addis Pharmaceuticals IV line are sisters company) the study was based on only five firms. This is due

to limitation of firms' age /operating years and absence of willingness of firms. So, the results of this study may be affected in terms of sample size.

## **1.9 Organization of the Study**

This research paper comprises five chapters including this introduction section, it organized as follows. Chapter Two provides theoretical literature review and empirical literature review of the earlier work undertaken on working capital management and how it affects profitability of firms in different economic state. Chapter Three describes the methodological approach that will be followed to address research questions. Chapter Four provides the data analysis, result and the discussions part. The last section Chapter Five presents the findings of the research, its conclusions and recommendations.

# CHAPTER TWO

## 2. REVIEW OF RELATED RITRATURE

The purpose of this section to assess what scholars said on their literatures about the definition and components of working capital management and the relationship of working capital management with firms' profitability.

### 2.1 Theoretical Literature Review

#### *2.1.1 Definition of Working Capital and its Management*

Working capital is the money needed to finance the daily revenue generating activities of the firm (Kesimli & Gunay, 2011). Working capital is an important tool for growth and profitability for corporations. If the levels of working capital are not enough, it could lead to shortages and problems with the day-to-day operations (Horne and Wachowicz, 2000). To illustrate the working capital of the firm, it is best to discuss the cycle of working capital. The cycle begins with the purchase of raw materials which can be found in the inventory. Later on, these raw materials are transformed in finished goods. These goods are stocked in the inventory until they are sold to a customer. The sale can be purchased by cash or by trade credit. This trade credit provides a delay until the cash is received. With every step of the cycle there are associated costs, which are direct costs and opportunity costs. The direct costs are the cost of capital invested in each part of the cycle, for example interest on the debt finance to sustain trade creditors. The opportunity costs are represented by the possible returns forgone by investing in working capital instead of some alternative investment opportunity (Berry and Jarvis, 2006).

The above discussed working capital and the cycle that it forms is managed by what is called *Working Capital Management (WCM)*. WCM is part of the financial management of a firm, other parts are e.g. capital budgeting and capital structuring. The first two are mainly focused on the managing of long-term investments and returns. While working capital management focuses mainly on the short-term financing and short-term investment decisions of firms (Sharma and Kumar, 2011). Working capital management refers to investment in current assets and current

liabilities which are liquidated within one year or less and is therefore crucial for firm's day-to-day operations (Kesimli & Gunay, 2011). According to Vahid, et al. (2012) working capital management plays a significant role in determining success or failure of firm in business performance due to its effect on firm's profitability as well on liquidity.

Working capital management is vital for a firm, especially for manufacturing, trading and distribution firms, because in these firms WCM directly affect the profitability and liquidity. This is because for these firms it accounts for over half their total assets (Raheman & Nasr, 2007). It is possible that inefficient WCM can lead to bankruptcy, even if the profitability of a firm is constantly positive (Kargar & Bluementhal, 1994). A reason for this could be that excessive levels of current assets can easily lead to a below average return on investment for a firm (Raheman & Nasr, 2007). An efficient WCM has to manage working capital in such a way that it eliminates risks of default on payment of short-term obligations on one side and minimizes the change of excessive levels of working capital on the other side (Eljelly, 2004).

### ***2.1.2 Importance of Working Capital Management***

Working capital has two components current assets and current liabilities. A proper management of working capital is required because if a company has too little investment in the working capital then it means that company doesn't have sufficient quantity of materials and account receivables which might lead to loss in production and consequently sales will decrease, furthermore in case of a high demand in the market it will be difficult for the company to react immediately and fulfill the demand. On the other hand if the investment in working capital is too big then a company has to bear the cost of storage of inventory, handling cost and opportunity cost (Arnold, 2008, p.529).

In order to control risk and cost of the company the decision about the financing and level of working capital is really important. The level of working capital fluctuates with any fluctuation in its component e.g. if the production of firm is higher but the sale is relatively lower than level of inventory will increase, on the other hand if sale exceeds the level of production then inventory will decrease. Similarly, the level of cash will increase when companies collect the

receivables and its level reduces when it pays its account payables. Moreover companies have three options to choose between to finance working capital i.e. short term debt, long term debt and equity finance. Equity financing is the most expensive way of financing followed by long term debt and short term debt.

Although short term debt is the cheapest way to finance but it carries risk with it because any discarded fluctuation in cash might push the company towards default. Long term debts have more risk than short term debts and it carries high interest rate (because of a higher risk premium) which will reduce profitability. So in order to maintain cash inflow, cash outflow and to create the breakeven between risk, return and liquidity it is really important to manage working capital (Andrew & Gallagher, 1999, pp.423:426).

### ***2.1.3 Components of Working Capital Management***

In the 1980's and prior to that period, working capital management was compartmentalized (Sartoris and Hill, 1983). WCM was divided in cash, account payables and account receivables. In most firms, these compartments were managed by different managers on various different organizational layers (Sartoris and Hill, 1983). But Sartoris and Hill (1983) argued that there was a need for an integrated approach, where all the three compartments are combined. This led to the integration of the management of inventories, account payables and account receivables, called Working Capital Management (WCM). According to Hillier, et al. (2010), working capital is also called net working capital and is defined as current assets less current liabilities.

$$\textit{Net Working Capital} = \textit{Current Assets} - \textit{Current Liabilities}$$

Both components of the working capital formula above can be found on the balance sheet. Current assets can be found on the left side of the balance sheet and are those assets that generate cash within one year. Current assets are normally divided in cash and cash equivalents, short-term investments, trade and other receivables, prepaid expenses, inventories and work-in-progress. Current liabilities can be found on the right side of the balance sheet and are obligations which have to be met within one year. Current liabilities are divided in trade

payables, short-term debt and accrued liabilities. Each component of working capital management will be discussed as follow:

### ***2.1.3.1 Cash Management***

Cash includes all currency and demand deposit balance. It is the life blood of business firms. It is needed to acquire supplies, resources and other assets used in generating the products and services provided by the firm. It is also needed to pay wages and salaries to employees, tax to government, interest and principal to creditors and dividend to shareholders. More fundamentally, cash is a medium of exchange that allows management to carry on the various activities of the business firms from day to day (Weston et al. 1996).

According to Ross et al. (2001), the objectives of cash management are twofold. The first objectives of cash management are to meet the payment schedule. That is to have sufficient cash to meet the disbursement needs of a firm. The second objective is to minimize the cash balances a firm holds on. However, in minimizing the cash balance, two conflicting aspects have to be reconciled. A high level of cash on hand will ensure timely payment of obligation and will enable the firm to take advantages of opportunities. But it also implies that large funds will remain idle, as cash is a non-earning asset and the firm will have to forgo profits. A low level of cash balance on the other hand may mean failure to meet payment schedules. Thus the goal of cash management is to minimize the amount of cash the firm must hold for use in conducting its normal activities, yet at the same time to have sufficient cash to take trade discount, to maintain credit rating, to meet unexpected cash needs, to prevent insolvency or bankruptcy arising out of the inability of a firm to meet its obligation (Ross, et al., 2001).

According to Walson, et al. (1996) cash management has taken an increasing importance in recent years for two reasons. First, there was an upward trend in interest rate that increased the opportunity cost of holding cash. Second technological development, particularly computerized electronic fund transfer mechanisms changed the way cash is managed. Financial managers, therefore have developed and refined techniques of cash collection and disbursement to try to optimize the availability of cash and to reduce the interest cost of borrowing from creditors. Most cash management activities are performed jointly by the firm and its banks. According to

Weston, et al. (1996), effective cash management encompass proper management of cash inflow and outflow, which entail (1) synchronizing cash flow (2) using float (3) accelerating collection (4) slowing cash disbursement (5) getting available funds to where they are needed.

### **2.1.3.2 *Accounts Receivable Management***

Accounts receivable is an investment whose returns must at least equal or exceed the potential gains from other competing commitments (Block & Hirt, 1992). Companies depend more or less on their account receivables to finance some if not all of their payables and they should therefore attempt to reduce their credit time to customers as much as possible (Larsson & Hammarlund, 2005). In making any decision, three key policy variables will have to be considered in line with profit objective namely credit standards (risk), terms of trade and collection policy. The collection policy embodies three important performance indicators; average collection period, ratio of bad debts to credit sales and aging of accounts receivable (Block & Hirt, 1992). The credit time runs from the invoice date until the due date of the invoice (Larsson & Hammarlund, 2005).

The reason for shortening the credit period is due to the fact that longer credit time to customers includes the unfavorable effect that it keeps companies from benefiting from the capital inflow that they are expecting from sales. By allowing customers to keep the money during a credit time companies are exposing themselves to a higher risk of ending up in an unstable financial situation. This is where the importance of timing comes in and where it becomes apparent which companies manage their working capital efficient and which companies do not (William & McAfee, 2009).

### **2.1.3.3 *Inventory Management***

Inventory is the least liquid working capital item; hence returns from it should be significantly higher than cash or receivables to justify investing in it (Block & Hirt, 1992). The composition of an inventory differs depending on what kind of production or business companies are involved in. The five different assets an inventory can consist of are; raw materials, work in progress materials, finished goods, extra material and consumption materials. Most companies have an inventory that they more or less depend on in their operation. The manufacturing companies can

hold an inventory that consist of all five different materials and for them keeping an inventory is essential for their production. For most companies the inventory can be seen as an unavoidable cost (Lantz, 2008).

The management of inventory is one of the more challenging tasks for working capital managers who, if they could decide, would like to minimize the inventory as much as possible in order to shorten the cash conversion cycle and reduce costs. The risk of minimizing an inventory down to a level close to zero is that it increases the possibility of running out of materials needed in the production or running short of finished goods during a high demand. Such situation would be costly for any company due to the revenues they would lose (Maness & Zietlow, 2005). Each manager has their own interests they first and foremost would like to satisfy which complicate the task to reach a joint decision. Each company should find the balance that they will benefit most from (Pass & Pike, 2007).

These inventories require funding hence their efficient management could significantly improve firm's profitability. It is not as easy to manage inventory as it is for liquid assets. This is because inventory management as in a typical manufacturing firm falls in more than one department. In addition control is influenced by other variables such as level versus seasonal production decision and inventory policy in inflationary or deflationary situations. Seasonal production eliminates inventory carrying cost but the cost of idle capacity must be absorbed. Alternatively, can savings from level production exceed inventory carrying costs? This scenario presents a typical financial analysis challenge which Economic Order Quantity (EOQ) inventory decision model has tried to resolve. The objective of the model is to ensure production inventory is optimized at minimum aggregated ordering and carrying cost. The model is expressed as:  $EOQ = (2SO/C)^{1/2}$ , where 'S' is sales, 'O' is ordering cost 'C' is carrying cost per unit. To eliminate the risk of stock outs inherent in this model, minimum stock or safety stock is essential. It comes with additional carrying cost but that should be offset by gains from additional sales that arise due to avoidance of stock outs (Block & Hirt, 1992).

The just-in-time (JIT) approach is a strategy for effective inventory management and help keeping inventory levels on a lower level. It allows minimum inventory to be maintained,



reduces carrying costs and completely eliminates stock outs as new orders arrive just in time of need. The strategy aims to make the orders of material, produce and deliver just in time when it is required and not before (Brealey et al., 2006).

