IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF SELECTED TANNERY FACTORIES IN ETHIOPIA

A Thesis Submitted to the Department of Accounting and Finance for Partial Fulfillment of the Requirements for the Award of Degree of Master of Science in Accounting and Finance

BY:

GIRMA DINDAMO

ID.NO: Gsex/0127/06

ADVISOR

Dr. D. GURUSWAMY

DEPARTMENT OF ACCOUNTING AND FINANCE
SCHOOL OF BUSINESS AND ECONOMICS
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

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Declaration

I, the undersigned, hereby declare that the thesis work entitled "The impact of working capital management on the profitability of the selected tannery factories in Ethiopia" submitted by me for the award of Master of Science Degree in Accounting and Finance from Adama Science and Technology University, is my original work and it has not been submitted or presented for the award of any other degree or other similar titles at any other university or institution.

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Signature: _____

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Department: Accounting and Finance

School: Business and Economics

University: Adama Science and Technology

Abstract

The main objective of the study was to assess the impact of Working capital management on profitability of the selected tannery factories. The data was collected from financial statements reported for tax purpose to Federal and Regional Revenue Authority for the period 2006-2013. From the total of 29 tannery factories in Ethiopia, the study used data of only eight tannery factories by using a purposive sampling technique because the selected tannery factories had financial statement of the before 2006 and due to the accordance of their establishment before 2006 and the accessibility of tannery factories to the researcher. The study used explanatory research design in order to explain the relationships between variables and also to examine the impact of working capital management on profitability of selected tannery factories by evaluating the relationship among different variables. The independent variables applied in the study were average collection period, inventory conversion period and average payment period. The control variables were debt ratio, current ratio and firm size; on the other hand the dependant variable was profitability of the selected tannery factories measured by return on asset. The study used descriptive statistics, and balanced fixed effect panel regression to analyze the data. The findings of the study showed that average payment period and firms' size have significant positive relationship with profitability.

Keywords: *Working capital management, Profitability, selected tannery factories.*

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Girma Dindamo

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Acronyms and Abbreviation

ACP: Average Collection Period

APP: Average Payment Period

CCC: Cash Conversion Cycle

CCE: Cash Conversion Efficiency

CLRM: Classical Linear Regression Model

CR: Current Ratio

DIO: Days Inventory Outstanding

DPO : Days Payable Outstanding

DSO: Days Sales Outstanding

DR: Debt Ratio

DW: Durbin-Watson stat

DWC: Days of Working Capital

FS: Firms Size

FEM: Fixed Effect Model

ICP: Inventory conversion Period

ITID: Inventory Turnover in day

LOS: Logarithm of Sales

MOFED: Ministry Of Finance and Economic Development

NOP: Net Operating Profitability

NPM: Net Profit Margin OLS:

OPM: Operating Profit Margin

REM: Random Effect Model

ROA: Return on Asset

ROE: Return on Equity

SG: Sales Growth

WCM: Working Capital Management

CHAPTER ONE

INTRODUCTION

This chapter presents a general overview of the study. It starts from the background of the study followed by statement of the problem, objectives of the study, literature driven hypothesis of the study, significance of the study, scope of the study and limitations of the study and finally, organization of the paper is presented.

1.1Background of Study

In Ethiopian tannery factories are one of the main manufacturing economic sectors, which should be given attention for the development of the country. This manufacturing sector is one of the leading industries playing a significant role in the generation of foreign currency, which ultimately the country utilizes, for developing all the other sector of its economy (MOFED, 2011).

Currently, there are 29 tannery factories in Ethiopia, which are operational in the sector employing about 6000 workers. Globally the leather and leather products industries have witnessed considerable shifts in the location of tanning and leather manufacturing to developing countries like Ethiopia where production cost are lower and environmental regulation less stringent. Among other favorable opportunities the sector enjoys in the country, the global trend has also contributed significantly to the growth of the tannery industry in Ethiopia (MOFED, 2011).

Every business needs working capital; even including a business which is fully equipped with all types of fixed assets. This is because such business is bound to collapse without (i) adequate supply of raw materials for processing; (ii) cash to pay for wages, power and other costs; (iii) creating a stock of finished goods to feed the market demand regularly; and, (iv) the ability to grant credit to its customers all these require working capital. Working capital is thus like the lifeblood of a business (Lasher, 2006).

Working capital is considered to be life-giving force to a firm and managing working capital is one of the most important functions of corporate management. Working capital management (WCM) is the management of short-term financing requirements of a firm which includes maintaining optimum balance of working capital components such as receivables, inventory and payables and using the cash efficiently for day to day operations (Chandrabai and Rao, 2011).

According to (Smith, 1980), the efficient management of working capital is important from the point of view of liquidity and profitability as well as firm value. Poor management of working

capital results in unnecessary investment in unproductive assets or inadequate investment in current assets.

Working capital management efficiency is vital especially for manufacturing firms, where a major part of assets is composed of current assets (Nasar, 2007) and if directly affects the profitability and liquidity of firms.

Management of working capital refers to management of current assets and current liabilities. Current assets are cash and other resources such as short-term investments (Government and marketable securities), receivables, inventories and pre-paid expenses that companies reasonably expect to convert to cash or use up within one year or less (Jayarathnea, 2014). This means that current assets are all of the company's assets that can be easily liquidated or converted in to cash to be used to pay off current liabilities within a span of a year or less.

Since the objectives of financial decision making is to maximize shareholders wealth, it is necessary to generate sufficient profits. But, maintaining liquidity of the firm is also an important objective. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Thus, strategy of firm must maintain a balance between these two objectives of the firms. If firms do not care about profit, they cannot survive for a longer period. In other round, if firms do not care about liquidity, they may face the problem of insolvency or bankruptcy (Mulualem, 2011).

The way working capital is managed has significant impact on profitability of the firm (Deloof 2003). Optimization of working capital balance means minimizing the working capital requirements and realizing maximum possible revenues. Efficient WCM increases firms' free cash flow, which in turn increases the firms' growth opportunities and return to shareholders.

According to (Mania, 2011), the extent to which profits can be earned will naturally depend up on the magnitude of the sale. However sales do not convert in to cash instantly, there is invariably a timing lag between Operating cycle which is a continuing flow from cash to suppliers, to inventory, to account receivable and back in to cash. This circulation is very fast in financial enterprises which have no commodities to sale and have probably less working capital requirement but for manufacturing firms, there is a time lag between purchase of raw materials, sale of finished goods and collection of receivables from customers. As the receivables outstanding are not collected at proper time, manufacturing firm will be in shortage of working capital and it may not be in a position to meet obligations as they come due and

require fairly large amounts of working capital, this shows that working capital requirement varies from industry to industry depending on their asset structure (Abreham, 2013).

Considering Effective working capital management is very important due to its significant effect on profitability of firms because proper optimization of working capital balance means minimizing the working capital requirement and realizing maximum possible revenues (Ganesan, 2007). If a firm minimizes its investment current assets, the resulting fund scan be invested in value- creating profitable projects, so it can increase the firm's growth and investment return of the manufacturing companies. Therefore, there must be a tradeoff between these two objectives of the firms. One objective should not be at cost of the other because both have their importance. If enterprise does not care about profit, it cannot survive for a longer period. On the other hand, if enterprise does not care about liquidity, it may face the problem of insolvency or bankruptcy. The other problem prevail in manufacturing firms, there is a time lag between purchase of raw materials, sale of finished goods and collection of receivables from customers. As the receivables outstanding are not collected at proper time, the firm will be in shortage of working capital and it may not be in a position to meet obligations as they due. On the other hand holding too much working capital bears opportunity costs which otherwise generate profit if it is invested on profitable assets (Richard et al, 2001). It implies that inefficient management of working capital increases the cost of running the business, which eventually results in decreasing of profits.

In general, working capital management is not only improving financial performance in today's cash-strapped and uncertain economy, but it is the question of meeting firm's day to day operation. Hence, it may have both negative and positive impact on firm's profitability, which in turn, has negative and positive impact on the shareholders' wealth (Mulualem, 2011), therefore, the main purpose of this study is to analyze and evaluate how the working capital management impact on profitability of selected tannery factories.

1.2. Statement of the Problem

Sufficient amount of working capital is very essential for smooth running of an enterprise. The goal of working capital management is to manage the firm's current assets and current liabilities in such a way that satisfactory level of working capital is maintained. Both excessive working capital and inadequate working capital impair the profitability and general health of the firms. Making profit is not necessarily an indication of effective management of its working capital because a company can be capable with assets and profitability but short of liquidity if its assets cannot readily be converted in to cash. As such there will be shortage of cash available for the

firm's utilization when due time reached (Alu, 2012). Therefore, working capital should be managed in such a way that by maintaining profit without affecting liquidity. Most business organizations do not hold the right amount of stocks, debtors and cash; due to this the firm is unable to meet its manufacturing short term obligations and its upcoming operational needs. This shows that failure of any business is due to poor management and absence of management skill (Abreham, 2013).

The impact of working capital management on firm's profitability has been studied by different researchers in different parts of the world (Filipa, 2011; Muoki, 2012; Garcia, 2011; Deloof, 2003; Mathuva, 2011 and Kirawa, 2013). However, these studies are made on large firms operating within developed money and capital markets of developed countries. However, there are inconsistencies between the findings of these studies. For instance the study conducted by Filipa (2011), and Deloof (2003), found strong negative cause and effect relationship between average collection period, average payment period, inventory turnover period with firm's profitability. Other researchers like Mathuva (2011), Kirawa (2013), and Muoki (2013), found positive relationship with average collection period and average payment period. A study conducted by other researcher Michael (2012), found negative but not significant relationship between inventory turnover period and average payment period with profitability.

In Ethiopian context, researches that are conducted on impact of working capital management on firm's profitability, based on private limited companies, and small, medium scale enterprises and sole proprietorship manufacturing firms (Mulualem, 2011; Ephrem 2011; Nuru, 2012; Abraham, 2013; Natarajan & Getachew 2013, and Tirngo Dinku, 2013). According to Mulualem(2011), showed that there is statistically negative relationship between average collection period, inventory conversion period and average payment period with profitability. Nuru Mohammed (2011), found that there is a negative relationship between average payment period, cash conversion cycle and liquidity with profitability. No significant relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand the finding shows that a high significant positive relationship between current liability to total assets ratio and profitability. Ephrame (2011), revealed that average payment period has significant negative relationship with profitability and also negative relationship between liquidity and profitability of firms. The study also finds that firm's size have positive but not significant relationship with net operating profitability. Abraham (2013), found that average payment period and size of the firm have positive and significant impact where as sales growth was negative and significantly related with related with profitability. Average collection period and profitability has negative relationship but debt ratio and profitability has negative

and significant relationship while current ratio has no significant relationship with profitability. Natarajan & Getachew (2013), revealed that average collection period has a negative and highly significant impact on profitability of the firms. Debt Ratio has a positive but significant impact on profitability of the union but and firms' size has significant impact on profitability of the firm. Tirngo Dinku (2013), showed that there is strong positive relationship average payable period and profitability. However the average payable period, inventory conversion period and average collection period have a significant negative relationship with profitability.

Therefore, absence of clear-cut direction of the relationship between any of the variables of working capital management and firms' profitability as well as the previous studies studied based on private limited companies, and small, medium scale enterprises and sole proprietorship manufacturing firms. As result the researcher aimed to examine how the working capital management can impact on profitability of tannery factories in Ethiopia. To the best of researcher knowledge no research has been conducted in this area particularly in Ethiopia based on the availability of literature and the current study is expected to fill the gap on this area.

1.3. Objectives of the Study

1.3.1. General Objective

The main objective of the study was to assess the impact of working capital management on the profitability of selected tannery factories in Ethiopia.

1.3.2. Specific Objectives

- To examine the relationship between average collection period and profitability.
- To establish the relationship between average payment period and profitability
- To find out the relationship between inventory conversion period and profitability
- To identify the relationship between current ratio and profitability
- To assess the relationship between debt ratio and profitability
- To examine the relationship between firms size and profitability

1.4. Hypothesis of the study

On the basis of the above stated objectives the following hypothesis were formulated.

H_o: 1 There is no significant relationship between average collection period and profitability of the selected tannery factories in Ethiopia.

H_1:1: There is a positive/negative relationship between average collection period and profitability of the selected tannery factories in Ethiopia.

H_0:2. There is no relationship between Inventory conversion period (ICP) and profitability of the selected tannery factories in Ethiopia.

H_1:2 There is a negative/positive relationship between Inventory conversion period (ICP) and profitability of the selected tannery factories in Ethiopia.