#### **2.1.3.4 Accounts Payable Management**

According to Block and Hirt (1992), approximately 40% of short term financing available to organizations is in the form of accounts payable or trade credit extending between 30 to 60 days. Many firms attempt to stretch this period in order to get additional short term financing but such actions could send negative credit rating signals. Other sources of funding that firms could exploit to boost their working capital positions include bank credit, commercial paper and foreign borrowing.

### **2.1.4 Measurements of Firms Profitability**

There are several measures of profitability which a company can use. Few measures of profitability are discussed here.

#### **2.1.4.1 Return on Equity (ROE)**

It measures the earnings of the company against the investment of common stockholders. Shareholders always want the higher value of ROE. It is calculated in the following way (Gitman, 2002, p.65).

$$ROE = (\text{Earnings available for common stockholders} / \text{CSE}) * 100$$

Where,

CSE = Common stock equity

#### **2.1.4.2 Net Profit Margin (NPM)**

It calculates the percentage of each sale dollar remains after deducting interest, dividend, taxes, expenses and costs. In other words it calculates the percentage of profit a company is earning against its per dollars sale. Higher value of return on sale shows the better performance (Gitman, 2002, p.64).

$$NPM = (\text{Earnings available for common stakeholder} / N.S) * 100$$

Where,

N.S = Net sales

#### **2.1.4.3 Return on Total Asset (ROA)**

This ratio explains that how efficient a company is to utilize its available assets to generate profit. It calculates the percentage of profit a company is earning against per dollar of assets. The higher value of ROA shows the better performance (Gitman, 2002, p.65).

$$R.O.A = (\text{Earnings available for common stockholders} / T.A) * 100$$

Where,

T.A = Total Assets

#### **2.1.4.4 Gross Operation Profit**

This ratio explains that how efficient a company is to utilize its operating assets. This ratio calculates the percentage of profit earned against the operating assets of the company (Lazaridis & Tryfonidis, 2006).

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

### **2.1.5 Theoretical Linkages between Working Capital Management and the Profitability of a Firm**

The management of Working capital is important to the financial health of business of all sizes. Working capital meets the short term financial requirements of a business enterprise. It is a trading capital not retained in the business in a particular form for longer than a year. The money invested in it changes form and substance during the normal course of business operations. The need for maintaining an adequate Working capital can hardly be questioned. Just as the circulation of blood is very important in the human body to maintain life, the flow of funds is

very necessary to maintain business. If it becomes weak, the business can hardly prosper and survive. Working capital starvation is generally credited as the major cause if not a major cause of small business failure in many developed and developing countries (Rafuse, 1996). The success of a firm depends ultimately, on its ability to generate cash receipts in excess of disbursement. Given these peculiarities efficient management of working capital and more recently good credit management practice is pivotal to the health and performance of the small firm sector, (Peel & Wilson, 1996). The study conducted revealed that 60% enterprises suffer from cash flow problems. From such study there is the need for many industries to improve their return on capital employed (ROCE) by focusing on some critical areas such as cost containment, reducing investment in working capital and improving working capital efficiency. Based on the information from the above findings, there is a negative relationship between profitability and the cash conversion cycle, inventory receivable days, accounts payable days and accounts receivable days which was used as a measure of working capital management efficacy. Therefore it seems that operational profitability dictates how managers or owners will act in terms of managing the working capital of the firm. The negative relationship between accounts receivables and firms' profitability suggests that less profitable firms will pursue a decrease of their accounts receivables in an attempt to reduce their cash gap in the cash conversion cycle. Likewise the negative relationship between number of days in inventory and corporate profitability suggests that 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. Therefore managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

## ***2.1.6 The relationship between working capital management Components and the profitability of a firm***

### ***2.1.6.1 Relationship between Average Collection Period and Profitability***

Average collection period refers to the average length of time required to convert the firm's receivables into cash following a sale. It is calculated by dividing accounts receivable by the average credit sales per day. This ratio measures the length of time it takes to convert the average sales into cash. This measurement defines the relationship between accounts receivable and cash

flow. A longer average collection period requires a higher investment in accounts receivable. A higher investment in accounts receivable means less cash is available to cover cash outflows, such as paying bills.

The negative relationship between average collection period and profitability suggests that an increase in the number of day's accounts receivable by one day is associated with a decline in profitability. Through this, managers can improve profitability by reducing the credit granted to their customers (Lazaridis & Tryfonidis, 2006).

So, there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (receivables collection period) and profitability.

#### ***2.1.6.2 Relationship between Inventory Turnover in Days and Profitability***

Inventory turnover in days refers to the average time required to convert materials into finished goods.

It is calculated as

$$\text{Inventory Turnover in Days} = (\text{Inventory} / \text{Cost of goods sold}) * 365$$

Inventory turnover ratio, which represents the efficiency of inventory management, is expected to be high for firms with greater profitability. A low inventory turnover ratio could indicate either poor sales or an excess amount of inventory (Ruichao, 2013).

Maintaining sufficiently high inventory levels reduces costs of possible interruptions in the production process and loss of doing business due to scarcity of products (Mathuva, 2010), while investing too much in inventories unnecessarily blocks the funds in working capital that could be invested in revenue generating activities. Since inventory determines the level of activities in a company, managing it strategically contributes to profitability (Brigham and Houston, 2003). The key to manage inventory of a business is to know how quickly firm's overall stock is moving, how long each item of stock sits on shelves before being sold. Managing inventory is a juggling act. Excessive stocks can place a heavy burden on the cash resources of a business.

Insufficient stocks can result in lost sales, delays for customers etc. The key issue for a business is to identify the fast and slow stock movers with the objectives of establishing optimum stock levels for each category and, thereby, minimize the cash tied up in stocks. The stock sitting on shelves for long periods of time ties up money which may reduce the profitability of firms.

### **2.1.6.3 Relationship between Average Payment Period and Profitability**

Average payment period can be defined as the average length of time between the purchase of materials and labor and the payment of cash for them.

It is calculated as;

$$\text{Average Payment Period} = (\text{Payable} / \text{Purchase}) * 365$$

Account payables plays a critical role in managing working capital because delaying bill payments is one of the tools for management to have access to an inexpensive source of financing. However, the opportunity cost of keeping high account payables may hurt the business if an early payment discount is offered (Ruichao, 2013).

Working capital management rule states that firms should strive to lag their payments to creditors as much as possible, taking care not to spoil their business relationship. Delaying payment of accounts payable to suppliers allows firms to access the quality of products and could be inexpensive and flexible source of financing. On the other hand, delaying of such payables can be expensive if a firm is offered a discount for the early payment. So, there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability (Naimulbari, 2012).

### **2.1.6.4 Relationship between Cash Conversion Cycle and Profitability**

Cash conversion cycle equals the length of time between the firm's actual cash expenditures to pay for productive resources (materials and labor) and its own cash receipts from the sale of products (that is, the length of time between paying for labor and materials and collecting on receivables). The cash conversion cycle thus equals the average length of time a shilling is tied up in current assets.

According to Brigham and Houston (2003) it is calculated as:

$$\text{Cash Conversion Cycle} = \text{Average Collection Period} + \text{Inventory turnover in days} - \text{Average Payment Period}$$

Cash conversion cycle can be shortened in three ways:

- ✚ By reducing inventory conversion period by processing and selling goods more quickly.
- ✚ By reducing receivables period by speeding up collections from sales
- ✚ By lengthening payables or deferral period through slowing down firm's own payments.

In general managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

## 2.2 Empirical Literature Review

Zariyawati et al. (2007), discussed the relationship between cash conversion cycle and profitability by using a sample of 1628 firm – year for the period of 1996 to 2006 they consists of six different economic sectors which are listed in Bursa Malaysia. The coefficient results of pooled OLS regression analyses provide a strong negative significant relationship between cash conversion cycle and firms profitability. This reveals that reducing cash conversion cycle results to profitability increases. Thus, in purpose to create shareholder value, firms manager should concern on shorten of cash conversion cycle till accomplished optimal level.

Ganesan (2007) studied the impact of working capital management policy on the profitability of telecommunication industry of USA. He studied 349 companies over the period of six years (2001-2007). Correlation analysis, regression analysis and ANOVA analysis was conducted to check the impact on profitability by the WCMP, .the result showed that there is weak negative relation between profitability and WCMP. He found that the companies have poor approach to manage the components of working capital.

Samiloglu & Demirgunes (2008) also used a sample consisting of Istanbul Stock Exchange listed manufacturing firms for the period of 1998 to 2007 under a similar regression model. It was found that accounts receivable period, inventory days, and leverage affects firm's profitability negatively, while growth (in sales) affects firm's profitability positively. They also went further to state that the firm's profitability can be increased by shortening accounts receivable and inventory periods. The negatively relationship between accounts receivable period and profitability may be due to that customers want more time to access quality of products they buy from firms with declining profitability.

Dong et al. (2010) studied the relationship between cash conversion cycle and profitability, as measured by the ratio of gross profit activities on a 130 sample companies listed on the Vietnam stock market during the period 2006-2008. The authors have also found a strong relationship between profitability and cash conversion cycle, indicating that the board of management can increase shareholders' value by identifying the appropriate cash conversion cycle and maintain each component of this cycle at the optimal levels.

Kulkanya Napompech (2011) examined the effects of working capital management on profitability. A regression analysis was made based on a panel sample data of 255 companies listed on the Stock Exchange of Thailand from 2007 through 2009. The results revealed that there is a negative relationship between the gross operating profits (GOP) and inventory conversion period and the receivables collection period.

Joshi and Ghost (2012) assessed the working capital performance of Cipla Ltd. during the period 2004/05 to 2008/09. The findings of the study show that there is a significant positive trend growth in most of the selected performance indicators. Further, the selected ratios show satisfactory performances during the study period. The researcher have used Motaals test to indicate significant improvement in liquidity performance during the period. The conclusion of the study is that there exists significant negative relationship between liquidity and profitability, which indicates that Cipla Ltd. has maintained post optimal level of liquidity during the period under study.

Mobeen Ur Rehman & Naveed Anjum (2013) empirically examined the effects of working capital management on the profitability of Pakistan cement industry. Secondary Data was collected from Annual Reports and the sample size is 10 consisting of Pakistan cement Companies listed in KSE from 2003-2008. The relationship between working capital management and profitability is examined using statistical tools. The result accepted the hypothesis that there is a positive relationship between working capital management and profitability on the cement sector of Pakistan.

Agyemang Badu Ebenezer & Michael Kwame Asiedu (2013) studied the effect of working capital management on the profitability of companies listed on the Ghana Stock Exchange. Secondary data from the Ghana Stock Exchange on manufacturing companies within the Accra metropolis was used to examine whether working capital management influence the profitability of manufacturing companies in the country. They found out that, the major component of working capital management such as inventory days, account payable and cash conversion cycle have influence on the profitability of manufacturing companies. The study recommended that, manufacturing companies should adopt efficient and effective ways of efficiently managing these components of working capital management.

Richard Kofi Akoto et al. (2013) examined the relationship between working capital management practices and profitability of listed manufacturing firms in Ghana. The study used secondary data collected from all the 13 listed manufacturing firms in Ghana covering the period from 2005-2009. Using panel data methodology, the study finds a significantly negative relationship between profitability and accounts receivable days. However, the firms' cash conversion cycle, current asset ratio, size, and current asset turnover significantly positively influence profitability.

Hina Agha, (2014) investigated the relationship between working capital management and profitability, the authors collected secondary data from Glaxo Smith Kline Pharmaceuticals Company registered in Karachi stock exchange for the period of 1996-2011. In this study they used variable of return on assets ratio to measure the profitability of company and variables of



account receivable turnover, creditors' turnover, inventory turnover and current ratio as working capital management criteria. The results of the research showed that there is a significant impact of the working capital management on profitability of company. Therefore, managers may enhance the profitability of their firms by minimizing the inventory turnover, account receivables ratio and by decreasing creditors turnover ratios but there is no significant effect of increasing or decreasing the current ratio on profitability. So, the results indicated that through proper working capital management the company can increase its profitability.

Ntui Ponsian, et al. (2014) examined the effect of working capital management on company profitability. The study adopts quantitative approaches to test a series of research hypotheses. A sample of three (3) manufacturing companies listed on the Dar es Salaam Stock Exchange (DSE) is used for a period of ten years (2002-2012) with the total of 30 observations. Data is analyzed on quantitative basis using Pearson's correlation and Regression analysis (Ordinary Least Square). The key findings from their study were; firstly, there exists a positive relationship between cash conversion cycle and profitability of the firm, Secondly, there is a negative relationship between liquidity and profitability showing that as liquidity decreases, the profitability also increases; Thirdly, there exists a highly significant negative relationship between average collection period and profitability indicating that a decrease in the number of days a firm receives payment from sales affects the profitability of the firm positively; Fourthly, there is a highly significant positive relationship between average payment period and profitability. This implies that the longer a firm takes to pay its creditors, the more profitable it is.; and fifthly, there exists a highly significant negative relationship between inventory turnover in days and profitability.

OJEANI, Nneka Roseline (2014) studied the impact of working capital management on the profitability of Pharmaceuticals firms listed on the Nigerian Stock Exchange market. Correlation and ex-post facto research design were used in a sample of five Pharmaceuticals firms. Secondary data for a period of ten years (2002-2011) was used, and Ordinary Least Squares (OLS) multiple regression was employed in data analysis. The study found that working capital management; account receivables collection management and inventory management have a negative significant impact and accounts payables management and cash conversion cycle

management have a positive significant impact on the profitability of listed pharmaceuticals firms in Nigeria.

James Ndirangu Kung'u (2015) determines the effects of working capital management on profitability of manufacturing firms in Kenya. The study employed a co relational research design. A questionnaire was used to collect primary data for the independent variables and a record survey sheet was used to collect secondary data for the dependent variable (profitability). Data received from secondary sources and from the chief finance officers was analyzed using Statistical Package for Social Sciences (SPSS) version 20.0. Both descriptive and quantitative analyses were used. The results of the study showed that there was positive linear relationship between all independent variables (credit policy, accounts payable practices, inventory control practices, liquidity management practices and working capital levels) and the dependent variable (profitability) and all the models were significant. The null hypotheses in this study were rejected. The study makes the following recommendations; manufacturing firms to regularly review their credit policies, make early payments to their suppliers to enjoy good relationship with their suppliers, install and maintain modern inventory control systems, establish optimal cash targets, lower and upper limits and employ accountants with adequate knowledge in financial matters. On policy implication, the government of Kenya through the ministry of industrialization should create an authority to oversee the development and success of manufacturing sector so as to be in line with vision 2030. Companies should employ qualified accountants who are members of the institute of certified public accountants of Kenya.

Wobshet Mengesha (2014) examined the impact of working capital management on firms' performance by using audited financial statements of a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The results indicate that longer accounts receivable and inventory holding periods are associated with lower profitability and significant negative relationship between cash conversion cycle and also no significant relationship between cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on invested capital has been observed. On the other hand, the findings show that a highly significant negative relationship between

account receivable period, inventory conversion period and account payable period with return on asset.

Abenet Yohannes Hailu & Professor P. Venkateswarlu (2015) examined Effect of working capital management on firms profitability evidence from manufacturing companies in eastern, Ethiopia. By using secondary data collected from 30 firms for five years from 2010 to 2014. The research analyzed using panel data regression. Accordingly, the results show that longer accounts receivable and inventory holding periods are associated with lower profitability.

## **2.3 Summary and Knowledge Gaps Emerged from Survey of Empirical Literature**

As can be evidenced in the above paragraphs most of the studies that have been carried out on the relationship between working capital management and firms' profitability are from abroad. Even though some studies have been made in Ethiopia context, most of the studies were conducted in other non-pharmaceuticals firms. Moreover, the studies resulted in different conclusions on the impact of working capital management on firm's profitability which signifies that there is a need for more and more in-depth investigations on the subject matter. Therefore, considering the shortage of empirical evidence on the effect of working capital management on firms' profitability (particularly in the pharmaceuticals sector) and to fill the research gaps in the area, this study has been initiated. Accordingly, this study attempts to contribute to the existing literature by examining the effect of working capital management on pharmaceuticals manufacturing firms' profitability and their relationship in Ethiopia.

# CHAPTER THREE

## 3. RESEARCH DESIGN AND METHODOLOGY

This chapter describes the research methodology adopted in the study. It includes research design, sampling design, target population, data collection procedures and data analysis.

### 3.1 Research Design

Research design is the plan and structure of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research (Robson, 2002). The main objective of this study was to examine the impact of working capital management on the profitability of pharmaceuticals manufacturing firms in Ethiopia. Therefore, descriptive design with a quantitative approach was adopted to clarify the impact of working capital management on the profitability of pharmaceuticals manufacturing firms in Ethiopia. Since descriptive design used enables to investigate the effect of efficient working capital management and its component on the firms' profit and also shows the relationship between each variable and firms' profitability, it is important to use this method in this study. In addition to the descriptive design, the study also utilized the diagnostic research design method where the association of different components of working capital management with firm profitability is determined.

### 3.2 Population, Sample and Sampling Techniques

The population of this study was the whole Pharmaceuticals manufacturing firms operating in Ethiopia which are grouped under pharmaceuticals category.

From the population (eleven manufacturer), five pharmaceuticals manufacturing firms were selected using non-probabilistic sampling technique specifically purposive sampling. These manufacturing firms included in the study are: Ethiopian Pharmaceuticals Factory, Addis Pharmaceuticals Factory, East African Pharmaceuticals, Cadila Pharmaceuticals and Fawes Pharmaceuticals. One of the reasons for choosing purposive sampling method was that the study

attempted to address the impact of working capital management on firms' profitability over the period of eight years and some firms had less than eight operating years. Secondly, the necessary data were available and these firms were willing to provide needed information to this study.

### **3.3 Source and Instruments of Data Collection**

The study used secondary data from secondary sources, which are audited financial statements of each selected firms from published annual reports, in the form of income statements and statement of financial position for the period span of eight years (2008-2015). Secondary data was used to test the research hypotheses based on the quantitative data by using quantitative research methodology. The various data were also collected based on the study needs such as different publications, Books and websites.

### **3.4 Description of Study Variables**

#### ***3.4.1 Dependent Variable***

To evaluate the effect of working capital management on firms' profitability, Gross Operating Profit (GOP) shall be used as a dependent variable. Because,

- i. It measures only the performance of the operating activities of a firm, this is because the measurement of the gross operating profit which is sales minus cost of goods sold excludes taxes, interest costs, depreciation and amortization (Lazaridis & Tryfonidis, 2006; Gill et al., 2010), and
- ii. It is based on the fact that this measurement focuses on the operational performance. This is because it excludes the income gained through the financial activities by firms; this is done through the exclusion of fixed financial assets, which are deducted from the total assets.

GOP is calculated as follows (Lazaridis & Tryfonidis, 2006; Deloof, 2003).

$$\text{GOP} = (\text{Sales minus Cost of Goods Sold}) / (\text{Total Assets minus Fixed Financial Asset}).$$

### 3.4.2 Independent Variables

The study employed Inventory Conversion Period, Receivables Collection Period (Days Sales Outstanding), Payables Deferral Period (Days Payment Outstanding), and Cash Conversion Cycle as independent variables.

### 3.4.3 Control Variables

In addition to the four independent variables mentioned above, the study also used Firm Size, Debt Ratio, and Growth in Sales as control variables; in order to have a reliable analysis of the impact of working capital management performance on profitability, it is common in working capital literature to use some control variables to account for various factors that may influence profitability of firms (Deloof, 2003; Padachi, 2006; Napompech, 2012; Kaur& Singh, 2013). These variables are summarized in Table 3.1 below:

**Table 3.1** Variables, Their Types, Abbreviations and Measurements

Gross Operating Profit	GOP	Dependent	$\text{Sales} - \text{COGS} / \text{Total Assets} - \text{Financial Assets}$
Inventory Conversion Period	ICP	Independent	$\text{Inventory} \times 365 / \text{COGS}$
Receivables Collection Period	RCP	Independent	$\text{Accounts Receivables} \times 365 / \text{Sales}$
Days Payment outstanding	DPO	Independent	$\text{Accounts Payable} \times 365 / \text{COGS}$
Cash Conversion Cycle	CCC	Independent	$\text{DIO} + \text{DSO} - \text{DPO}$
Firm Size	LnSales	Control	Natural Logarithm of Sales
Debt Ratio	DtR	Control	$\text{Total Debt} / \text{Total Assets}$
Growth in Sales	GiS	Control	$\frac{\text{This Year's Sales} - \text{Previous Year's Sales}}{\text{Previous Year's Sales}}$

## **3.5 Methods of Data Analysis**

### ***3.5.1 Descriptive Statistics***

Descriptive statistics is a tool to help us understand information that we generate and help us to organize large amounts of information in a succinct manner (Beins & McCarthy, 2012). It enables us to describe and compare variables numerically by focusing on the central tendency and dispersion of the variables (Saunders et al., 2009).

Thus, the descriptive statistics in terms of maximum, minimum, median, mean and standard deviation of the dependent, independent and control variables shall be worked out and presented in a table (Deloof, 2000); Napompech, 2012).

### ***3.5.2 Correlation Analysis***

Correlation analysis involves measuring the strength of a relationship between two variables. The Pearson Correlation Coefficient measures the degree to which there is a linear association between two interval scaled variables. A positive correlation reflects a tendency for a high value in one variable to be associated with a high value in the second. A negative correlation reflects an association between a high value in one variable and a low value in the second. The sample correlation coefficient ( $r$ ) always lies between 1 and -1. An  $r$  of 1 indicates a perfect positive linear association between the two variables whereas if  $r = -1$ , there is a perfect negative linear association and a zero correlation coefficient reflects the absence of any linear association (Aaker et al., 2007).

This study used the Pearson Correlation Coefficient to determine and measure the degree to which the dependent and independent variables are associated.

### ***3.5.3 Regression Analysis***

Regression analysis is a statistical technique that is used to relate two or more variables. Here, a variable of interest, the dependent or response variable ( $Y$ ) is related to one or more independent or predictor variables ( $X$ 's). The objective of regression analysis is to build a regression model or a prediction equation relating the dependent variable to one or more independent variables. The

model can then be used to describe, predict and control the variable of interest on the basis of the independent variables. Regression analysis provides a tool that can quantify relationships between a dependent and one or more independent variable while at the same time it provides statistical control (Aaker et al., 2007).