H_0:3 There is no relationship between average payment period and profitability of the selected tannery factories in Ethiopia.

H_1:3 There is a positive/negative relationship between average payment period and profitability of the selected tannery factories in Ethiopia.

H_0:4. There is no relationship between liquidity and profitability of the selected tannery factories in Ethiopia

H_1:4.There is a negative/positive relationship between liquidity and profitability of the selected tannery factories in Ethiopia.

H_0:5.There is no relationship between debt used by manufacturing firms and profitability of the selected tannery factories in Ethiopia.

H_1:5. There is a negative/positive relationship between debt used and profitability of the selected tannery factories in Ethiopia,

H_0:6. There is no relationship between the size and profitability of the selected tannery factories in Ethiopia.

H_1:6. There is a positive /negative relationship between the size and profitability factories in Ethiopia.

1.5. Significance of the study

The findings of this study will have great contribution to the owners, prospective customers and creditors of the selected tannery factories as it provides important information regarding profitability in relation to efficient working capital management. It also provides general information about impact of working capital management on profitability, which will be used for policymakers to contribute incentives for the sector and decision making by the management of selected tannery factories. Furthermore, the result of this study informs and

gives initiation for other researchers to undertake further and detailed studies on the impact of working capital management on profitability.

1.6. Scope of the Study

This study was mainly focused on the impact of working capital management on profitability of tannery factories in Ethiopia. In Ethiopia there are 29 tannery factories but the total of eight tannery factories were selected using purposive sampling method. Finally the study took only eight years data starting from 2006- 2013 fiscal years.

1.7. Limitations of the Study

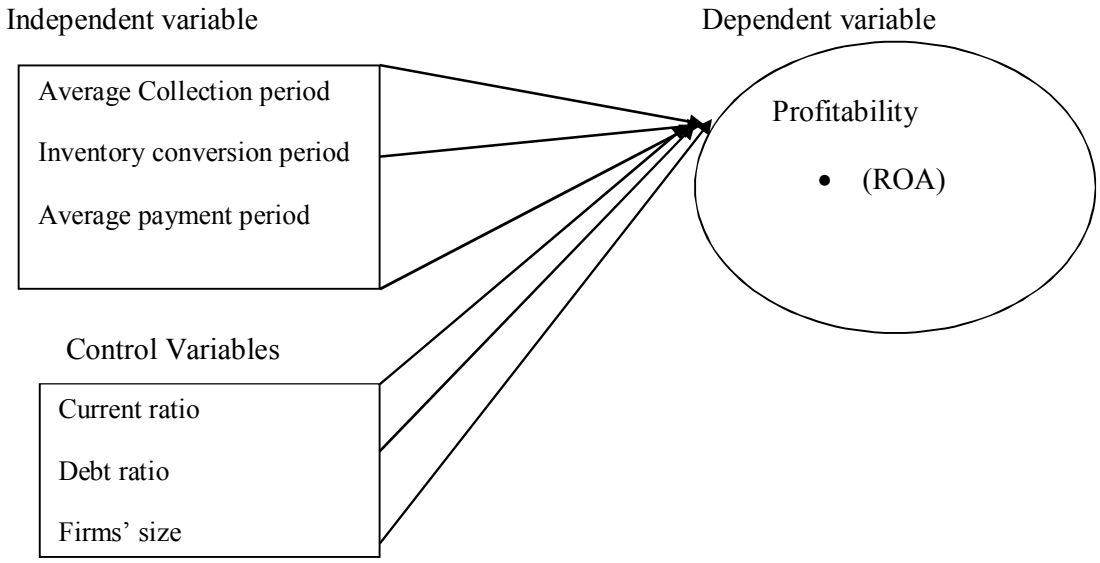
The study was limited to analysis of components of working capital management, namely average collection period, average payment period, inventory conversion period, current ratio, debt ratio, firm's size and their effects on profitability of the tannery factories. Lack of willingness of the focal persons in the organizations to give secondary data and also the study excluded other variables, the result may not generate as whole and this affects the output. Moreover, shortage of literature on the area in Ethiopian context was narrowed the study output.

1.8. Organization of the paper

The paper was organized into five chapters. The first chapter deals with background of the study, statement of the problem, research objectives, hypothesis, significance of the study, scope of the study, limitation of the study and organization of the research report. The second chapter is exclusively devoted to the review of related literature on impact of working capital management from global and Ethiopian perspectives. Chapter three indicates the methodology used in the study: the chapter comprises research design, sampling, data collection, data analyzing instruments and the description of applied regression model, result and Discussion of the findings of the study is described in chapter four. And the last chapter presents the conclusions drawn from the findings and recommendations.

1.9. Conceptual Framework

The conceptual framework is the systematic diagram that depicted the independent and dependant variables included in the study. It is a system of concepts, assumptions, expectations, beliefs and theories that support and inform research. It informs either graphically or in narrative form of the main things to be studied. Therefore, this study applied the following conceptual framework (Miles and Huberman, 1994).



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CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents the review of related literatures. The chapter is divided into two parts. The first part presents the theoretical review of literatures related topic of the study. The second part discusses the empirical literatures studied by different researchers from globally and Ethiopia point of view.

2.1. Theoretical Literature

2.1.1. Definition and Concept of Working Capital

The term working capital originated with the old Yankee peddler, who would load up his wagon with goods and then go off on his route to peddle his wares (Brigham and Gapenski, 1996). The merchandise was called working capital because it was what he actually sold, or turned over, to produce the profits. The wagon and horse were the fixed assets. The peddler generally owned the horse and wagon so, they are financed with equity capital. But, he borrowed the funds to buy the merchandise. These borrowing were called working capital loan, they had to be repaid after each trip to demonstrate to the bank that the credit was sound. If the peddler was able to repay the loan, then the bank would make another loan, and banks that followed this procedure were said to be employing sound banking practices.

Working capital is considered to be life-giving force to a firm and managing working capital is one of the most important functions of corporate management. Working capital management (WCM) is the management of short-term financing requirements of a firm which includes maintaining optimum balance of working capital components such as receivables, inventory and payables and using the cash efficiently for day to day operations (Chandrabai and Rao, 2011). Efficient working capital management requires determining an optimal level of working capital, financing it imaginatively and exercising control over it (Sundar, 2012).

Working capital measures the net position of firms' liquid assets, both real and financial, and it is commonly used by accountants to measure a firm's liquidity. It is defined as current assets less current liabilities. The three major components of current assets are accounts receivables, inventories, and cash and cash equivalents. Inventories are often divided further into materials, work- in-process, and finished goods. The former two categories are more volatile than finished- goods inventories. Current liabilities consist primarily of accounts payable and debt due in less than one year (Fazzari and Petersen, 1993).

Optimization of working capital balance means minimizing the working capital requirements and realizing maximum possible revenues. Efficient working capital management (WCM) increases firms' free cash flow, which in turn increases the firms' growth opportunities and return to shareholders. Despite firms' traditional focus on long term capital budgeting and capital structure, the recent trend is that many companies across different industries focus on WCM efficiency (Ganesan, 2007).

The main purpose of this chapter is reviewing related literature on working capital management and its impact on profitability of a firm. The chapter again rearranged into two sections. The first section presents the theoretical review of working capital management while the second section reviews the empirical evidence about working capital management concludes on the literature review and explains the knowledge gap.

2.1.2 Two Dimensional Approaches of Working Capital Management

The functions of managing working capital can be classified as managing working capital internally (the first dimension) and managing working capital externally (the second dimension). The first dimension deals with the management of level of current assets, current liabilities and operations (that affect the balances of current assets and liabilities) as well as the management of cash payments and cash receipts and the second dimension deals with the management of firms relation with their customers and suppliers (Baig, 2008).

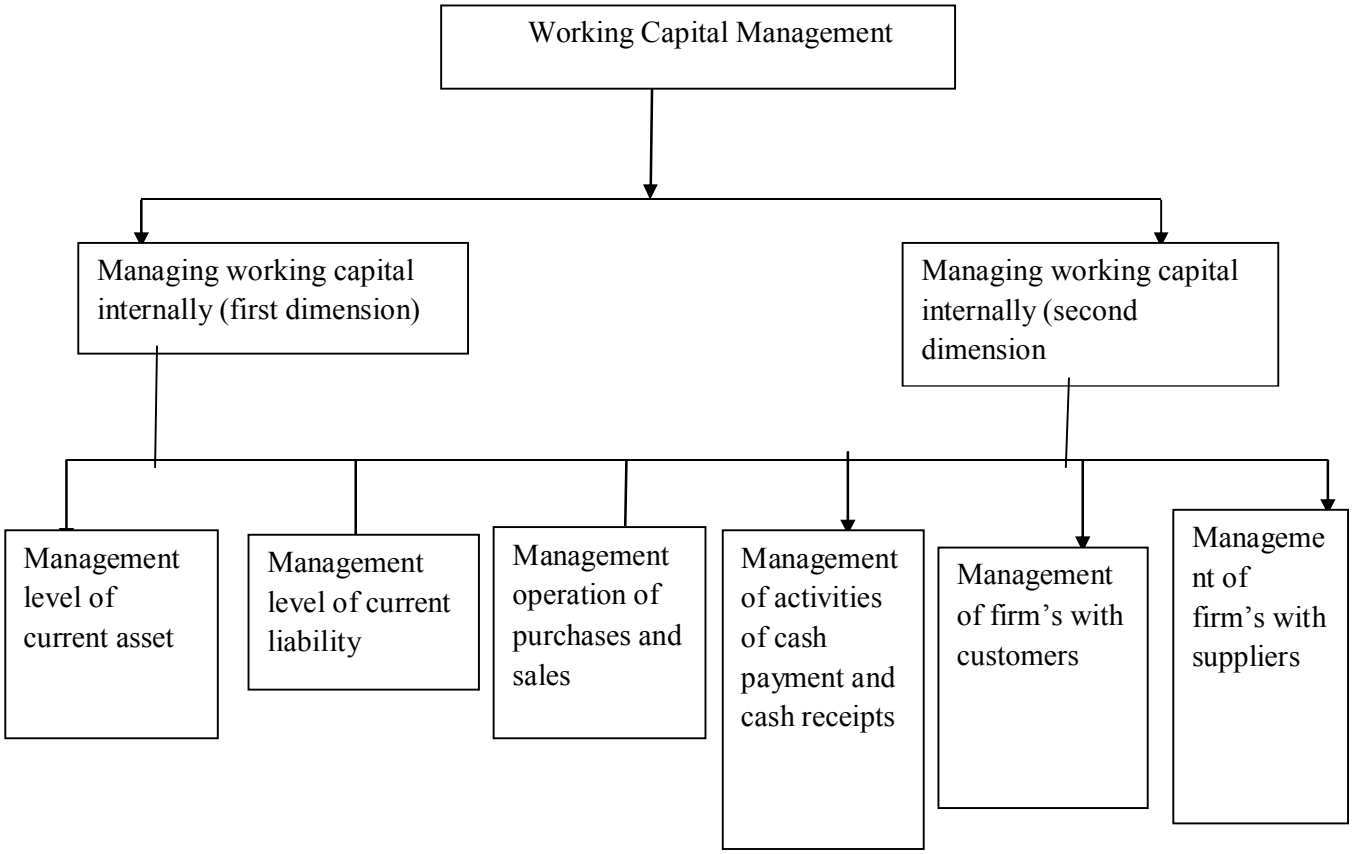
The function of managing working capital externally, second dimension, involves the management of relations (co-operation) of firms with their forward linkages (customers) and backward linkages (suppliers). As not a single firm can survive independently, it should make transactions with the other firms such as suppliers and customers. Any transaction between the two firms has costs that can only be minimized by mutual co-operation for both parties. Therefore, it requires the need for development of an appropriate inter-firm managerial governance pattern. With the help of this method, transaction costs for both the firms may decrease. Hence, this may increase the value of the firm. There are two types of costs that are associated with each transaction; 1) working capital balances (change in the balances of current assets and liabilities caused by the transaction) and 2) inter-firm transactional relationship. Therefore, total cost of a transaction is aggregate of these costs. Cost of working capital balances is subjected to control in managing working capital internally (Baig, 2008).

If a firm can effectively design the purchasing and sales policies, it would have other direct effect in a firm's external value chain as credit purchasing and payment as well as credit selling and collection policies have. In the management of the activities of cash payment, the firm has to slow-down cash payments and pay debts as late as it is reliable with maintaining its credit standing with suppliers so that it can make the most efficient use of the money it has. In the management of cash receipt, the firm has to speed-up and control collection of cash. A firm has to speed-up the collection of sales so that it earns income and uses the money quicker; to invest or pay bills and save future expenses (Ganesan, 2007).

The same study by Baig (2008 cited Williamson, 1985) showed that Aggregate cost of transaction of a firm may increase if both the firms in transaction seek to maximize their own benefits without considering the effects of their actions on other transaction firm. But there are some costs, under the head of inter-firm relationship costs, which can be avoided if the two parties coordinate their common operations. It can be achieved if firms can assess their transaction and decide on the appropriate inter-firm managerial governance pattern. It will reduce the aggregate costs of firms to a level below the sum total of costs of both firms without cooperation.

Therefore, the environment of cooperation (inter firm managerial governance pattern) between transacting parties may result at a concomitant benefit of creating value to both firms by reducing inter-firm transactional relationship cost.

Figure 2.1: Two-dimensional Approach of Working Capital Management



Source: Baig, 2008

2.1.3 Components of Working Capital

Current assets and liabilities are collectively known as working capital. One of important current assets is accounts receivable. Accounts receivable arise because companies do not usually expect customers to pay for their purchases as they arise. The bills that are unpaid are a valuable asset that companies expect to be able to turn into cash within short period of time. According to Brealey et al (2001), the bulk of accounts receivable consists of unpaid bills from sales to other companies and are known as trade credit. The remainder arises from the sale of goods to the final consumer. These are known as consumer credit. Another important current asset is inventory. Inventories consist of raw materials; work in process and finished goods. The remaining current assets are cash and marketable securities. The cash consists of bills, but most of the cash is in the form of bank deposits. These may be demand deposits (money in checking accounts that the firm can pay out immediately) and time deposits (money in savings accounts that can be paid out only with a delay)(Brealey et.al, 2001),.

The principal marketable security is commercial paper (short-term unsecured debt sold by other firms). And other securities include Treasury bills, which are short-term debts sold by the government (ibid). There are always advantages to holding large amounts of ready cash—they reduce the risk of running out of cash and having to borrow more on short notice. However, there is a cost to holding idle cash balances rather than putting the money to work earning interest. On the other hand, Current liabilities are defined as items requiring payment within one year; hence, payables and accruals are classified as current. Other current liabilities include notes payable, short-term loans, and any long-term debt that's within a year of its due date (Baig, 2008).

2.1.4. Factors determining working capital requirements

The total working capital required by a firm is determined by a wide variety of factors. These factors affect different organizations differently and they also vary from time to time. In general factors influencing working capital decisions of a firm may be classified in to two, such as internal factors and external factors (Mulualem, 2011). The internal factor includes nature of business, size of business, firm's product policy, credit policy, and growth and expansion of the business while external factors include business fluctuations, changes in the technology, infrastructural facilities, import policy and the taxation policy. Each factor is discussed below:

a) Internal factors

The companies should take these factors in to account while determining the optimal level of working capital needed for the business by considering inherent factors related to the business and they are presented as follows:

1) Nature and size of the business: The working capital requirements of a firm are basically influenced by the nature and size of the business. Size of the firm may be measured in terms of the scale of operations. A firm with larger scale of operations needs more working capital than a small firm. In the same way, the nature of the business influences the working capital decisions. Trading and financial firms have less investment in fixed assets. However, they require a large sum of money to be invested in working capital. Retail stores business units require larger amount of working capital, while public utilities need less working capital and more funds to invest in fixed assets.

2) Firm's production policy: The firm's production policy (manufacturing cycle) is an important factor to decide the working capital required for a firm. The production cycle starts

with the purchase of raw materials and use of same and ends with the production of finished goods. On the other hand, production policy may be uniform production policy or seasonal production policy, and it also influences the working capital decisions. If the company maintains continues or uniform production policy, there is a need of regular working capital. If the production policy of the company depends upon the situation or conditions like season, working capital requirement will depend upon the conditions laid down by the company and changing demand.

3) Firm's credit policy: The credit policy of a firm influences credit policy of working capital. A firm that follows liberal credit policy to all customers requires more amount of funds. On the other hand, the firm following strict credit policy and grant credit facilities to few potential customers will require less working capital. The credit terms to be granted to customers may depend up on the norms of the industry to which the firm belongs.

4) Growth and expansion of business: Working capital requirement of a business firm tend to increase in correspondence with growth in sales volume and fixed assets. A growing firm may require more funds to invest in fixed assets in order to sustain its growing production and sales. This in turn, increases investment in current assets to support increased scale of operations. Therefore, a growing firm requires additional funds on continuous basis.

b) External factors

Sometimes firm's working capital requirements are affected by external factors which cannot be controlled by the business's internal administration and management and they are discussed as follows:

1) Business fluctuations: Most firms experience fluctuations in demand for their products and services. These factors affect the working capital requirements. When there is growth in the economy, sales will increase, and the firm's investment in inventories and book debts will also increase. Under economic growth, additional investment in fixed assets may be made by some firms to increase their productive capacity. This requires additional funds. On the other hand when, there is a decline in economy, sales will also decline and, the firms try to reduce their short-term borrowings. Similarly, the seasonal fluctuations will also affect the working capital requirement of a firm.

2) Changes in the technology: The technological changes and developments in the area of production can have immediate effects on the need for working capital. If the firm want to replace a new machine in the place of old one, the new system can utilize less

expensive raw materials, and the inventory needs of the firm may be reduced. Therefore, the working capital needs may be also affected.

3) Taxation policy: The amount of tax to be paid is determined by the prevailing tax regulations and very often taxes payments have to be made in advance. Therefore, the tax policies o f the government will influence the working capital decisions. If the Government follows regressive taxation policy that imposes heavy tax burdens on business firms, they will be left with little profits for distribution as well as retention purpose. As a result, the firm is expected to borrow additional funds to meet its increased working capital requirement. If there is a liberalized taxation policy, the pressure on the requirement of working capital is reduced. In general, as tax liability increases, the level of working capital required will increases and vice versa (Becker, 2008).

2.1.5. Types of Working Capital

The need for current assets arises because of the operating cycle. The operating cycle is a continuous process and, therefore, the need for current assets is felt continuously. But the magnitude of current assets needed is not always in the same, it increases and decreases over time. However there is always a minimum level of current assets which is continuously required by the firm to carry on its business operations. This minimum level of current assets is referred to as permanent, or fixed, working capital. Based on time, working capital may be classified into two important types as permanent and temporary working capital (Paramasivan and Subramanian, 2009) and briefly discussed below.

Permanent Working Capital: - Is also known as fixed working capital. It is a capital; the business concern must maintain certain amount of capital at minimum level at all times. The level of permanent capital depends up on the nature of business. Permanent or fixed working capital will not change irrespective of time or volume of sales (Brigham and Houston, 2003).

Temporary Working Capital: - Any amount over and above permanent level of working capital is temporary, fluctuating or variable working capital. The position of required working capital is need to meet fluctuations in demand consequent up on change in production and sales as a result of seasonal changes .

2.1.6. Working Capital Policies

Because of the importance of working capital management, a firm needs to formulate policies concerning the various components of working capital. Key policy areas of working capital relate to the level of investment in working capital for a given level of operations and the extent to which working capital is financed from short-term funds such as bank overdrafts (Watson and Head, 2007).

A company should have working capital policies on the management of stock, debtors, cash and short-term investments in order to minimize the possibility of managers making decisions which are not in the best interests of the company. Examples of such suboptimal decisions are giving credit to customers who are unlikely to pay and ordering unnecessary stocks of raw materials. Sensible working capital policies will reflect corporate decisions on: the total investment needed in current assets, i.e. the overall level of investment; the amount of investment needed in each type of current asset, i.e. the mix of current assets; and the way in which current assets are to be financed. Working capital policies need to consider the nature of the company's business since different businesses will have different working capital requirements. A manufacturing company will need to invest heavily in spare parts and components and might be owed large amounts of money by its customers. A food retailer will have large stocks of goods for resale but will have very few debtors. The manufacturing company clearly has a need for a carefully thought out policy on debtor management, whereas the food retailer may not provide credit at all. Working capital policies also need to indicate the credit policies of a company's close competitors, since it would be foolish to lose business because of an unfavorable comparison of terms of the trade. Any fluctuations in the supply of or demand for goods and services, for instance, due to seasonal variations in business, should also be considered, as must the impact of a company's manufacturing period on its current assets.

An aggressive policy with regard to the level of investment in working capital means that a company chooses to operate with lower levels of stock, debtors and cash for a given level of activity /or sales. An aggressive working capital policy will increase profitability since less cash will be tied up in current assets, but it will also increase risk since the possibility of cash shortages or running out of stock (stock outs) is increase(Watson and Head, 2007).

A conservative and more flexible working capital policy for a given level of turn-over would be associated with maintaining a larger cash balance, even investing in short-term securities, providing more generous credit terms to customers and maintaining higher levels of stock. This type of policy will give rise to a lower risk of financial problems or stock problems, but at the expense of reducing profitability (Watson and Head, 2007).

A moderate policy would tread a middle path between the aggressive and conservative approaches. It should be noted that the working capital policies of a company can be characterized in to aggressive, moderate and conservative by only comparing them with

the working capital policies of similar companies. There are no absolute benchmarks of what may be regarded as aggressive or otherwise, but these characterizations are useful for analyzing the ways in which individual companies approach the operational problem of working capital management (Watson and Head, 2007).

2.1.7. Importance of Working Capital Management

In finance literature, there is a common opinion about the importance of working capital management. Explanations about why working capital management is significant for a firm generally focus on the relationship between efficiency in working capital management and firm profitability (Afza and Nazir, 2007; Christopher and Kamalavalli, 2009; Deloof, 2003). Efficient working capital management includes planning and controlling of current liabilities and assets in a way that avoids excessive investments in current assets and prevents from working with few current assets insufficient to fulfill the responsibilities. It aims at protecting the purchasing power of assets and maximizing the return on investment.

A research by Lamberson (1989) says a lot about the importance and use of financial analysis and working capital management by small manufacturers in U.S.A questionnaire was mailed to chief financial officers of 477 small firms in the southern region of U.S. 85 percent of the respondents indicated that they use ratio analysis for financial planning on monthly basis. Working capital management was ranked important and most important by 90 percent of the respondents. The importance of working capital management for small firms was, perhaps, due to their limited access to capital markets and finance providers.

Accounts receivables and inventory management among the various components of working capital were ranked the most important while cash management was ranked least important by small manufacturers.

The prime object of management is to make profit. This accomplishment in most business depends largely on the manner in which they manage their working capital. Administration of fixed assets falls within the realm of capital budgeting while the management of working capital is a continuing function which involves control of every day and flow of financial resources circulating in the company in one form or the other. In turn, these decisions are influenced by the trade-off that must be made between profitability and risk.

The success of operations of a firm is determined to a large extent by the method of administration of its current. It requires continuous management to maintain proper level in various components of working capital i.e. cash, receivables and inventory etc. In establishing

proper proportions, cash and financial budget may be very useful. Sales expansion, dividend declaration, plant expansion, new product line, increased salaries and wages, rising price levels etc. put added strain on working capital maintenance. Due to the poor management and lack of management skills, business fails certainly. Shortage of working capital, so often advanced as the main cause of failure of industrial concerns, is nothing but the clearest evidence of mismanagement which is so common.

Lowering the level of investment in current assets, while still being able to support sales, would lead the firm to an increase in return on total assets. Smith (1980) first signaled the importance of the tradeoffs between the dual goals of working capital management, i.e., liquidity and profitability. To the extent that the explicit costs of short-term financing are less than those of intermediate and long- term financing, the greater the proportion of short-term debt to total debt, the higher is the profitability of the firm. From another perspective, the current assts of a typical manufacturing firm accounts for ever half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm is realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Van-Horne and Wachowicz, 2004).

For small companies current assets and liabilities are the principal source of external financing. These firms do not have access to the longer term capital markets, other than to acquire a mortgage on a building. The fast growing but a larger company also makes use of current liabilities financing. For these reasons the financial manager and staff devotes a considerable portion of their time to working capital matters. The management of cash, marketable securities, receivable, payables, accruals, and other means of short-term financing is the direct responsibility of a financial manager, only the management of inventories is not. Moreover, these management responsibilities require continuous day to day supervision. Thus, working capital management is important, for no other reason than the proportion of the financial managers' time that must be devoted to it.