For this study, the general form of the multiple regression model given below was used (Aaker et al., 2007):

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \dots + \beta_iX_i + \varepsilon$$

Therefore, the general formula used for the model can be represented as follows:

$$GOP_{it} = \alpha + \beta_1X_{i1} + \beta_2X_{i2} + \dots + \beta_iX_{it} + \varepsilon$$

Where:

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

*α* = the intercept of equation

*β<sub>i</sub>* = Coefficient of *X<sub>it</sub>* variables

*X<sub>it</sub>* = the different independent variables for working capital management of firm *i* at time *t*.

*t* = Time from 1, 2..., 5 years and *ε* = Error term

For this study, the above general multiple regression models was modified using the defined dependent, independent and control variables as shown below:

$$GOP_{it} = \alpha + \beta_1ICP_{it} + \beta_2RCP_{it} + \beta_3DPO_{it} + \beta_4CCC_{it} + \beta_5LnSales_{it} + \beta_7DtR_{it} + \beta_8GiS_{it} + \varepsilon \quad (\text{Model I})$$

Model used for regressing Receivables Collection Period (RCP) as independent variable:

$$GOP_{it} = \alpha + \beta_2RCP_{it} + \beta_5LnSales_{it} + \beta_7DtR_{it} + \beta_8GiS_{it} + \varepsilon \dots\dots\dots (\text{Model II})$$

Model used for regressing Inventory Conversion Period (ICP) as independent variable:

$$GOP_{it} = \alpha + \beta_1ICP_{it} + \beta_5LnSales_{it} + \beta_7DtR_{it} + \beta_8GiS_{it} + \varepsilon \dots\dots\dots (\text{Model III})$$

Model used for regressing Days Payment Outstanding (DPO) as independent variable:



$$GOPit = \alpha + \beta_3 DPOit + \beta_5 LnSalesit + \beta_7 DtRit + \beta_8 GiSit + \varepsilon \dots \dots \dots \quad (Model IV)$$

Model used for regressing Cash Conversion Cycle (CCC) as independent variable:

$$GOPit = \alpha + \beta_4 CCCit + \beta_5 LnSalesit + \beta_7 DtRit + \beta_8 GiSit + \varepsilon \dots \dots \dots \quad (Model V)$$

Where  $\varepsilon$  = Error term

After collecting and organizing the data, the analysis was done using current and available SPSS software package.

# **CHAPTER FOUR**

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

In this chapter, the study provided two types of data analysis; namely descriptive analysis and inferential analysis. The descriptive analysis helps the study to describe the relevant aspects of the phenomena under consideration and provides detailed information about each relevant variable. In descriptive statistics mean, standard deviation, minimum and maximum of the sample characteristic variables were determined. The study also carried out inferential statistics to determine in depth relationship between the variables. For the inferential analysis, the study used the Pearson correlation, the panel data regression analysis and the t-test statistics. While the Pearson correlation measures the degree of association between variables under consideration, the regression estimates the relationship between working capital management and firms' profitability.

### **4.1 Descriptive Statistics**

Table 4.1 below presents a summary of descriptive statistics of dependent and independent variables for five pharmaceuticals manufacturing firms for a period of eight years from 2008 to 2015.

**Table 4.1 Table of the result of Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>GOP</b>	40	-.1	.6	.200	.1396
<b>ICP</b>	40	73.3	520.0	276.145	106.3057
<b>RCP</b>	40	0.0	232.1	48.278	43.9499
<b>DPO</b>	40	.7	482.0	81.715	102.2201
<b>CCC</b>	40	-59.5	496.3	242.705	112.3958
<b>LnSales</b>	40	6.7	8.7	7.795	.6106
<b>DtR</b>	40	.1	4.2	.910	.8261
<b>GiS</b>	40	-.6	1.9	.298	.5461
<b>Valid N (listwise)</b>	40				

*Source: Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)*

Table 4.1 shows that an average value of gross operating profit (GOP) is 20% and standard deviation is 13.96%. This means that the value of profitability can deviate from the mean to both sides by 13.96%. The maximum value of GOP is 60% while the minimum is -10%. And also receivable collection period (RCP) has a mean value of 48 days with a maximum of 232 days and a minimum of zero days. This means that on average Ethiopian pharmaceuticals manufacturing firms don't extend credit to their customers beyond 48 days. Additionally, from selected firms it takes an average 276 days to sell manufactured products (inventories) with standard deviation of 106 days. The maximum time taken by the firm to sell inventory is 520 days as well as firms needs a minimum 73 day to sell its manufactured product.

The descriptive statistics also shows that firms wait an average 82 days to pay their purchases with standard deviation of 102 days. The minimum time taken by a firm to pay its purchases is half day and a maximum days taken is 482 days. It also takes average 243 days firms to convert their input resource in to cash. The shortest conversion period -59 ½ days, this means that there is a firm which have a longer days of payment outstanding.

In addition to the independent variables, the above table also includes the descriptive statistics of control variables that are used in the study. The size of the firms and its relationship with profitability as measured by natural logarithm of sales is used as control variable. The mean value of log of sales (InSales) is 7.795, while the standard deviation is half day and the minimum and the maximum value of log of sales is 6.7 and 8.7 respectively. And also debit ratio (DtR) and growth in sales (GiS) are control variable. The mean value of DtR and GiS is 91% and 29.81% and standard deviation 82.61% and 54.61%, respectively.

## **4.2 Correlation Analysis**

In this section, the study measured the degree of association between the working capital management components and the firms' profitability. Correlation analysis is also being conducted in order to determine the relationship between the independent and dependent variables such as the working capital management components and control variables towards the profitability of the firms that is measured by gross operating profit.

**Table 4.2 The table shows of the relationship between variables**

**Correlations**

		<i>GOP</i>	<i>ICP</i>	<i>RCP</i>	<i>DPO</i>	<i>CCC</i>	<i>LnSales</i>	<i>DtR</i>	<i>GiS</i>
<i>GOP</i>	Pearson Correlation	1							
	Sig. (2-tailed)								
	N	40							
<i>ICP</i>	Pearson Correlation	.006	1						
	Sig. (2-tailed)	.971							
	N	40	40						
<i>RCP</i>	Pearson Correlation	.158	-.119	1					
	Sig. (2-tailed)	.330	.466						
	N	40	40	40					
<i>DPO</i>	Pearson Correlation	-.168	.490**	-.079	1				
	Sig. (2-tailed)	.300	.001	.628					
	N	40	40	40	40				
<i>CCC</i>	Pearson Correlation	.220	.454**	.351*	-.477**	1			
	Sig. (2-tailed)	.172	.003	.027	.002				
	N	40	40	40	40	40			
<i>LnSales</i>	Pearson Correlation	.442**	-.293	.639**	-.257	.206	1		
	Sig. (2-tailed)	.004	.066	.000	.109	.202			
	N	40	40	40	40	40	40		
<i>DtR</i>	Pearson Correlation	.089	-.073	-.045	.001	-.087	.028	1	
	Sig. (2-tailed)	.585	.655	.784	.994	.591	.864		
	N	40	40	40	40	40	40	40	
<i>GiS</i>	Pearson Correlation	.330*	-.158	-.057	.200	-.354*	-.015	.129	1
	Sig. (2-tailed)	.038	.329	.727	.216	.025	.925	.429	
	N	40	40	40	40	40	40	40	40

*\*\*.* Correlation is significant at the 0.01 level (2-tailed).

*\*.* Correlation is significant at the 0.05 level (2-tailed).

**Source:** Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)

As shown in table 4.2 above, Inventory conversion period (ICP) has a negative relationship with Receivable collection period (RCP), Firm Size (InSales), Debt Ratio (DtR) and Growth in Sales (GiS) and a positive relationship with Days Payment Outstanding (DPO) and Cash Conversion Cycle (CCC).

And also Receivable collection period (RCP) has a negative relationship with Days Payment Outstanding (DPO), Debt Ratio (DtR), Growth in Sales (GiS) and a positive relationship with Cash Conversion Cycle (CCC) and Firm Size (InSales).

In addition, Days Payment Outstanding (DPO) has a positive relationship with Debt Ratio (DtR) and Growth in Sales (GiS) and a negative relationship with Cash Conversion Cycle (CCC) and Firm Size (InSales).

Cash Conversion Cycle (CCC) has a positive relationship with Firm Size (InSales) and negative relationship with Debt Ratio (DtR) and Growth in Sales (GiS).

The correlation analysis result also shows the correlation of control variable with other variables in addition to independent variable. Growth in Sales (GiS) has positive relationship with Debt Ratio (DtR) and a negative relationship with Firm Size (InSales). And Debt Ratio (DtR) has a positive relationship with Growth in Sales (GiS).

Generally, the above table indicates the relationship between the dependent variable (Gross Operating Profit (GOP)) with independent and control variables. It has a positive correlation with Inventory conversion period (ICP), Receivable collection period (RCP), Cash Conversion Cycle (CCC), Firm Size (InSales), Debt Ratio (DtR) and Growth in Sales (GiS).

This means that the length of Inventory conversion period, Receivable collection period, Cash Conversion Cycle are associated with increasing in firms' profitability and an increasing firms' sales years to year directly related to firm' profitability ( i.e. it increase firms' profitability).

Days Payment Outstanding (DPO) has a negative relationship with Gross operating profit, i.e. delaying payment of account payable to supplier is decrease the firms' profitability.

### **4.3 Regression Analysis and Hypothesis Testing**

In this section, the study tries to show the impact of working capital management on pharmaceuticals manufacturing firms' profitability by using the models presented under chapter three because the Pearson correlations doesn't indicates the level of significance influences of independent variable on the dependent variable. And also the study attempts to test the developed hypotheses under chapter one.

In the case of a small sample, the adjusted R<sup>2</sup> value should be considered as it provides more accurate estimation of the true population value (Pallant, 2007, p.158). There is a rule of thumb which can be used to determine the adjusted R<sup>2</sup> value as follows: < 0.1: poor fit, 0.11 to 0.30: modest fit, 0.31 to 0.50: moderate fit, >0.50: strong fit (Muijs, 2004, p. 166).

As the  $\beta$  coefficients have different scales, the absolute value of Beta parameter under Standardized Coefficients is used in order to compare and determine the influence of independent variables on the dependent variable (Muijs, 2004, p. 167). The Significant value is used to measure the statistic significant unique contribution of each independent variable to the formula (Pallant, 2007, p.159).

To avoid the possibility of multicollinearity, it is important that the results from collinearity diagnostics should have tolerance value above 0.10 and variance inflation factor (VIF), which is the inverse of the tolerance value, below 10, as the small value of tolerance indicate the high multicollinearity with other variables (Pallant, 2007, p.156).

To evaluate the study models, the value of R<sup>2</sup> has been considered to determine the amount of variance in the dependent variables which is explained by all variables in the formula (Pallant, 2007, p.158).

### 4.3.1 Regression Analysis Result for Model I

Table 4.3.1 below shows the regression analysis result by computing all independent and control variables except cash conversion cycle. Cash conversion cycle variable excluded from model I, since it has strong relationship with others variables.

The table shows that linear regression the coefficient of determination is 0.336 (adjusted R<sup>2</sup>); about 33.60% of the variation in data is explained by Inventory conversion cycle, Receivable collection period, Days payment outstanding, Firm size, Growth in sales and Debt ratio. It indicates that the models is fit at predicting the Inventory conversion cycle, Receivable collection period, Days payment outstanding, Firm size, Growth in sales and Debt ratio.