2.2 Empirical Literature

2.2.1 Empirical Studies in Global Context

Jose et al. (1996) examined the relationship between aggressive working capital management and profitability of United States firms. Cash conversion cycle (CCC) has been taken as a measure of working capital management where a shorter cash conversion cycle represents the aggressiveness of working capital management whereas pre-tax return on assets and equity has been used as profitability measures. The data has been collected for a period

of twenty-four years from 1974 through 1993 for 2,718 firms. The relationship between the cash conversion cycle and profitability measures has been tested through cross-sectional regression analysis. The results indicated a significant negative relationship between the cash conversion cycle and profitability indicating that more aggressive working capital management is associated with higher profitability. The shorter the cash conversion cycle, greater the return on assets and return on equity.

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

Wang (2002) took a sample of Taiwanese and Japanese firms and Deloof (2003) took a sample of Belgium Firms. The results suggested that profitability depends on how the working capital management is handling by the management. Deloof(2003) stated that no of days inventory and no of days accounts receivable is indirectly related to profitability. Deloof (2003) also stated that if the cash conversion cycle is shorter than the profitability will be increased. Thus efficient working capital management is very important to increases the value of the shareholders (Wang, 2002; Deloof, 2003).

Tryfonidis and Lazaridis (2006) analyzed the relationship between working capital management and profitability of the firms. The variable for the measurement of profitably was gross operating profit in their research. Significant relationship between the cash conversion cycle and profitability was reported. Tryfonidis and Lazaridis (2006) stated that the profit can be maximizing by taking care of every component of working capital at individual level.
Padachi(2006) studied different behaviors in the working capital management for a sample of 58 small Mauritian firms for the year 1998 – 2003. Padachi (2006) stated that if the working

capital is managed efficiently than it will add up to the firms' value and increase profitability.

Zuberi (2010) made study on a sample of Pakistan's automobile sector and concluded that the growth and current ratio of the firms in automobile sector have direct relation with the profitability of the firms. Ding, Guariglia and Knight (2010) took a sample of over 120,000 Chinese firms and concluded that working capital management significantly affects the profitability of firms. Alipour (2011) took a sample of 1063 top firms listed in Tehran stock exchange and found a negative significant relationship between No of days accounts receivable, Inventory Turnover and cash conversion cycle where as positive significant relation with no of days accounts payables with profitability and hence concluded that working capital management significantly affects the profitability of the firms.

Enqvist, Graham, Nikkinen (2012) worked on the sample of Finland firms and studied the relationship of working capital management and profitability on different business cycles and concluded that there is a significant negative relationship between cash conversion cycle and profitability of firms. The results suggested that efficient management of inventory and accounts receivable days significantly affects the corporate profitability of the firms. Ganesan (2007) made an analysis of working capital management efficiency and profitability and liquidity of firms in telecommunication equipment industry in USA, using a sample of 443 financial statements of 349 telecommunication equipment companies randomly selected, between the periods of 2001 – 2007. The variables consisted of: Days of Working Capital (DWC); Cash Conversion Efficiency (CCE); Current Ratio (CR); Days Sales Outstanding (DSO); Days Inventory Outstanding (DIO); and Days Payable Outstanding (DPO). IS and IA are measures of profitability. Correlation and regression analyses were made for the variables of the study. The results indicate that there is an insignificant negative relationship between IA and DWC. Also, IS is negatively related to DWC, DSO, DIO and DPO. However, the association of DSO with IS and IA is not significant enough to predict IS or IA using DSO. Hence, working capital management efficiency is negatively associated with profitability and liquidity. Therefore, he concluded that the industry can improve working capital management efficiency by reducing inventory and improving DPO by getting more credit from suppliers.

Joana Filipa Garcia (2011), analyzed the impacts of working capital management up on companies profitability: evidence from European companies for a period of 12 years (1998-2009)and found a significant negative relationship between receivables collection period, inventory conversion period, payable deferral period, cash conversion cycle and profitability. The researcher suggests that companies can improve their profitability by reducing the time

span during which working capital is tied up within the company. He also founds that liquidity measured by current ratio and profitability are inversely related meaning that different levels of liquidity leads to different impacts of cash conversion cycle up on operating profitability.

Mamad Fauzi Shubita (2013), conducted study on relationship between working capital management and corporate profitability for a sample of 39 companies from 2004-2009 and concluded that the working capital is managed will have deep impact on profitability of companies. He also founds that there is in fact negative relationship between profitability and net trade cycle, average number of day's inventories and the number of days payable but there is a significant positive relationship between sales growth and profitability.

Deloof (2003), investigated if working capital management affects the profitability of Belgian firms. The study used a sample of 1,009 firms that provided 5,045 firm-year observations over the period 1992-1996. As is common in studies relating to working capital management, He used the cash conversion cycle as a comprehensive measure of working capital management and found that the coefficients of Days Accounts Receivable, Number of Days Inventories and days Accounts Payable were negative and highly significant regarding the dependent variable gross operating profit. The coefficient of the cash conversion cycle was negative however, it was not significant. He stated that this was not a surprise since gross operating income declines with The Number of Days Accounts Receivable and Inventories, but also with The Number of Days Accounts Payable, which is subtracted to compute the cash conversion cycle. The results indicate that firms can increase corporate profitability by reducing The Number of Days Inventories, Accounts Receivable and accounts payable.

David Mathuva (2011), studied the influence of working capital management components on corporate profitability on Kenyan listed firms. In his study the ACP and leverage are negatively related with the firm's profitability while all other variables exhibit a positive relationship. Negative relationship between APP and profitability, which means more profitable firms wait a longer to pay their bills since they have a greater bargaining power with their suppliers.

Adina Elena (2010), attempted a study on working capital management and profitability the case study of ALBA companies using Pearson correlation analysis for a sample of 20 annual financial statements of companies covering a period from 2004-2008 and concludes that there is a weak negative linear correlation between working capital management indicators and profitability.

Agyemang & Michael (2013), examined the effect of working capital management on profitability of companies listed on the Ghana stock exchange by using secondary data and finds that there is a negative relationship between account payable days, inventory days and net operating profit but not significantly. Furthermore there is a positive relationship between cash conversion cycle and net operating profit but not statistically significant and concludes that managers of manufacturing companies must employ efficient and effective working capital management practices to ensure the survival of the business.

Hussain et al, (2012), revealed that profitability of the firm is significantly affected by the working capital management. In order to achieve an optimal level of working capital the firms should accurately control the liquidity profitability trade off. The result of the study by the researchers on manufacturing sector of Pakistani revealed that low investment in current assets and low current liability financing increases the profitability of firms. The study also suggested that company size, sale growth and leverage ratio significantly affect the profitability of the firm.

Albert Amponsah & Michael Nyarko (2013), analyzed the working capital management and profitability: an empirical investigation in emerging market. The study includes conceptual as well as empirical analysis in which data from a sample of non-listed firms from 2004-2009 are analyzed and found that profitability is negatively related to the length of the cash conversion cycle. Also performance is positively affected by firm's size, GDP growth and firm's sales growth and suggests the policy makers in emerging markets need to motivate and encourage managers and shareholders to give more attention to working capital management.

Mohammad Shaukat &Mahum Bukhari (2013), investigated the impact of working capital management on corporate performance in cement, chemical and emerging sectors of Pakistan by using their annual reports from 2007-2011 applying pooled ordinary list squares method and found that APP negatively and significantly whereas cash conversion cycle positively and significantly relate with return on equity. While average collection period and operating cycle positively and significantly whereas average age of inventory negatively and significantly relates to the return on equity.

Kulkanya(2012), examined the effects of working capital management on profitability of Thai listed firms based on a panel sample of 255 companies listed on the stock exchange of Thailand from 2007-2009 and founds that there is a negative relationship between gross operating profit and inventory conversion period and receivable collection period, payables

deferral period and cash conversion cycle. Fixed financial assets have a positive but not significant relationship with gross operating profit.

Stephen Kirwa Kimeli (2012), made a study on Working capital management and profitability of Manufacturing companies in Nairobi Securities and Exchange made a survey of six listed companies between 2006-2010 and analyze the data using multiple regression and correlation analysis and reveal that all components of working capital (ACP, APP, CCC, ITO) affects profitability at varying levels of significance. The study established that a gross profit was positively correlated with average collection period and average payment period but negatively correlated with cash conversion cycle. The relationship between inventory turnover in days and gross profit was insignificant.

Awolabi and Alu (2012), analyzed the effects of working capital management and profitability in selected manufacturing company in Nigeria and finds that there is a significant inverse relationship between some working capital management components (ICP, DCP, and CCC) and profitability of manufacturing companies. This means that the higher the (ICP, DCP, and CCC) the lower the profitability position of manufacturing company and vice versa. The researcher also concludes that the size of the company has a lot to do with its profitability such that as the company increases in size the ROA also increases and vice versa but age has a negative significant effect on ROA. Out of the components of working capital management only CPP has an insignificant on profits of the company. Generally the study conclude that the combined power of the model indicates that, working capital management (Measured by its components) affects the company's profitability by 24.3% which is not significant.

Padachi (2006), examined the trends in working capital management and its impact on firms' performance. The researcher examined trend in working capital needs and profitability of firms to identify the causes for any significant differences between the industries. The dependent variable, return on total assets was used as a measure of profitability and the relation between working capital management and corporate profitability is investigated for a sample of 58 small manufacturing firms, using panel data analysis. The regression results of the study showed that high investment in inventories and receivables is associated with lower profitability. The findings also revealed that an increasing trend in the short-term component of working capital financing.

Biswajit Bose (2013) revealed that out of seven ratios namely working capital turnover ratio (WCTR), CATNS, CATTA, ITR, CPR, CR, only CPR has positive influence on ROA using

DWC. The study shows that there is disproportionate and inadequate increase in the profitability of the company for the decrease in working capital.

Vedavinayagam (2007), conducted on of working capital management efficiency in Telecommunication equipment industry for a period of 2001-2007 using a sample of 443 annual financial statements of 349 telecommunication equipment companies found that days working capital is negatively related to the profitability but not significantly. Liquidity and profitability are negatively associated with days of working capital. The finding also indicates that there is an evidence that the profitability measure profit margin(IS) is negatively related to the days of working capital(DWC), days of sales outstanding(DSO), days of inventory turnover(DIO), and days of payable outstanding(DPO). However the association of DSO with IS and IA is not significant enough to predict IS or IA using DSO. These means that effect of managing DSO is not significant enough to impact the profitability measures.

Paul Muoki, Stephen Kirwa, Marcella Riwo and Jennifer Mwende (2013), conducted research on management of working capital and its effect on profitability of manufacturing companies listed in Nairobi security exchange(NSE) Kenya and finds that operating profit is positively correlated with APP, LOS, ACP and FATA though the correlations with ACP and FATA are statistically insignificant. The strong positive correlation between LOP and LOS confirms that gross profit are directly proportional to company size on the other hand ITID, CCC, CR and DR are negatively correlated with LOP which shows that any increase in any of these factors will reduce operating profit. However the correlation between ITID, CR and LOP are statistically insignificant. Finally recommends that the manager should focus on reducing cash conversion cycle and try to collect receivables as soon as possible and reduce inventory periods and try to delay payables.

Raheman et.al (2010), studied the impact of working capital management on firm's performance in Pakistan by using balanced panel data of 204 manufacturing firms and the results indicated that the cash conversion cycle, net trade cycle and inventory turnover in days are significantly affecting the performance of the firms. According to their study, manufacturing firms are in general facing problems with their collection and payment policies. Moreover, they pointed out that the financial leverage; sales growth and firm size also have significant effect on the firm's profitability. The study also concluded that firms in Pakistan are following conservative working capital management policy and the firms are needed to concentrate and improve their collection and payment policy. Finally the researchers recommended that effective policies must be formulated for the individual components of

working capital. Furthermore, they indicated that efficient Management and financing of working capital (current assets and current liabilities) can increase the operating profitability of manufacturing firms.

Azhagaiah Ramachandran and Muralidharan Janakiraman (2009), analyzed the relationship between working capital management efficiency and earnings before income tax (EBIT) of the paper industry in India for a period of 1997-1998 to 2005-2006 and finds that adequate working capital management is essential as it has direct impact on EBIT and liquidity. The study shows that there is a negative relationship between EBIT and CCC but EBIT has a positive relationship with account receivable days. With regard to the impact of the number of days inventory (Inventory cycle) on the EBIT of the firms under the paper industry, the result discusses that inventory days has a significant negative co-efficient with EBIT.

2.2.2 Empirical Studies in Ethiopia

Nuru Mohammed (2011), examined the effect of working capital Policies management on firm's profitability. Evidence from Private Limited Manufacturing Companies in Addis Ababa, Ethiopia". The result of his study shows there is a negative relationship between average payment period, cash conversion cycle and liquidity with profitability. No significant relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand the finding shows that a high significant positive relationship between current liability to total assets ratio and profitability.