**Table 4.3.1 Regression Analysis for Model I**

#### A) Model Summary

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>
1	.662 <sup>a</sup>	.438	.336	.1137

a. Predictors: (Constant), GiS, LnSales, DtR, DPO, ICP, RCP

b. Dependent Variable: GOP

#### B) Coefficients

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>Tolerance</b>	<b>VIF</b>
1	(Constant)	-0.97109856	.321		-3.026	.005		
	ICP	0.000501961	.000	.382	2.386	.023	.663	1.508
	RCP	-0.0005449	.001	-.172	-.998	.326	.576	1.736
	DPO	-0.00041812	.000	-.306	-1.912	.065	.664	1.507
	LnSales	0.135158132	.041	.591	3.292	.002	.528	1.894
	DtR	0.006002447	.022	.036	.269	.790	.975	1.025
	GiS	0.11407786	.036	.446	3.168	.003	.858	1.165

a. Dependent Variable: GOP



*Source: Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)*

This model indicate the Tolerance values of the independent variables are above 0.10 and the Variance Inflation Factors (VIF) are below ten (10). It indicates that there is no multi-collinearity problem among the independent variables in the data.

Under appendix II, the graph shows that the residuals were distributed unsystematic pattern. Therefore, this model has no heteroscedasticity problem.

Also the table show inventory conversion period (ICP) and firm size (InSales) have a positive statistically significant impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia at significant level at 5%, (P-value of 0.023 and 0.002) respectively. If the firm size increases, its profitability will be raised by the coefficient of 0.1352 with significant value of 0.002.

The Debt ratio (DtR) has a positive relationship with firms' profitability at 5% significant level but insignificant with firms profitability (Gross Operating Profit). And also Growth in sales (GiS) has statistically significant a positive relationship with firms profitability at significant level of 0.05. It indicates that if the manufacturers sales increase, its' gross operating profit raise by the coefficient of 0.1141.

Receivable collection period (RCP) and Days payment outstanding (DPO) have a negative association with gross operating profit (GOP) at 5% significant level but insignificant with gross operating profit.

#### ***4.3.2 Regression Analysis Result for Model II***

The table below show that Receivable collection period (RCP) has a negative impact on the profitability (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

**Table 4.3.2 Table of Regression Analysis for Model II**

**A) Model Summary**

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
II	.574 <sup>a</sup>	.329	.253	.1207	0.890922

a. Predictors: (Constant), RCP, DtR, GiS, lnSales

b. Dependent Variable: GOP

**B) Coefficients**

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>Tolerance</b>	<b>VIF</b>
II	(Constant)	-0.80371002	.304		-2.640	.012		
	LnSales	0.128717803	.041	.563	3.119	.004	.588	1.700
	DtR	0.003924898	.024	.023	.166	.869	.977	1.023
	GiS	0.083074003	.036	.325	2.325	.026	.981	1.020
	RCP	-0.00057856	.001	-.182	-1.007	.321	.586	1.706

a. Dependent Variable: GOP

**Source:** Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)

In Model II Beta coefficient is -0.00058 for receivable collection period (RCP) days which shows that it makes a very weak contribution to predict the gross operating profit. It contributes to gross operating profit at 5% significance level but insignificance with GOP, which the result is consistent with the majority of the findings of from past empirical literature reviewed that had also revealed a negative relationship between RCP and firms profitability (Ganesan, 2007; Samiloglu & Demirgunes, 2008; Kulkanya Napompech, 2011; Richards Kofi Akoto, Dadson Awunyo-Vitor & Lawer Angmor, 2013; Hina Agha, 2014; Ntui Ponsian, Kiemi Chrispina, Gwatako Tago, Halim Mkiibi, 2014; OJEANI, Nneka Roseline, 2014; Wobshet Mengesha, 2014; and Abenet Yohannes and Professor P. Venkateswarlu, 2015).

Specially, from the above listed literature review the result of this study is consistent with (Ganesan, 2007) that is revealed insignificant negative impact on firms' profitability. Based on this, the study accepts the null hypotheses one which state that, "there is no significant impact of Receivable collection period on the profitability of pharmaceuticals manufacturing firms in Ethiopia". Therefore, the study concludes that Receivables collection has insignificant negative impact on the profitability of listed pharmaceuticals firms in Ethiopia, during the period covered by the study.

### 4.3.3 Regression Analysis Result for Model III

Model III shows that Inventory Conversion Period (ICP)) has a positive impact on Gross Operating profit (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

**Table 4.3.3 Table of Regression Analysis for Model III**

#### A) Model Summary

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	.593 <sup>a</sup>	.351	.277	.1187	1.194293

a. Predictors: (Constant), GiS, LnSales, DtR, ICP

b. Dependent Variable: GOP

#### B) Coefficients

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>Tolerance</b>	<b>VIF</b>
III	(Constant)	-0.82246323	.277		-2.969	.005		
	ICP	0.000284599	.000	.217	1.498	.143	.885	1.129
	LnSales	0.116658678	.033	.510	3.575	.001	.910	1.099
	DtR	0.007321704	.023	.043	0.315	.754	.980	1.020
	GiS	0.093632273	.036	.366	2.632	.013	.957	1.045

a. Dependent Variable: GOP

*Source: Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)*

The result from the table shows that ICP has insignificant positive impact on profitability of pharmaceuticals manufacturing firms in Ethiopia, given the coefficient of 0.00029 which is significant at 5% level of significance (P- value of 0.143). It indicates that when a firm has longer inventory conversion days, firms profit increase by the rate of 0.00029. This suggests that the inventory conversion period has a positive insignificant impact on gross operating profit of listed pharmaceuticals manufacturing firms in Ethiopia during the period of the study. Based on this, the study accepts the null hypothesis two which states “there is no significant impact of Inventory Conversion Period on the profitability of the listed pharmaceuticals firms in Ethiopia”. Therefore, the study concludes that as inventory conversion period increases the profitability of pharmaceuticals manufacturing firms in Ethiopia raises.

This result is consistent with the study conducted by Abenet Yohannes & Professor P. Venkateswarlu (2015).

#### ***4.3.4 Regression Analysis Result for Model IV***

The table below shows that the extent contribution of Day Payment Outstanding (DPO) on pharmaceuticals manufacturing firms’ profitability. It has a negative impact on Gross Operating profit (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

The study find out the association of DPO and firms’ profitability is a negative relationship between them, this result is consistent with the prior studies conducted by Wobshet Mengesha (2014) and Abenet Yohannes & Professor P. Venkateswarlu (2015).

**Table 4.3.4 Table of Regression Analysis for Model IV**

**A) Model Summary**

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	.571 <sup>a</sup>	.326	.249	.1210	0.93657

a. Predictors: (Constant), DPO, DtR, GiS, LnSales

b. Dependent Variable: GOP

**B) Coefficients**

<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>Tolerance</b>	<b>VIF</b>
IV	(Constant)	-0.55229492	.262		-2.111	.042		
	LnSales	0.094305264	.033	.412	2.869	.007	.932	1.073
	DtR	0.005309619	.024	.031	.224	.824	.982	1.018
	GiS	0.091702572	.037	.359	2.509	.017	.942	1.061
	DPO	-0.00018268	.000	-.134	-0.912	.368	.895	1.117

a. Dependent Variable: GOP

**Source:** Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)

The above table clearly shows that Beta Coefficient is -0.000183 for Day Payment Outstanding (DPO) with P-value of 0.368 which show that DPO variable has insignificant contribution to predict the dependent variable Gross operating profit. Based on this, the study accepts the null hypothesis three which states that, “there is no significant impact of Day payable outstanding on the profitability of the listed pharmaceuticals firms in Ethiopia”. Therefore, the study concludes that day payable outstanding has insignificant negative impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia, during the period covered by the study.

### 4.3.5 Regression Analysis Result for Model V

The Cash Conversion Cycle (CCC) is used to measure efficiency of working capital management. Table 4.3.5 shows that the extent on how cash conversion cycle affect pharmaceuticals manufacturing firms' profitability. The adjusted  $R^2$  of the model is .314 and value of  $R^2$  in model V is .384 which endorses that 38.40% of the variation in the dependent variable is explained by the model.

**Table 4.3.5 Table of Regression Analysis for Model V**

#### A) Model Summary

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>
1	.620 <sup>a</sup>	.384	.314	.1156

a. Predictors: (Constant), CCC, DtR, lnSales, GiS

b. Dependent Variable: GOP

#### B) Coefficients

<i>Model</i>		<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>T</i>	<i>Sig.</i>	<i>Collinearity Statistics</i>	
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>			<i>Tolerance</i>	<i>VIF</i>
V	(Constant)	-0.61845554	.238		-2.600	.014		
	lnSales	0.088241915	.031	.386	2.839	.007	.952	1.050
	DtR	0.008165821	.023	.048	.361	.721	.980	1.021
	GiS	0.111247273	.037	.435	3.046	.004	.862	1.160
	CCC	0.000371162	.000	.299	2.055	.047	.832	1.202

a. Dependent Variable: GOP

**Source:** Computed by the researcher from annual financial reports of selected five pharmaceuticals manufacturing firms (2008-2015)

The results presented in table 4.3.5 shows that the cash conversion cycle has statistically significant positive impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia, with the coefficient of 0.00037 which is significant at 5% level of significance (for the P-value of 0.047). This signifies that the CCC variable significantly drive the gross operating profit of pharmaceuticals manufacturing firms in Ethiopia, during the period of the study. The result of this study in relation to CCC consistent with some of the earlier studies that revealed a positive significant relationship between cash conversion cycle and firms' profitability (Ntui Ponsian, et al., 2014; Dong, et al.,2010; and Richard Kofi Akoto, et al., 2013). Based on this the study rejects the null hypothesis four which states that, "there is no significant impact cash conversion cycle on the profitability of the listed pharmaceuticals firms in Ethiopia".

# CHAPTER FIVE

## 5. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Summary of Findings

In this section I am trying to summarize the major findings.

#### *5.1.1 Findings for Descriptive Statistics*

The study finds out that the average gross operating profit of the sampled manufacturing firms is 20% with standard deviation of 13.96%. From forty observations, the average time required to convert raw materials into finished goods is 276 days with standard deviation of 106 days. And also the minimum days needed to collect the credit sales is zero days and a maximum of 232 days. A minimum delaying payment of account payable to suppliers is half days and an average of 102 days. The minimum length of time between paying for labor and materials and collecting on receivables is negative 59 ½ days and an average of 242 ½ days.

#### *5.1.2 Findings for Correlation Analysis*

The major finding in the correlation analysis is that the cash conversion cycle has a strong positive relationship with receivable collection period and inventory conversion cycle and strong negative association with day payment outstanding and growth in sales. The relationship between the dependent variable (GOP) with independent and control variable is a positive correlation with Inventory conversion period, Receivable collection period, Cash Conversion Cycle, Firm Size, Debt Ratio and Growth in Sales and a negative relationship between Days Payment Outstanding.



### ***5.1.3 Findings for Regression Analysis***

The first model fits at predicting the Inventory conversion cycle, Receivable collection period, Days payment outstanding, Firm size, Growth in sales and Debt ratio; linear regression coefficient of determination is 0.336. The papers finds out that ICP and InSales have a positive statistically significant impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia at significant level of 5%, (P-value of 0.023 and 0.002) respectively.

The DtR has a positive relationship with firms' profitability at 5% significant level but insignificant with firms profitability (Gross operating profit). And also GiS has statistically significant a positive relationship with firms profitability at significant level of 0.05.

RCP and DPO have a negative association with GOP at 5% significant level but insignificant with gross operating profit.

In the second model the finding is Receivable collection period (RCP) has a negative impact on the profitability (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

In the third model, the outcome shows that Inventory Conversion Period (ICP)) has a positive impact on Gross Operating profit (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

In the fourth model, the finding shows the extent contribution of Day Payment Outstanding (DPO) on pharmaceuticals manufacturing firms' profitability. It has a negative impact on Gross Operating profit (GOP) of listed pharmaceuticals manufacturing firms at 5% significant level but insignificant with gross operating profit.

The paper find out that in the fifth model cash conversion cycle has a positive statistically significant impact on selected pharmaceuticals manufacturing firms' profitability at 5% significant level.

## 5.2 Conclusions

Based on the major findings, the study concludes:

An increasing in the number of day's account receivable by one day and average length of time between the purchase of materials and labor and the payment of cash for them have no significance effect on the profitability of pharmaceuticals manufacturing firms in Ethiopia during the period span of the study.

The length of time to which raw materials were converted to finished goods has insignificant contribution to the profitability of pharmaceuticals manufacturing firms in Ethiopia during the study period.

Increasing in the length of the time between paying labor and materials and collecting receivable is related with raise firms' profitability pharmaceuticals manufacturing firms in Ethiopia during the period of the data used.

Firm size and growth in sales have a positive statistically significant impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia. And the debt ratio has no positive significant impact on pharmaceuticals manufacturing firms' profitability during the period span of the study.

## 5.3 Recommendations

In line with the findings and conclusions of this study to improve the profitability of pharmaceuticals manufacturing firms in Ethiopia, the study makes the following recommendations to financial managers, finance officers, general managers and to those who are on managerial level:

- Should keep their working capital at optimum level since cash conversion cycle has a significant positive impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia.
- Should increase sales at high rate possibly by giving a reasonable time for customers to settle their credit invoice because growth in sales and firm size have significance

positive impact on the profitability of pharmaceuticals manufacturing firms in Ethiopia. It should be noted that allowing credit sales has an impact on receivable collection period, but receivable collection period has insignificant negative impact on pharmaceuticals manufacturing firms in Ethiopia.

- Should decide to hold a large quantity of raw materials/stock if the firm has enough space to store a stock or it incurs a minimum holding cost and higher ordering cost. This is because Inventory conversion period does affect the pharmaceuticals manufacturing firms' profitability positively but not significant.

## **5.4 Suggestions for Further Research**

This study conducted based on five pharmaceuticals manufacturing firms in Ethiopia, which are under the category of pharmaceuticals according to register book of FMHACA. The study suggests that the scope of future research should expand by having non pharmaceuticals category manufacturing firms as per FMHACA register book and other industries to obtain better result. Also, it will be better to include additional working capital management components such as cash and cash equivalents.

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- MD.Kazi Naimulbari(2012). *The impact of working capital management on profitability of Pharmaceuticals sector in Bangladesh* *Unpublished thesis, Independent University, Bangladesh*
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- Wobshet Mengesha. (2014). *Impact of Working Capital Management on Firms' Performance: The Case of Selected Metal Manufacturing Companies in Ethiopia*. *Ethiopia*. *Unpublished thesis, Jimma University*

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## **Website**

[www.fmhaca.gov.et/listdrugsformularies.html](http://www.fmhaca.gov.et/listdrugsformularies.html)

[www.cleverism.com](http://www.cleverism.com)



## APPENDIX

### Appendix I Detailed information about collected data

S.No.	Company Name ID	Budget Year	GOP	ICP	RCP	DPO	CCC	lnSales	DtR	GiS
1	A	2008	0.12	232.19	47.84	144.70	135.33	7.96	4.25	0.52
2	A	2009	0.15	238.80	62.15	47.56	253.39	8.09	3.00	0.36
3	A	2010	0.38	210.65	45.99	38.15	218.49	8.45	2.42	1.30
4	A	2011	0.35	305.61	73.18	102.31	276.48	8.51	1.85	0.14
5	A	2012	0.27	323.48	31.90	57.94	297.44	8.36	1.57	(0.29)
6	A	2013	0.36	243.18	70.67	89.04	224.81	8.58	1.31	0.66
7	A	2014	0.32	302.17	68.61	46.24	324.54	8.65	1.01	0.16
8	A	2015	0.33	267.51	78.55	34.99	311.07	8.70	0.89	0.14
9	C	2008	(0.08)	77.97	50.42	1.31	127.08	7.45	0.62	-
10	C	2009	0.08	73.34	31.79	18.40	86.73	7.80	0.60	1.25
11	C	2010	0.08	116.57	46.11	9.73	152.95	7.78	0.69	(0.04)
12	C	2011	0.12	102.19	54.16	39.41	116.94	7.96	0.73	0.51
13	C	2012	0.27	98.58	31.15	6.51	123.22	8.20	0.42	0.73
14	C	2013	0.36	125.92	102.93	47.15	181.70	8.41	0.52	0.63
15	C	2014	0.29	210.73	123.19	52.89	281.03	8.40	0.56	(0.03)
16	C	2015	0.22	123.89	49.82	49.29	124.42	8.32	0.53	(0.16)
17	E1	2008	0.09	287.55	14.71	154.40	147.86	7.23	0.79	(0.12)
18	E1	2009	0.05	358.80	9.18	211.75	156.23	7.14	0.87	(0.20)
19	E1	2010	(0.08)	365.43	9.04	187.27	187.20	7.06	0.98	(0.16)

20	E1	2011	(0.04)	428.16	-	173.15	255.01	6.93	0.69	(0.26)
21	E1	2012	0.01	365.75	1.20	426.46	(59.51)	7.00	0.21	0.19
22	E1	2013	0.16	240.38	11.18	72.80	178.76	7.45	0.08	1.80
23	E1	2014	0.16	252.84	5.02	70.71	187.15	7.58	0.10	0.34
24	E1	2015	0.33	314.42	5.32	64.77	254.97	7.64	0.09	0.15
25	E2	2008	0.16	287.55	101.90	1.99	387.46	8.10	0.23	0.11
26	E2	2009	0.13	358.80	35.51	0.70	393.61	8.12	0.24	0.06
27	E2	2010	0.15	365.43	44.08	1.34	408.17	8.16	0.28	0.09
28	E2	2011	0.15	428.16	69.94	92.70	405.40	8.19	0.39	0.07
29	E2	2012	0.16	365.75	72.86	65.39	373.22	8.24	0.35	0.14
30	E2	2013	0.17	240.38	93.50	67.32	266.56	8.35	0.36	0.27
31	E2	2014	0.17	252.84	81.21	100.49	233.56	8.37	0.37	0.06
32	E2	2015	0.11	314.42	232.14	110.52	436.04	8.30	0.47	(0.15)
33	F	2008	0.20	286.76	31.63	18.75	299.64	6.71	1.51	1.20
34	F	2009	0.20	308.67	3.71	16.74	295.64	6.75	1.40	0.08
35	F	2010	0.22	331.47	18.69	15.99	334.17	6.89	1.35	0.39
36	F	2011	0.20	253.44	17.46	16.67	254.23	6.99	1.35	0.27
37	F	2012	0.18	245.71	1.28	9.73	237.26	6.88	1.44	(0.23)
38	F	2013	0.30	520.05	64.34	482.04	102.35	7.34	0.89	1.88
39	F	2014	0.63	336.82	12.69	108.21	241.30	7.55	0.58	0.62
40	F	2015	0.17	483.30	26.02	12.99	496.33	7.15	0.37	(0.60)

## Appendix II Regression Analysis Result for Model I

### Variables Entered/Removed<sup>a</sup>

<i>Model</i>	<i>Variables Entered</i>	<i>Variables Removed</i>	<i>Method</i>
1	GiS, lnSales, DtR, DPO, ICP, RCP <sup>b</sup>		Enter

a. Dependent Variable: GOP

b. All requested variables entered.

### Model Summary<sup>b</sup>

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>
1	.662 <sup>a</sup>	.438	.336	.1137

a. Predictors: (Constant), GiS, lnSales, DtR, DPO, ICP, RCP

b. Dependent Variable: GOP

### ANOVA<sup>a</sup>

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	.333	6	.056	4.291	.003 <sup>b</sup>
	Residual	.427	33	.013		
	Total	.760	39			

a. Dependent Variable: GOP

b. Predictors: (Constant), GiS, lnSales, DtR, DPO, ICP, RCP

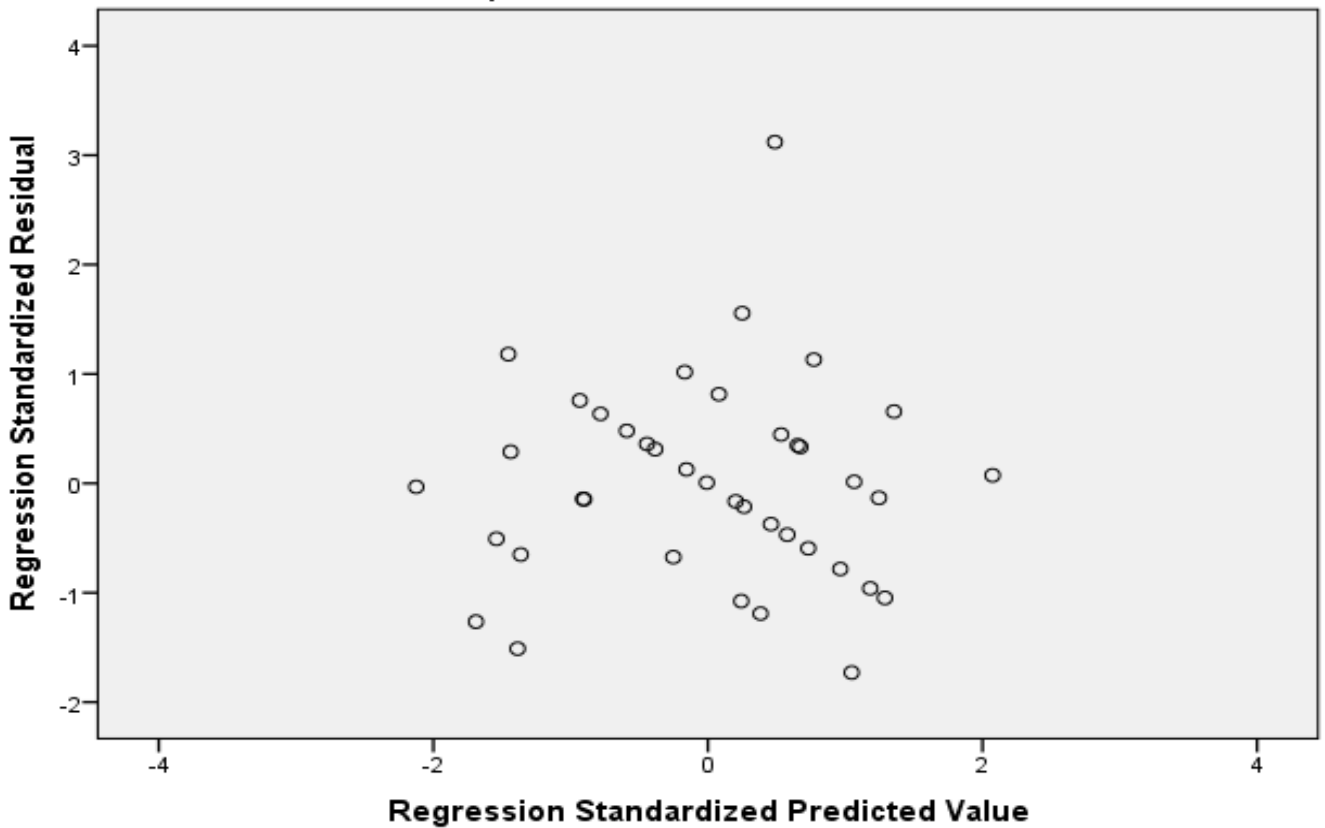
*Coefficients<sup>a</sup>*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.971099	.321		-3.026	.005		
	ICP	0.000502	.000	.382	2.386	.023	.663	1.508
	RCP	-0.000545	.001	-.172	-.998	.326	.576	1.736
	DPO	-0.000418	.000	-.306	-1.912	.065	.664	1.507
	lnSales	0.1351581	.041	.591	3.292	.002	.528	1.894
	DtR	0.0060024	.022	.036	.269	.790	.975	1.025
	GiS	0.1140779	.036	.446	3.168	.003	.858	1.165