Mulualem Mekonnen (2011), attempted to examine the impact of working capital management on firms profitability for a period of five years (2005-2009) with total of 65 observations using Pearson correlation and OLS regression analysis and the results of his study showed that there is statistically negative relationship between Average collection period, inventory conversion period and average payment period with profitability .

Ephrame Woldu (2011), revealed that CCC and ACP after easy and useful ways to check working capital management efficiency. To be profitable, firms must try to keep these numbers of days account receivable and number of days required by firms to convert their operations in to cash to minimum level. Number of days account payable has significant negative relationship with SME'S and also negative relationship between liquidity and profitability of firms. The study also finds that firm's size have positive but not significant relationship with net operating profitability.

Natarajan & Getachew (2013), studied working capital management on profitability of cooperative unions in east showa, Ethiopia using descriptive statistics, correlation and regression analysis which is supported by STATA software package and finds that there is an imperial linkage between the determinants of working capital management and profitability of east showa cooperative unions whereas ITP, DR, and FATA have significant impact on the profitability of the unions. ACP has a negative and highly significant impact on profitability of the unions. ITP, DR, FATA has a positive but significant impact on profitability of the union but ACP, CCC, and size have significant impact on profitability of the unions.

Bamlaku (2012), revealed that appropriate amount of working capital has measured efficient performance of firms, and negative working capital has indicated firm's inability to pay its short term obligations and it signed inefficient performance of the manufacturing enterprises in Addis Ababa. His study was a quantitative approach of research that has been conducted by statistical analysis of financial information, specifically annual financial statements of the selected Addis Ababa manufacturing firms for the period of 2006-2010.

Abraham Kamfeso (2013), conducted a study on the impact of working capital management on firms' profitability- case of Selected sole proprietorship manufacturing firms in Adama City and found APP and size of the firm have positive and significant impact where as sales growth was negative and significantly related with related with profitability. ACP and profitability has negative relationship but debt ratio and profitability has negative and significant relationship while current ratio has no significant relationship with profitability.

Tirngo Dinku (2013), conducted a research on the impact of working capital management on profitability of micro and small enterprises with special reference to Bahir Dar city administration using a sample of 67 micro and small enterprises for the year 2003. The result shows that there is strong positive relationship number of days account payable and profitability. However the number of account payable, number of day's inventory and cash conversion cycle have a significant negative relationship with profitability.

2.3 Research Gap

However, different researches are studied by many researchers from different views and in different parts of the World, little researches have done in developing countries including Ethiopia but there are inconsistencies between their findings.

The impact of working capital management on firm's profitability has been studied by different researchers in different parts of the world (Filipa, 2011; Muoki, 2012; Garcia, 2011; Deloof, 2003; Mathuva, 2011 and Kirawa, 2013). However, these studies are made on large firms operating within developed money and capital markets of developed countries. However, there are inconsistencies between the findings of these studies. For instance the study conducted by Filipa (2011), and Deloof (2003), found strong negative cause and effect relationship between average collection period, average payment period, inventory turnover period with firm's profitability. Other researchers like Mathuva (2011), Kirawa (2013), and Muoki (2013), found positive relationship with average collection period and average payment period. A study conducted by other researcher Michael (2012), found negative but not significant relationship between inventory turnover period and average payment period with profitability.

In Ethiopian context, researches that are conducted on impact of working capital management on firm's profitability, based on private limited companies, and small, medium scale enterprises and sole proprietorship manufacturing firms (Mulualem, 2011; Ephrem 2011; Nuru, 2012; Abraham, 2013; Natarajan & Getachew 2013, and Tirngo Dinku, 2013). According to Mulualem(2011), showed that there is statistically negative relationship between average collection period, inventory conversion period and average payment period with profitability. Nuru Mohammed (2011), found that there is a negative relationship between average payment period, cash conversion cycle and liquidity with profitability. No significant relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand the finding shows that a high significant positive relationship between current liability to total assets ratio and profitability. Ephrame (2011), revealed that average payment period has significant negative relationship with profitability and also negative relationship between liquidity and profitability of firms. The study also finds that firm's size have positive but not significant relationship with net operating profitability. Abraham (2013), found that average payment period and size of the firm have positive and significant impact where as sales growth was negative and significantly related with related with profitability. Average collection period and profitability has negative relationship but debt ratio and profitability has negative and significant relationship while current ratio has no significant relationship with profitability. Natarajan & Getachew (2013), revealed that average collection period has a negative and highly significant impact on profitability of the firms. Debt Ratio has a positive but significant impact on profitability of the union but and firms' size has significant impact on profitability of the firm. Tirngo Dinku (2013), showed that there is strong positive relationship average payable

period and profitability. However the average payable period, inventory conversion period and average collection period have a significant negative relationship with profitability.

Therefore, absence of clear-cut direction of the relationship between any of the variables of working capital management and firms' profitability as well as the previous studies studied based on private limited companies, and small, medium scale enterprises and sole proprietorship manufacturing firms. As result the researcher aimed to examine how the working capital management can impact on profitability of tannery factories in Ethiopia. To the best of researcher knowledge no research has been conducted in this area particularly in Ethiopia based on the availability of literature and the current study is expected to fill the gap on this area.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter, the study try to cover issues related to research design, data type and source, sample design and sample size, method of data analysis, models specification and finally variables and their measurements.

3.1. Research Design

Saunders, Lewis and Thornhill, (2007) suggest an explanatory study type of research design for researches that study "…a situation or a problem in order to explain the relationships between variables." Therefore, the study was taken to examine the impact of working capital management on profitability of selected tannery factories by evaluating the relationship among different variables. Therefore the researcher used an explanatory research study as suggested by the above scholars.

3.2 Data Type and source

The researcher was used quantitative data type to perform the objective of the study. The data was collected from financial statements reported for tax purpose to Federal and Regional Revenue Authority for the period 2006-2013 as secondary sources. Data of only eight years were used in the study because of limited number of firms having operating age of more than eight years.

3.3 Sample Design and Sample size

Target population of the study was all tannery factories in Ethiopia and these are 29 tannery factories are registered with federal investment in 2013 the study selected eight tannery factories using purposive sampling method according to their establishment before 2006.The selected eight tannery factories were Colba, Hora, Ethio leather, Walia, Batu, Modjo, Ethio tannery and Addis Ababa.

3.4. Nature of Data

Balanced panel data was used to empirically test the relationship between the dependent variable (profitability) and the independent variables identified above. This is a collection of multi-dimensional data set observed over multiple time periods. It is also called longitudinal studies. By balanced a set should contain all elements observed in all time frames. There are a number of cases in which a balanced panel data preferred over the unbalanced panel data. Among other things balanced panel data allows an observation of the same unit (e.g., individual, company, person, etc.) in every time period (e.g., year, month, etc.), which reduces the noise

introduced by unit (individual, etc.) heterogeneity. The study uses secondary data source from the audited financial statements of the selected Ethiopian tannery companies.

3.5. Method of Data Analysis

The main objective of this study was to examine the impact of working capital management on the profitability of selected tannery factories in Ethiopia. This study collected the data from Federal and Regional customs and Revenue Authority covering time period from 2006 to 2013.

The study used descriptive statistics, correlation and regression analysis to analyze collected data. Descriptive statistics were used to describe relevant aspects of observable facts about the variables and provide detailed information about each relevant variable. Under this, mean, median, standard deviation, maximum and minimum values of the required variables have been computed. Correlation analysis is used to measure the degree of association between the dependent variables and explanatory variables. Linear panel data regression model was employed to analyze the causal relationships between variables. In addition, balanced fixed effect panel regression model was used after completing tests of CLRM (classical linear regression model) assumptions. The balanced fixed effect panel regression model was used to measure and estimate the causal relationships between net operating profit and explanatory variables.

3.6. Model Specification

The study used pooled regression type of panel data analysis. The pooled regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects which is deemed to have advantages over cross sectional and time series data methodology Gujarati, (2003).

Panel data involves the pooling of observations on the cross-sectional over several time periods. The advantage of using panel data is to address a broader range of issues and tackle more complex problems with than would possible with time series/cross sectional data alone Gujarati (2004). Second, it is used to examine how variables or the relationship between them change dynamically (over time) and help to mitigate problems of multicollinearity that may arise if time series are modeled individually. Third, by structuring the model in an appropriate way (Fixed and random effect), we can remove the impact of certain forms of omitted variables bias in regression results. Forth, panel data gives more informative data, more variability, less collinearly among variables, more degree of freedom and more efficiency. Therefore, the panel data model estimated in the subsequent chapter looks the following:

$$ROA_{i,t} = \beta 0 + \beta 1 ACP_{i,t} + \beta 2\ APP_{i,t} + \beta 3 ICP_{i,t} + \beta 4 CR_{i,t} + \beta 5 DR_{i,t} + \beta 6 FS_{i,t} + \varepsilon$$

Where: ROA = Return on Asset, ACP = Average collection period, APP = Average Payment Period, ICP = Inventory Conversion Period CR= Liquidity, DR= Firm's debt, FS= Firm's size, β0, β1, β2, β3, β4, β5 and β6- model coefficients ε = Error term, i, t = for firm i in period t.

3.7. Description of Variables

This study used one dependent variable, three independent and three control variables. The independent variables were: average collection period, average payment period and inventory conversion period and control variables were current ratio, debt ratio and size of the firm while the dependent variable was net operating profitability measured by ROA. The description for each variable is explained below:

Dependent Variables

Return on Asset

Dependent variable Return on Asset used to measure the profitability of firms. Return on Assets (ROA), Return on Equity (ROE) and Operating Profit Margin (OPM) are best known and most frequently used profitability measures (Nuru Mohammed, 2011). For this study Profitability was measured using ROA.

The reason for choosing this variable was that the ROA represents the ratio of how much a firm has earned on its asset base (Melicher and Leach, 2009). Consistently, the ROA was used in this study as dependent variable because accordingly the net profit in relation to the company asset base is a good way to measure the extent of returns on investments made in the company (Soekhoe, 2012; Tiringo, 2013; Padachi, 2006) and Sharma and Kumar, 2011).

Independent Variables

Average collection Period (ACP)

Average collection period refers to the average length of time required to convert the firm's receivables into cash following a sale. 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. A study by Mulualem (2011), show that there is statistically significant negative relationship between profitability and average collection period. The finding suggests that firms can improve their profitability by reducing the number of day's accounts receivable outstanding. Also this can be interpreted as the less the time it takes for customers to pay their bills, the more cash is available to replenish inventory hence the higher the sales realized leading to high profitability of the firm. If firms don't manage debtors, they gradually lose control due to reduced cash flow and could experience an increased rate of bad debts. So the longer someone owes firm's money, the greater the chance the firm never gets paid.

As a result, profit may only be called real profit after the receivables are turned into cash. Therefore, the management of account receivables is inevitable and largely influenced by the credit policy and collection procedure (Deloof, 2003).

Inventory conversion Period (ICP)

Inventory turnover in days refers to the average time required to convert materials into finished goods. 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). Although most empirical research suggest a negative relation between inventory turnover in days and profitability (Lazaridis and Tryfonidis, 2006; Mansoor and Muhammad, 2012; Raheman and Nasr, 2007; Dong, 2010), find contradictory findings on the relationship between inventory turnover in days and profitability. (Gill, Biger and Mathuva, 2010) suggest a positive relationship between inventory turnover in days and profitability.

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. Dong (2010), found in his study that there are strongly negative relationships between inventory conversion cycle and profitability. This denote that decrease in the profitability occur due to increase in cash conversion cycle.

Average Payment Period (APP*)*

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. According to Kirawa (2012), 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. Mathuva(2010) in the study "the influence of working capital management components on corporate profitability: a survey on Kenyan listed firms" shows that average payment period has a positive relationship with profitability. The positive relationship suggests that an increase in the number of day's accounts payable by 1 day is associated with an increase in profitability.

Although studies by (Mathuva, 2010; Muoki, 2013 and Abraham, 2013) show positive relationship between accounts payment period and profitability other more research by Filipa(2011), Ray (2012), Mulualem (2011), Deloof(2003) Reheman & Nasr (2007) and

Mohamed (2011) suggest a negative relationship between average payment period and the firm profitability.