a. Dependent Variable: GOP

**Scatterplot**

**Dependent Variable: GOP**



### Appendix III Regression Analysis Result for Model II

#### Variables Entered/Removed<sup>a</sup>

<i>Model</i>	<i>Variables Entered</i>	<i>Variables Removed</i>	<i>Method</i>
1	GiS, lnSales, DtR, ICP <sup>b</sup>		Enter

a. Dependent Variable: GOP

b. All requested variables entered.

#### Model Summary<sup>b</sup>

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	.593 <sup>a</sup>	.351	.277	.1187	1.19429

a. Predictors: (Constant), GiS, lnSales, DtR, ICP

b. Dependent Variable: GOP

#### ANOVA<sup>a</sup>

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	.267	4	.067	4.743	.004 <sup>b</sup>
	Residual	.493	35	.014		
	Total	.760	39			

a. Dependent Variable: GOP

b. Predictors: (Constant), GiS, lnSales, DtR, ICP

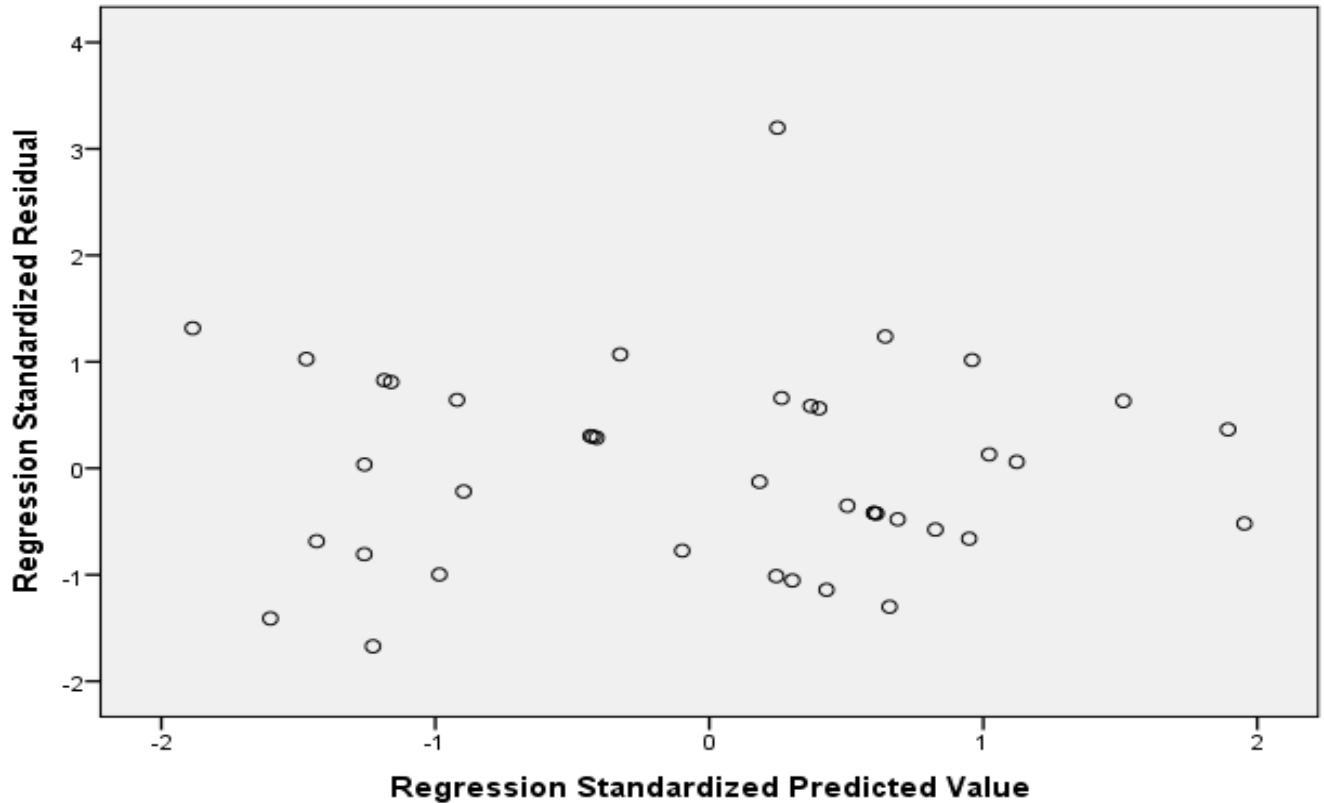
### *Coefficients<sup>a</sup>*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.822463	.277		-2.969	.005		
	ICP	0.0002846	.000	.217	1.498	.143	.885	1.129
	lnSales	0.1166587	.033	.510	3.575	.001	.910	1.099
	DtR	0.0073217	.023	.043	0.315	.754	.980	1.020
	GiS	0.0936323	.036	.366	2.632	.013	.957	1.045

a. Dependent Variable: GOP

### Scatterplot

Dependent Variable: GOP



## Appendix IV Regression Analysis Result for Model III

### Variables Entered/Removed<sup>a</sup>

<i>Model</i>	<i>Variables Entered</i>	<i>Variables Removed</i>	<i>Method</i>
1	RCP, DtR, GiS, lnSales <sup>b</sup>		Enter

- a. Dependent Variable: GOP  
 b. All requested variables entered.

### Model Summary<sup>b</sup>

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	.574 <sup>a</sup>	.329	.253	.1207	0.89092

- a. Predictors: (Constant), RCP, DtR, GiS, lnSales  
 c. Dependent Variable: GOP

### ANOVA<sup>a</sup>

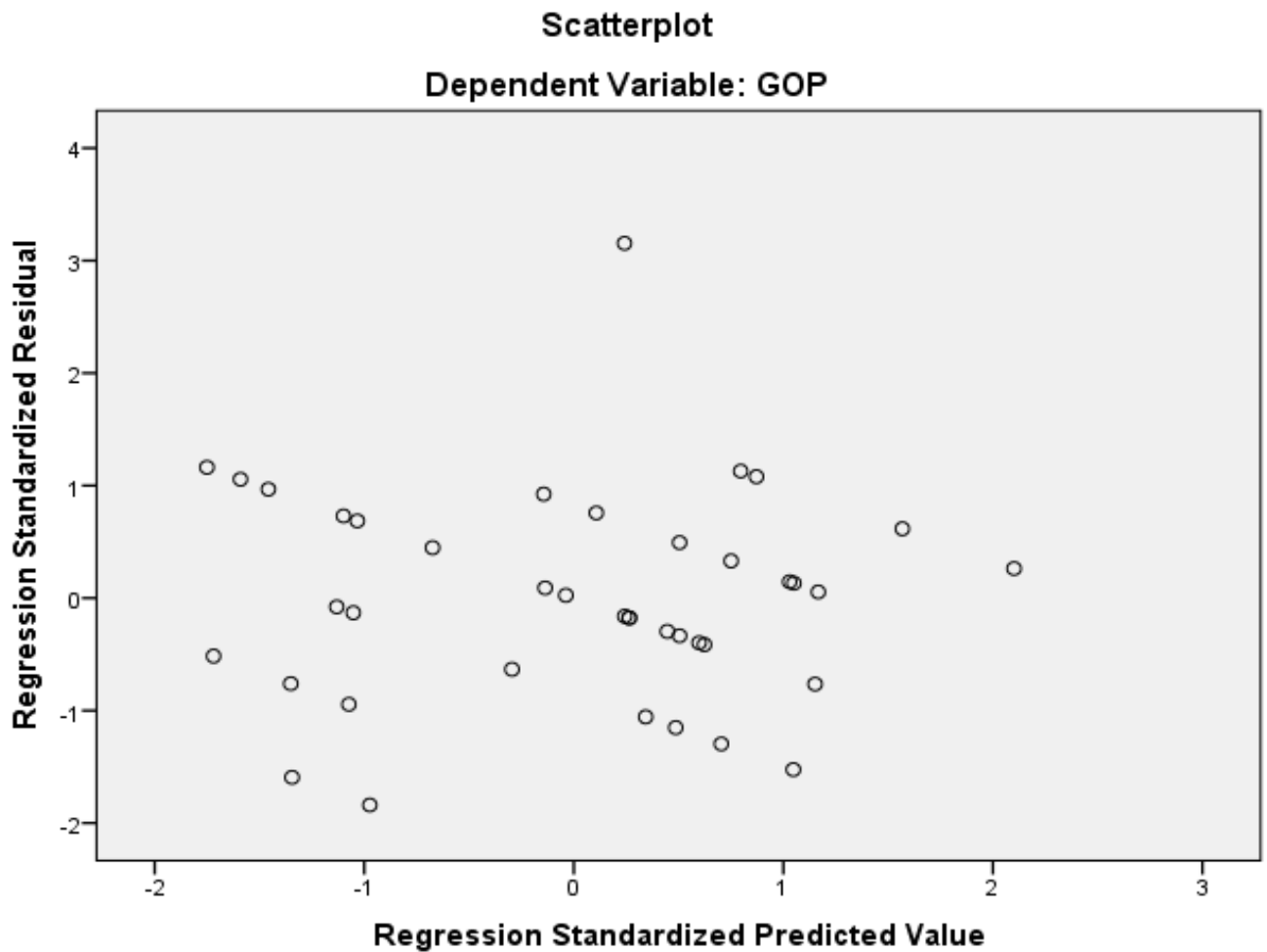
<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	0.2503107	4.000	0.06257768	4.297	.006 <sup>b</sup>
	Residual	0.5096893	35.000	.015		
	Total	0.76	39.000			

- a. Dependent Variable: GOP  
 b. Predictors: (Constant), RCP, DtR, GiS, lnSales

### *Coefficients<sup>a</sup>*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.80371	.304		-2.640	.012		
	lnSales	0.1287178	.041	.563	3.119	.004	.588	1.700
	DtR	0.0039249	.024	.023	.166	.869	.977	1.023
	GiS	0.083074	.036	.325	2.325	.026	.981	1.020
	RCP	-0.000579	.001	-.182	-1.007	.321	.586	1.706

a. Dependent Variable: GOP





**Appendix V Regression Analysis Result for Model IV**

***Variables Entered/Removed<sup>a</sup>***

<i>Model</i>	<i>Variables Entered</i>	<i>Variables Removed</i>	<i>Method</i>
1	DPO, DtR, GiS, lnSales <sup>b</sup>		Enter

a. Dependent Variable: GOP

b. All requested variables entered.