Control Variables

Liquidity

Liquidity means the amount of capital available for company to invest and spend. In every area of financial management, the finance managers are always faced with the dilemma of liquidity and profitability, hence have to strike a balance between the two (Eljelly, 2004). Most of the time, liquidity goals of a firm is to have adequate cash to pay for its bills; to make large unexpected purchases and finally, firm has an adequate cash reserve to meet emergencies in all time. Whereas, profitability goal on the other hand requires that, funds of a firm are used so as to yield higher returns. Therefore, when one increases, the other decreases, (Brigham and Houston, 2003). Apparently, liquidity and profitability goals conflict in most of the decisions the finance managers make. Higher inventories are kept in anticipation of increase in prices of raw materials; hence, profitability goal is approached but the liquidity position of a firm is endangered. In reality, none of the managers choose any of these two extremes instead they want to have a balance between profitability and liquidity which fulfils their need of liquidity and gives required level of profitability. A study by Arnold (2008), Mulualem (2011) and Mohamed (2011), finds that there is a significant negative relationship between liquidity and profitability. In contrast a study by Naimulbari(2012) and Azam and Haider (2011) show a positive correlation between gross operating profitability and current ratio.

Firm's debt:

Firm's debt is also used as a control variable. Debt Ratio estimates that how much portion of total assets of a firm is financed by its creditors. It represents the leverage of a firm. Higher value of debt ratio shows that the firm has greater indebtedness and more financial leverage. Greater leverage shows that the cost of financing working capital would be higher. Many researchers have discovered an inverse relationship between debt ratio and profitability such as (Mohammad and Saad, 2010; Gill et al. 2010; Raheman and Nasr, 2007 and Raheman et al., 2010). This inverse relationship implies that as the debt ratio of the manufacturing firms' increases the profitability decreases. In contrast, a study by Abraham (2013) and Owlabi(2012**),** show a positive correlation between profitability and debt ratio. Positive relationship between debt ratio and profitability indicates that as debt ratio increases profitability increases.

Firm's Size

The working capital requirements of a firm are basically influenced by the nature and size of the business. Size of the firm may be measured in terms of the scale of operations. A firm with larger scale of operations needs more working capital than a small firm (Mulualem, 2011).

Table 3.7: Summary of Description and Variables of Measurement

Variables	Methods of computation
ROA (Profitability)	Profit Before Interest and Tax(PBIT)/Total Assets
ACP (Average collection period)	(Average of accounts receivable / Sales)*365
INV (Inventory conversion period)	(Average Inventory/Cost of Goods Sold)*365
APP (Account payable period)	(Average of accounts payable / Cost of goods sold)*365
Current ratio	Current assets/current liability
Debt ratio	Total liabilities/Total assets
Firm size	Natural logarithm of total asset

CHAPTER FOUR

RESULTS AND DISCUSSIONS

The main objective of the study was to examine the impact of working capital management on profitability of selected tannery factories in Ethiopia. In order to achieve the research objectives of the study covers the following issues in this chapter : the first section describes the basic features of the sample data in the study using descriptive statistics followed by correlation analysis which shows the linear relationship between two sets of data. The other important topic is regression diagnostics (testing the basic assumptions of classical linear regression model) which is covered in the third section. In the next two sections the chapter deals with selecting appropriate model and regression results and discussion of the main findings of the regression result. Finally, hypothesis testing is presented in section six.

4.1. Descriptive Statistics

This section provides simple summaries about the sample data. Descriptive statistics in table 4.1 below reports the mean, median, maximum, minimum, standard deviations and number of observations of each variable. The researcher used these descriptive statistics to describe and/or summarize numeric observations for both the dependent and explanatory variables.

Table 4.1: Descriptive Statistics of Variables

Particulars	ROA	ACP	APP	ICP	CR	DR	FS
Mean	0.084	264.273	71.379	347.574	2.382	0.457	7.919
Median	0.059	52.681	46.280	169.131	0.996	0.444	7.969
Maximum	0.920	9673.161	804.967	9513.615	28.820	3.467	8.633
Minimum	0.000	3.408	-4.268	2.130	0.005	0.005	5.603
Std. Dev.	0.146	1216.848	113.785	1171.069	4.403	0.447	0.471
Observations	64	64	64	64	64	64	64

Source: Eviews 7 outputs based on selected tannery factories of financial statement from 2006-2013

An important issue to note from table 4.1 above is that all variables in the study have equal number of observation i.e. eight cross sections over eight years (2006-2013) which makes the total observation for each variable 64. This makes the sample data a balanced panel data.

The ratio of profit before income tax to total asset of selected tannery factories (ROA) which is the dependent variable in this study ranges from 0.000 to 0.92 percent. With a mean of around 0.084 the ratio deviates from its mean by about 0.146 percent. This indicates that selected tannery factories were able to generate on average 8.4 percent of their earning from invested capital. But there is also a tannery company that converted none of the invested assets into earning or profit during the review period (minimum ROA=0.00). In contrast there is a company that was able to convert 92 percent of its earning from invested assets during the same period (maximum ROA=0.92).

The average collection period (ACP) of these tannery factories ranges from 3.407 to 9673.16. With its mean value of 264.3 the ratio deviates from its mean value by about 1216.85. This means that on average it takes the selected tannery factories 263.3 days to turn their receivables into cash.

Average payment period (APP) of selected tannery factories has a mean value of around 71.38. With this mean the sample data for this variable deviates from its mean by 113.8. It ranges from -4.27 to 804.96. This indicates that selected tannery factories take them on average 71 days to pay their creditors. But there is a company that takes it 805 days to do the same.

Inventory conversion period ratio (ICP) of selected tannery factories on the other hand ranges from 2.13 to 9513.6. With its mean value of around 347.57 the ratio deviates from its mean by 1171.06. Therefore, inventory of selected tannery factories has been disposed off or sold on average in 347 days. But there is a company that was able to dispose its inventory in 2 days period during a given year over the review period.

The liquidity ratio (CR) ranges from 0.004 to 28.82. With its mean value of 2.38 the ratio deviates from its mean value by 4.40. The average liquidity ratio greater than one indicate that on average selected tannery factories' current assets should be able to satisfy near-term obligations.

The other two explanatory variables are the firm's debt ratio (DR) and firm's size (FS) with a range of 0.004 to 3.46 and 5.60 to 8.63 respectively. With their mean values of around 0.45 and 7.92, the ratios deviate from their mean by 0.44 and 0.74 respectively.

4.2 Correlation Analysis

Table 4.2 below depicts correlation matrix (correlation coefficients of each pair of variables which measures the relationship between the two variables. It quantifies the extent to which two quantitative variables go together, giving a value between +1 and -1 inclusive, where 1 is total positive correlation, zero is no correlation and -1 is total negative correlation. When two

variables are correlated it means that they vary together. When the relation is positive (greater than zero but less than 1), it implies that high values of one variable is associated with high values of the other variable and negative correlation (less than zero but greater than -1) implying that high values of one variable is associated with low values of the other and vice versa(Cohen,1988).

Table 4.2: Correlation matrix of dependent and explanatory variables

	ROA	ACP	APP	ICP	CR	DR	FS
ROA	1.0000						
ACP	-0.0732	1.0000					
APP	0.4119	-0.0682	1.0000				
ICP	-0.0826	0.1063	-0.0460	1.0000			
CR	0.0032	-0.0690	-0.0872	-0.0671	1.0000		
DR	0.0550	-0.0556	0.1981	-0.1330	-0.0179	1.0000	
FS	0.0076	-0.5810	0.0691	0.1393	0.2408	-0.0512	1.0000

Source: Eviews 7 outputs based on selected tannery factories' financial statement from 2006-2013.

The correlation between ROA and ACP is negative. This means that selected tannery factories' return on assets decreases as average collection period increases and vice versa. The correlation between the two has an absolute value of -0.073 which can be taken as a weak relationship between the two variables.

The correlation between ROA and APP is positive implying that selected tannery factories' return on assets increase as average payment period increases and vice versa. The correlation coefficient between the two variables has an absolute value of 0.41 which can also be taken as a weak relationship. However, the relationship between average payment period and return on assets of selected tannery factories is stronger than the relationship between their average collection period and return on assets.

The correlation between ROA and ICP is also negative. This indicates that returns on assets of selected tannery factories decreases as their inventory conversion period increases and vice versa. However, the relationship between the two is also weak and an absolute value of - 0.08.

The correlation between ROA and CR is positive indicating that return on assets of selected tannery factories increases as their current ratio (liquidity ratio) increases and vice versa.

Nevertheless, it can be assumed that there is no linear association between the two variables at least during the review period with correlation coefficient near zero in absolute values.

ROA and DR have also positive correlation. Therefore, as selected tannery factories' debt ratio increases their return on assets also increases and vice versa. Again their relationship can be taken as a weak linear relationship as the correlation coefficient in absolute value is 0.05. The same is true for the relationship between ROA and FS. But in this case there is no linear association between selected tannery factories' return on asset and their size as measured by their total assets (in logarithms).

Generally, it can be seen from the table above that there is weak linear relationship among the dependent and explanatory variables in this study.

The correlation between ACP and APP is negative. As average payment period of selected tannery factories' increases their average collection period decreases and vice versa. The correlation between the two has an absolute value of 0.068 which can be taken as a weak relationship between the two variables.

Average collection period (ACP) of selected tannery factories has also negative linear association with their current ratio (liquidity ratio), factories' debt ratio (DR) and their size (FS). Obviously this shows that as liquidity of selected tannery factories increases, their average collection period decreases and vice versa. Similarly, as their size and debt increases, their average collection period decreases. Relatively there is a strong relationship between selected tannery factories' average collection period and their size as measured by total assets with the value of 0.58.

Average payment period (APP) of selected tannery factories has negative linear association with their inventory conversion period and their liquidity. Therefore, as these factories' inventory conversion period and liquidity increases, their average payment period decreases and vice versa. However, the linear association of average payment period with both inventory conversion period and liquidity is very weak (with correlation coefficient of 0.046 and 0.087 respectively in absolute value). Linear association between average payment period and selected tannery factories' debt as well as between average payment period and the factories' size is positive. Therefore, as selected tannery factories' debt increases, their average payment period also increases though the relationship is very weak. The same is true as far as the association between average payment period and factories size is concerned.

Inventory conversion period on the other hand have a negative linear association both with selected tannery factories' liquidity and their debt ratio. These indicate that as these factories' liquidity and debt ratio increases, their inventory conversion period decreases and vice versa. Yet its association with both variables is very weak. But these factories' inventory conversion period has positive linear association with their size. As factories' size increases, their inventory conversion period also increases though the association is weak.

The correlation coefficient between selected tannery factories' liquidity and their debt ratio is negative. As their debt ratio increases, these factories' liquidity decreases though there is a weak linear association between the two (see table 4.2). But there is a positive but weak linear association between selected tannery factories' liquidity and their size.

Finally the correlation coefficient between selected tannery factories debt ratio and their size as measured by total assets is negative implying that factories' debt ratio decreases as their size increases and vice versa. But the association between the two is also very weak.

The fact that there is a weak linear association among the explanatory variables reveals that all explanatory variables can be included in regression analysis. The independent variables with a bivariate correlation of more than 0.7 should not be included in multiple regression analysis (Tabuchnick and Fidell, 1996)

4.3. Regression Diagnostics: Test of CLRM assumptions

In this section the study tests whether the sample data obtained from selected tannery factories over the period from 2006-2013 meet the assumptions of classical linear regression models. The study examines the distribution of variables to check for non-normally distributed variables as a first look at checking assumptions in regression. This is mainly because, without verifying that sample data have met the regression assumptions, the results from the regression may be misleading (Regression with SAS. UCLA: Statistical consulting group). Test for the assumption of errors has zero mean ($u_t = 0$), test for homoskedastic error, no autocorrelation or serial correlation, no perfect multicollinearity, and normality of the error term are particularly considered in this study.

4.3.1. Test for the assumption of errors has zero mean ($(u_t = 0)$

The assumption of a zero mean in the error term is one of the assumptions underlying the classical linear regression model though it is not very restrictive. A constant non-zero mean for the disturbances affects only the intercept estimate but not the slope (Badi Baltagi, 2011). Fortunately, in many economic applications, it is the slope coefficients that are of interest and not the intercept (Badi Baltagi, 2011). The mean of the residuals will always be zero provided that

there is a constant term in the regression (Chris brooks, 2014). Therefore, as long as the equation has a constant term, this assumption is satisfied. To this effect the current study included the constant term in order for the sample data meet the assumption.

4.3.2. Homoskedasticity

The other basic assumption of the classical linear regression model is the assumption that states the probability distribution of the disturbance term remains same for all observations, that is homoskedasticity. Homoskedasticity implies that the variance of each u_i is the same for all values of the explanatory variables. However, if the disturbance terms do not have the same variance, this condition of non constant variance or non-homogeneity of variance is known as heteroskedasticity. If the assumption of constant variance is violated, the least squares estimators are still unbiased, but the Gauss-Markov theorem does not hold anymore, and standardized scores do not have the assumed distribution, and therefore test results and confidence intervals are unreliable (Bedru and Seid, 2005).

To detect whether the assumption of homoskedastic error variance is violated the current study used Breusch-Pagan test. To conduct this test the researcher first estimated the model and then kept the squared OLS estimated residuals, run an auxiliary regression of the squared OLS estimated residuals on the independent variables. Keeping the R-squared from this regression form either the F or LM test is made. According to this test, the null of homoskedasticity is not rejected if the p-value is greater than 5% and the result is reported in table 4.3 below.

Table 4.3: Breusch-Pagan F-test

F-statistic	0.105973	Prob. F(6, 57)	0.9954
Obs*R-squared	0.706049	Prob. Chi-Squared(6)	0.9944
Scaled explained SS	6.876723	Prob. Chi-Squared(6)	0.3324

Source: Eviews 7 outputs based on selected tannery factories' financial statement from 2006-2013

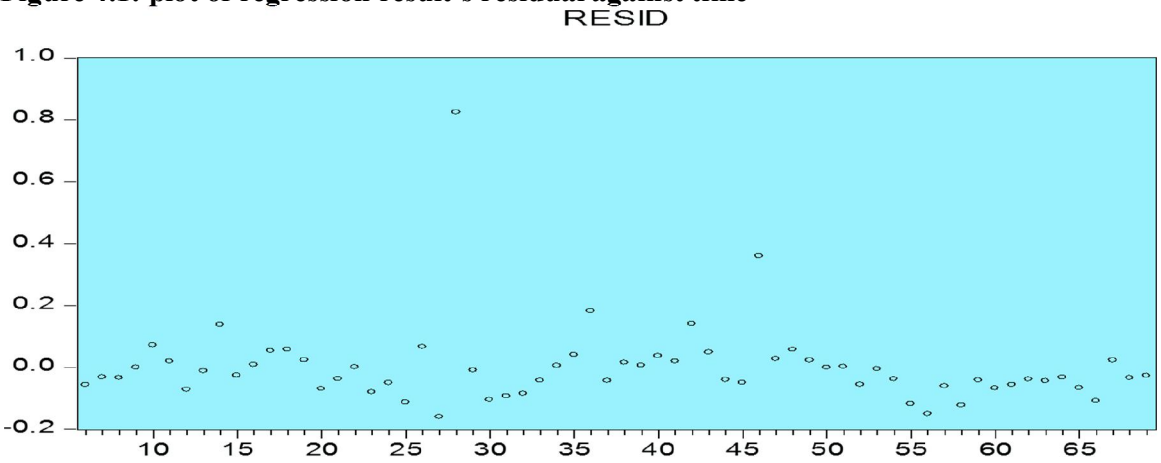
It can be observed from table 4.3 that the Obs*R-squared statistic is reported as 0.706 and the Chi-square P-value is reported as 0.99. Therefore, there is sufficient evidence that the researcher fail to reject the null of homoskedasticity at 5% significance level.

4.3.3. Autocorrelation

Another key assumption in classical linear regression model is that the error terms are independent of each other. Autocorrelation may be defined as correlation between members of

series of observations ordered in time and space (Gujarati, 2003). In this section the study present a simple test to determine whether there is autocorrelation (serial correlation), i.e. where there is a (linear) correlation between the error term for one observation and the next using residual plots and Durbin Watson statistic. Figure 4.1 below depict the residual plots against time.

Figure 4.1: plot of regression result's residual against time



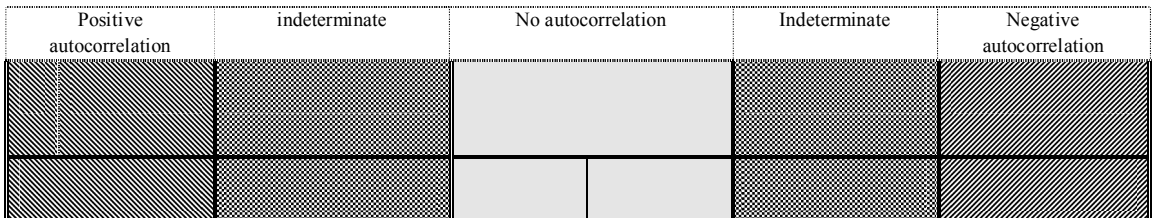
Source: Eviews 7 outputs based on selected tannery factories' financial statement from 2006-2013.

The plot of residuals against time shows that the residuals appear to be normally distributed across time as required by the assumptions of the classical linear regression model (figure 4.1). The plot suggests that there is no serial correlation in the regression residuals. But to be sure the study conducted the Durbin-Watson test.

The Durbin Watson statistic (d) takes on values between 0 and 4. A value of d = 2 means there is no autocorrelation. A value substantially below 2 (and especially a value less than 1) means that the data is positively autocorrelated, i.e. on average a data element is close to the subsequent data element. A value of d substantially above 2 means that the data is negatively autocorrelated, i.e. on average a data element is far from the subsequent data element(Gujarati, 2003).

For the Durbin-Watson test, the null hypothesis is of no serial correlation in the residuals from a linear regression and the alternative is that there is autocorrelation (serial correlation) among the residuals. The rejection region of the null hypothesis of no autocorrelation is shown in figure 4.2 below.

Figure 4.2: D-W test rejection and non-rejection regions



d 0 d_l d_u 2 $4-d_u$ $4-d_l$ 4

Where d_l and d_u are the lower and upper critical values of the Durbin-Watson test respectively. It can be seen from figure 4.2 the null hypothesis of no autocorrelation is rejected if the Durbin Watson statistic is less than its lower critical value as there is a positive autocorrelation. Again the null hypothesis of no autocorrelation is rejected if the Durbin Watson statistic is greater than four minus its lower critical value for the simple reason that there is negative autocorrelation. A Durbin Watson statistic between its upper and four minus its upper critical value indicates that the null hypothesis of no autocorrelation is failed to be rejected. The distribution of d depends on the explanatory variables in the data set. This means that there is no unique critical value d_l and d_u that leads to rejection of the null hypothesis. In this case the Durbin Watson from the regression result is 2.067 and the sample data have 64 observations and six regressors excluding the intercept. Therefore, the lower and upper critical values for the Durbin Watson test are 1.432 and 1.767 respectively at 5% critical values (Durbin Watson critical value table). If d_l=1.432 and d_u=1.767 then $4-d_u$=2.233 and $4-d_l$=2.568. The Durbin Watson statistic from the regression result (d=2.067) is between the upper critical value (1.767) and four minus the upper critical value (2.233) implying that there is no evidence to reject the null of no serial correlation between residuals of the regression. The Durbin-Watson statistic is consistent with the graphical patterns observed in figure 4.1 above.

4.3.4. Multicollinearity

Multicollinearity refers to the presence of highly inter correlated predictor variables in regression models, and its effect is to invalidate some of the basic assumptions underlying their mathematical estimation. According to Kutner et al. (2005), multicollinearity happens when there are high correlations among independent variables. In this case, these independent variables may compete to explain much of the similar variance and it would be difficult to distinguish their contributions to the dependent variable. Multicollinearity is nowadays utilized in a broader sense to include both the cases of perfect and less than perfect multicollinearity. If perfect multicollinearity occurs, the regression coefficients of the independent variables are indeterminate and their standard errors are infinite. If less than perfect multicollinearity happens, the regression coefficients of the independent variables are determinate, but with large standard errors, which means the coefficients cannot be estimated accurately and precisely (H. J. Zainodin and S. J. Yap, 2011).

One way to assess the possibility of multicollinearity among study variables is to perform correlations. According to Gujarati and Porter (2009) if two variables are highly correlated

perhaps it suggests that the data suffer from the multicollinearity problem. Therefore, the current study used correlation coefficient between regressors to test the problem of multicollinearity. Table 4.4 summarizes correlation matrix among explanatory variables in this study.

Table 4.4: Correlation matrix among explanatory variables

Variables	ACP	APP	ICP	CR	DR	FS
ACP	1.00					
APP	-0.07	1.00				
ICP	0.11	-0.05	1.00			
CR	-0.07	-0.09	-0.07	1.00		
DR	-0.06	0.20	-0.13	-0.02	1.00	
FS	-0.58	0.07	0.14	0.24	-0.05	1.00

Source: Eviews 7 outputs based on selected tannery factories' financial statement 2006-2013

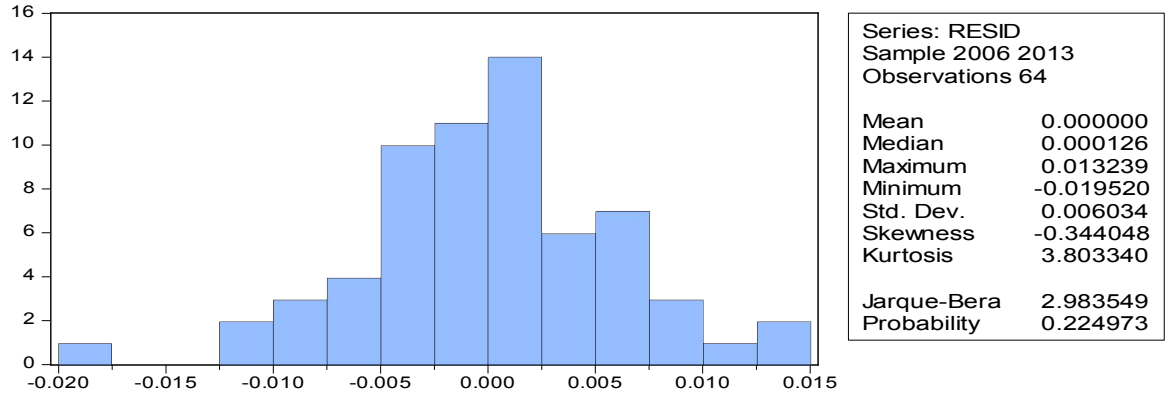
As it can be seen from the correlation coefficient of explanatory variables, the highest correlation coefficient observed is the correlation between ACP and FS which is 0.58. Therefore, it can be concluded that the data in this study is free from the problem of multicollinearity.

4.3.5. Normality Test

The normality assumption of the error term is required in order to conduct single or joint hypothesis tests about the model parameters (Gujarati, 2003). If the disturbances (ui) are independently and identically distributed with zero mean and constant variance and if the explanatory variables are constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding β's (Gujarati, 2004).

Histogram of residuals is used in this study to check whether the variance is normally distributed. A symmetric bell-shaped histogram which is evenly distributed around zero indicates that the normality assumption is likely to be true. If the histogram indicates that random error is not normally distributed, it suggests that the model's underlying assumptions may have been violated (Gujarati, 2003).

Figure 4.3: Normality test of residuals



Source: Eviews 7 output based on selected tannery factories' financial statement from 2006-2013

As it can be seen from the graph depicted in figure 4.3 above the histogram is more or less a bell shaped implying that the error term from the regression result is normally distributed though there are some outliers. A Jarque-Bera statistic of 2.98 and its P-value of 0.225 indicate that there is no evidence to reject the null hypothesis that the residuals in the regression result comes from a normal distribution at 5 percent significance level. Therefore, the Jarque-Bera statistic result is consistent with the graphical inspection from the histogram.

4.4. Regression Model Selection

Panel data models examine group (individual-specific) effects, time effects or both in order to deal with heterogeneity or individual effect that may or may not be observed(Hun M. Park, 2011). These effects are either fixed or random effect. A fixed effect model examines if intercepts vary across group or time period, whereas the random effect model explores differences in error variance components across individual or time period.

4.4.1. Pooled OLS

If individual effect u_i (cross-sectional or time specific effect) does not exist (u_i =0), ordinary least squares (OLS) produces efficient and consistent parameter estimates.

$$y_{it} = \propto + x_{it}^{'}\beta + \varepsilon_{it} \ (u_i=0)$$

If individual effect u_i is not zero in longitudinal data, heterogeneity (individual specific characteristics like managerial skills and marketing strategy of the factories that are not captured in regressors) may influence the core assumptions of OLS like erogeneity, homoskedasticity and autocorrelations(Greene, 2008; Kennedy, 2008). The violation of these basic assumptions of the OLS renders random effect estimators biased. Hence, OLS estimator is no longer best unbiased linear estimator. To this end panel data models provide a way to deal with these problems.