***Model Summary<sup>b</sup>***

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	.571 <sup>a</sup>	.326	.249	.1210	0.93657

a. Predictors: (Constant), DPO, DtR, GiS, lnSales

b. Dependent Variable: GOP

***ANOVA<sup>a</sup>***

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	0.2477037	4.000	0.06192593	4.231	.007 <sup>b</sup>
	Residual	0.5122963	35.000	.015		
	Total	0.76	39.000			

a. Dependent Variable: GOP

b. Predictors: (Constant), DPO, DtR, GiS, lnSales

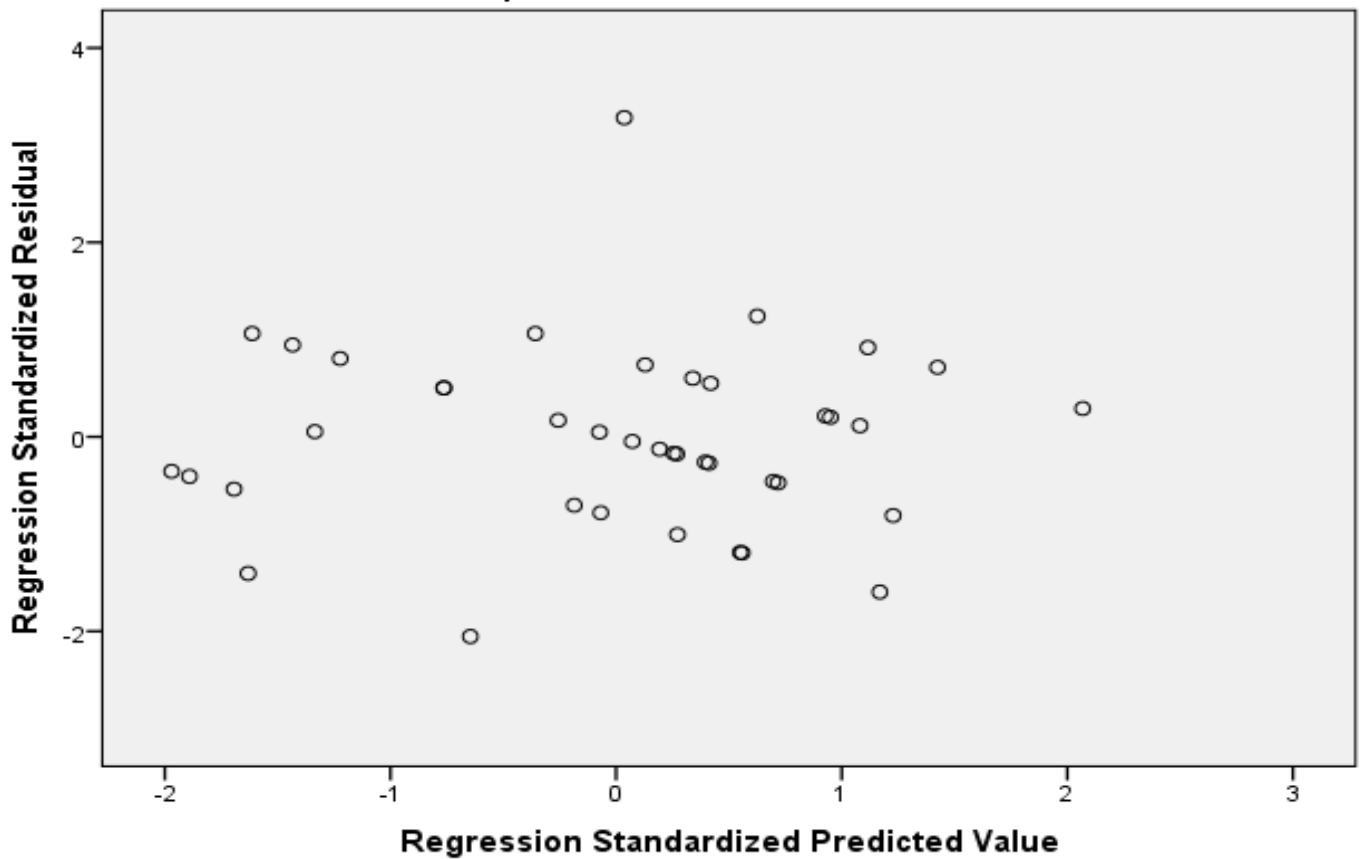
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.552295	.262		-2.111	.042		
	lnSales	0.0943053	.033	.412	2.869	.007	.932	1.073
	DtR	0.0053096	.024	.031	.224	.824	.982	1.018
	GiS	0.0917026	.037	.359	2.509	.017	.942	1.061
	DPO	-0.000183	.000	-.134	-0.912	.368	.895	1.117

a. Dependent Variable: GOP

**Scatterplot**

**Dependent Variable: GOP**



**Appendix VI Regression Analysis Result for Model V**

***Variables Entered/Removed<sup>a</sup>***

<b>Model</b>	<b>Variables Entered</b>	<b>Variables Removed</b>	<b>Method</b>
1	CCC, DtR, lnSales, GiS <sup>b</sup>		Enter

a. Dependent Variable: GOP

b. All requested variables entered.

***Model Summary<sup>b</sup>***

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.620 <sup>a</sup>	.384	.314	.1156

a. Predictors: (Constant), CCC, DtR, lnSales, GiS

b. Dependent Variable: GOP

***ANOVA<sup>a</sup>***

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	.292	4	.073	5.459	.002 <sup>b</sup>
	Residual	.468	35	.013		
	Total	.760	39			

a. Dependent Variable: GOP

b. Predictors: (Constant), CCC, DtR, lnSales, GiS

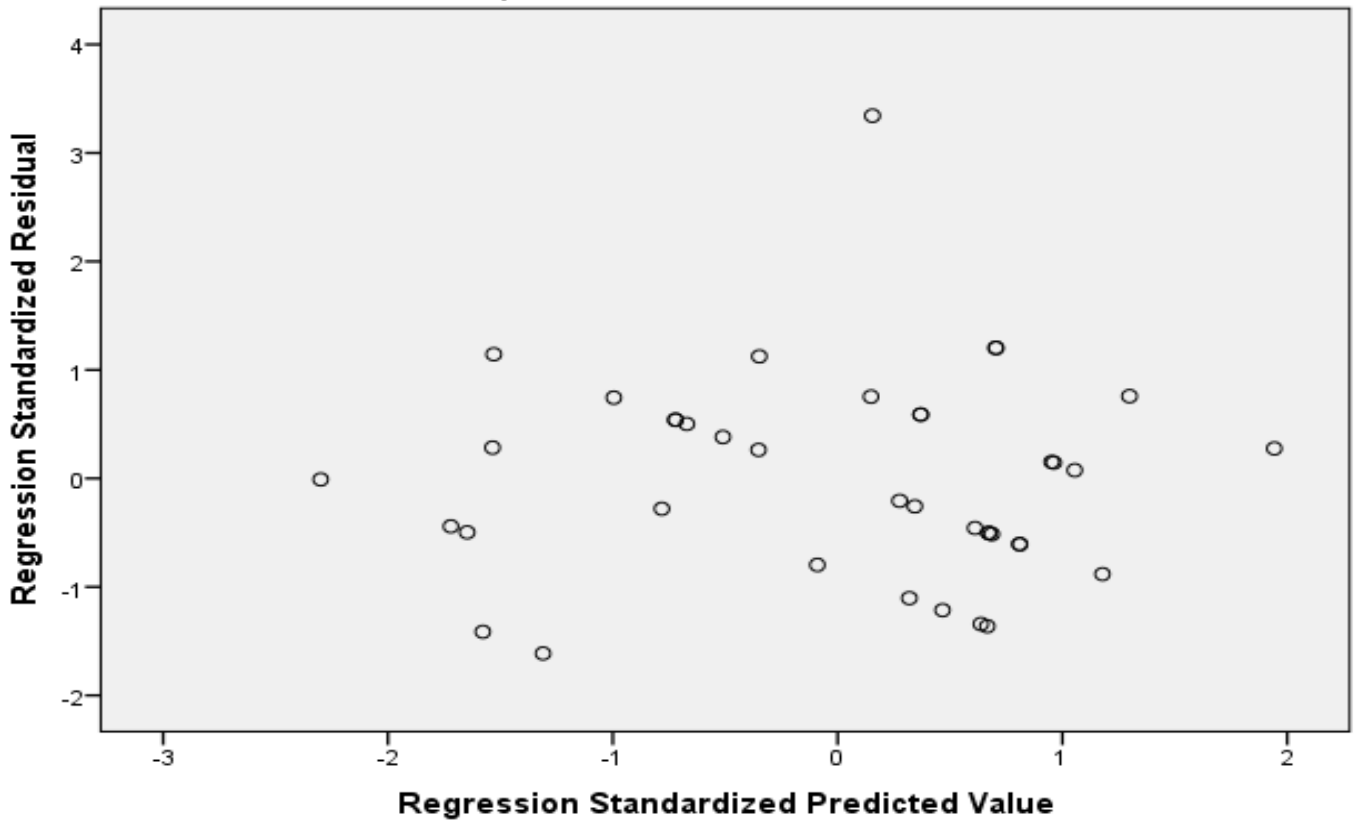
### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.618456	.238		-2.600	.014		
	lnSales	0.0882419	.031	.386	2.839	.007	.952	1.050
	DtR	0.0081658	.023	.048	.361	.721	.980	1.021
	GiS	0.1112473	.037	.435	3.046	.004	.862	1.160
	CCC	0.0003712	.000	.299	2.055	.047	.832	1.202

a. Dependent Variable: GOP

### Scatterplot

Dependent Variable: GOP



## Appendix VI I *List of Population*

<b>S.No</b>	<b>Manufacturer Name</b>	<b>Category</b>	<b>Region</b>
1	Addis Pharmaceuticals Factory	Pharmaceuticals	Tigray
2	Cadila Pharmaceuticals	Pharmaceuticals	Oromia
3	Ethiopian Pharmaceuticals Factory	Pharmaceuticals	Addis Ababa
4	Pharmacure Pharmaceuticals	Pharmaceuticals	Addis Ababa
5	East African Pharmaceuticals	Pharmaceuticals	Addis Ababa
6	Medsol Pharmaceuticals	Pharmaceuticals	Addis Ababa
7	Julphar Pharmaceuticals	Pharmaceuticals	Addis Ababa
8	Fawes Pharmaceuticals	Pharmaceuticals	Addis Ababa
9	Sino-Ethiopia Associate Africa	Pharmaceuticals	Oromia
10	Rx-Africa Pharmaceuticals	Pharmaceuticals	Oromia
11	Addis Pharmaceuticals IV line	Pharmaceuticals	Addis Ababa

**Source:** From FMHACA, *register book of large and small scale manufacturing.*