4.4.2: Fixed Versus Random Effects

Panel data models examine fixed and/or random effects of individual or time. The core difference between fixed and random effect models lies in the role of dummy variables. A parameter estimate of dummy variables is a part of the intercept in a fixed effect model and an error component in the random effect model. Slopes remain the same across group or time period in either fixed or random effect model (Hun Myoung Park, 2011).

According to Park (2011) a fixed group effect model examines individual differences in intercepts, assuming the same slopes and constant variance across individual group or entity). Since an individual specific effect is time invariant and considered a part of the intercept, u_i is allowed to be correlated with other regressors.

A random effect model on the other hand assumes that individual effect (heterogeneity) is not correlated with any regressors and then estimates error variance specific to groups (or times). Hence, u_i is an individual specific random heterogeneity or a component of the composite error term. The intercept and slopes of regressors are the same across individual. The only difference among individuals (or time periods) lies in their individual specific errors, not in their intercepts.

The ultimate goal in this section of the paper is to empirically examine the impact of working capital management of selected tannery factories on their profitability. To this effect, the dependent variable (profitability) as explained by the ROA and working capital management as explained by ACP, APP, ICP, CR, DR and FS enter the model. The study have a balanced data of eight year from 2006 – 2013. So there are a total of 64 observations (eight cross-sections over eight years).

Therefore, the concern, before directly going to the estimation process, is the choice between these two competing models [fixed effect or random effect]. The study proceed by applying the Hausman test to check which model is more appropriate in order to answer the research objectives set in this paper based on the sample data set.

4.4.2.1: The Hausman Specification Test

The generally accepted way of choosing between fixed and random effects is running a Hausman test. The Hausman test is commonly used to indicate an ideal choice between fixed effect and random effect estimators (in a panel data context). This robust estimator was first proposed by Arellano (1993). Statistically, fixed effects are always a reasonable thing to do with panel data (they always give consistent results) but they may not be the most efficient model to run. Random effects will give better P-values as they are a more efficient estimator, so we should run random effects if it is statistically justifiable to do so. The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results.

The Hausman test tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are (insignificant P-value, Prob>chi2 larger than .05) then it is safe to use random effects. If the P-value is found to be significant, however, the fixed effect model should be used.
Null hypothesis is: Random- effect model is more appropriate
Alternative hypothesis: Fixed-effect model is more appropriate

- Decision rule: if the P-value is statistically significant a fixed-effect model is more appropriate to use, otherwise the random effect model.

As a procedure to run a Hausman test comparing fixed effect model with that of random effect model, the study first estimate the random effect model and the result is reported in table 4.5 below.

Table 4.5: Results of Hausman test: Fixed effect versus Random effect

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.239591	6	0.0185
** WARNING: estimated cross-section random effects variance is zero.			

source: Eviews 7 outputs based selected tannery factories of financial statement 2006-2013

As explained earlier in this chapter the Hausman specification test is used to choose between fixed effects and random effects models (Hausman, 1978). According to this test the null hypothesis of a random effects model is more appropriate than the fixed effects model (Brooks, 2008) is rejected at five percent significance level. As indicated by the Hausman test (see Table 4.6), which shows that random effects model is not appropriate and fixed effect model is to be preferred as the p- value of (0.0185) is much lower than 0.05. This demonstrates that the random effects model should be rejected and thus, the analysis is based on the fixed effects estimation.

The Hausman test has proofed that the fixed effect model is more appropriate than the random effect model to estimate the impact of ACP, APP, ICP, CR, DR and FS on ROA given the sample data from the financial statement of selected tannery factories.

4.5. Result of Regression Analysis

Model: $ROA_{i,t} = \beta_0 + \beta_1 ACP_{i,t} + \beta_2 APP_{i,t} + \beta_3 ICP_{i,t} + \beta_4 CR_{i,t} + \beta_5 DR_{i,t} + \beta_6 FS_{i,t} + \varepsilon_{i,t}$

$$ROA_{i,t} = -5.951 + 0.0713 APP_{i,t} + 0.0016 CR_{i,t} - 0.0092 DR_{i,t} + 0.0791 FS_{i,t}$$

Table 4.6: Estimation result using fixed effect model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.5911	0.30318	-1.949818	0.0508**
ACP	0.0000	0.00002	-0.302538	0.7635
APP	0.0713	0.00884	8.070078	0.0001*
ICP	0.0000	0.00000	-0.339593	0.7356
CR	0.0016	0.00150	1.092504	0.2798
DR	-0.0092	0.00918	-1.002314	0.3210
FS	0.0791	0.03816	2.073284	0.0433**
R-squared	0.743446		F-statistic	11.14546
Adjusted R-squared	0.676742		Prob(F-statistic)	0.0000
	Durbin-Watson stat		1.731311	

Source: Eviews 7 outputs based on selected tannery factories' financial statement 2006-2013

Note: * denotes significant at 1 percent and ** denotes significant at 5 percent.

R-squared value of about 0.74 and an Adjusted R-Squared value of 0.67 would indicate that the model (explanatory variables modeled using fixed effect panel least square linear regression) explains approximately 74% and 67% of the variation in the dependent variable (ROA) respectively.

The Joint F-Statistic indicates that the overall model (fixed effect panel least square estimated) is statistically significant. The null hypothesis for Joint F-statistic is that the explanatory variables in the model are not effective. For a 95% confidence level, a p-value (probability) of 0.0000 indicates that the model is statistically significant model. The Durbin-Watson Statistic is used to test for the presence of serial correlation among the residuals. In this case the value of Durbin-Watson statistic is 1.73 indicating no serial correlation or autocorrelation.

Coming to the empirical relationship between the dependent variable and the explanatory variables in this study the coefficients of estimation indicate that only two variables i.e. APP (at 1%) and FS (at 5%) are found to be statistically significant to explain variation in the dependent variable (ROA).

Average collection period is found to have no statistically significant impact on selected tannery factories' profitability as measured by their return on assets. However, this finding is in contrary to the expectation of the researcher. The result is also inconsistent with some studies for example Abrham Kamfeso (2013), revealed that average collection period has a significant impact on firm's profitability. On the other hand Mulualem (2011), showed that there is statistically negative relationship between average collection period and profitability of the firm.

As expected average payment period of selected tannery factories has statistically significant positive impact on these factories profitability. Accordingly a 1 percentage point increase in average collection period increases profitability by about 0.7 percentage point other things remain constant.

The regression result also shows that inventory conversion period has no statistically significant impact on selected tannery factories' profitability in Ethiopia. Again this finding is against the expectation of the researcher. The result is also inconsistent with some of the existing studies' finding like Mulualem (2011), revealed that inventory conversion period a statistically significant negative impact on profitability of firms.

In this study liquidity ratio and debt ratio are also found to have no statistically significant impact on selected tannery factories' profitability. Nevertheless, the finding is in contrary to Nuru Mohammed (2011) found that the ratio of current liability to total assets has statistically significant positive impact on profitability private limited manufacturing companies in Addis Ababa.

Finally the regression result indicates that selected tannery factories' size as measured by their total assets has a statistically significant negative impact on their profitability. This finding is again inconsistent with the expectation of the researcher and with some findings, a 1 percentage point increase in the size of selected tannery factories is expected to increase the ratio of profit before income tax to total asset (ROA) of the selected tannery factories by nearly 0.08 percentage point holding all other variables constant.

4.6: Hypothesis Testing

Hypothesis testing in regression analysis is basically a formal way of testing the quality of regression results. It can be used to perform standard tests, or to test theories in a formal way. However, the regression model should stand up to the classical linear regression model before doing any hypothesis testing. If this does not hold the results from the test will likely be invalid (Gujarati, 2003). The most common hypothesis test in econometrics is the t-test of the null hypothesis that a coefficient equals zero and the F-test which is used to test multiple restrictions. F-test is similar to t-test, but with several hypotheses at the same time.

The fixed effect model regression result in the previous section indicated that average collection period (ACP), inventory conversion period (ICP), liquidity and firm's debt variables are found to be statistically insignificant in explaining variation in the profitability of selected tannery factories.

The regression result also indicated that selected tannery factories' average payment period and firm size as explained by their total assets are found to be statistically significant. In this section the researcher conducted hypothesis testing of individual regression coefficients using t-test. If the sample findings are unlikely, given the null hypothesis, the researcher rejects the null hypothesis. Typically, this involves comparing the P-value to the significance level, and rejecting the null hypothesis when the P-value is less than the significance level.

Hypothesis 1

H0: There is no relationship between average collection period and profitability of selected tannery factories in Ethiopia.

H1: There is positive relationship between average collection period and profitability of tannery factories in Ethiopia.

As reported in table 4.6 the regression result indicate that there is a positive relationship between average collection period and return on assets of selected tannery factories in Ethiopia. According to the regression result the impact of average collection period on return on assets of these factories is almost zero. The P-value for this coefficient is 0.76. Therefore, the researcher has no sufficient evidence to reject the null hypothesis at 5 percent significance level.

Hypothesis 2

H0: There is no relationship between inventory conversion period (ICP) and profitability of selected tannery factories in Ethiopia.

H1: There is relationship between inventory conversion period (ICP) and profitability of selected tannery factories in Ethiopia.

As far as the empirical relationship between Inventory conversion period and return on assets of selected tannery factories' are concerned, the regression result reveals that the former has a positive impact on the latter. Accordingly, the impact of inventory conversion period of these factories on their return on assets is found to be 0.00 and P-value of 0.735. Therefore, the researcher has no sufficient evidence to reject the null that there is no relationship between inventory conversion period and profitability of these factories at the 5 percent significance level.

Hypothesis 3

H0: There is no relationship between average payment period and profitability of selected tannery factories in Ethiopia.

H1: There is relationship between average payment period and profitability of selected tannery factories in Ethiopia.

As it can be observed from the regression result reported in table 4.6 in the previous section average payment period of selected tannery factories has a positive impact on their return on

assets. This implied that when the APP increased by 1 unit and the profitability of the firm increased by 0.071unit. The impact of average payment period on return on assets is significant because at 1% significant the P-value is to 0.001. This is an indicator of reject the null hypothesis and accepted the alternative hypothesis therefore there is significant positive APP with ROA of selected tannery factories in Ethiopia.

Hypothesis 4

H0: There is no relationship between liquidity and profitability of selected tannery factories in Ethiopia.

H1: there is a relationship between liquidity and profitability of selected tannery factories in Ethiopia.

The sample finding for the impact of selected tannery factories on their return on assets is positive. Regression result reveal that the impact of liquidity ratio of selected tannery factories on their return on assets is 0.0016 with its P-value of 0.2798. Based on this result the researcher fail to reject the null as there is no evidence to reject it a 5 percent significance level.

Hypothesis 5

H0: There is no relationship between debt used by selected tannery factories and their profitability in Ethiopia.

H1: There is a relationship between debt used by selected tannery factories and their profitability in Ethiopia.

The regression result revealed that selected tannery factories and their return on assets have negative relationship and the impact is found to be 0.009 with a P-value of 0.321. Based on this evidence the researcher failed to reject the null that there is no relationship between the two at 5 percent significance level.

Hypothesis 6

H0: There is no relationship between size and profitability of selected tannery factories in Ethiopia.

H1: There is a relationship between size and profitability of selected tannery factories in Ethiopia.

The last hypothesis test is on the relationship between selected tannery factories size as measured by their total assets and their return on assets. The regression result revealed that selected tannery factories size has a positive impact of around 0.079 with a P-value of 0.043 on their return on assets (table 4.7). As a result the researcher rejected the null hypothesis that selected tannery factories size has no relationship with their return on assets at 5% significance level.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

This chapter presents conclusions and recommendations and it is divided into two sections. Section one deals conclusion based on the result and discussion and section two shows the possible recommendations forwarded by the researcher.

Though a number of studies have tried to address the impact of working capital management and its impact on the profitability of firms, no research work has been conducted (to the best knowledge of the researcher) on this area as far as the tannery factories are concerned especially in Ethiopia. Adequate amount of working capital is very essential for smooth running of any enterprise in general and the tannery factories in particular. Taking this into account the current study has tried to shed light on the relationship between working capital management as explained by average collection period, average payment period, inventory conversion period, liquidity, firm's debt ratio and firm size and the profitability of selected tannery factories as explained by ROA.

Taking sample data from selected tannery factories operating in the country over the period from 2006-2013. The study tried to empirically examine the impact of these explanatory variables on ROA. In order to achieve the objectives of the study, the researcher employed descriptive statistics and fixed effect model using Eviews 7 statistical package. The analysis of trend of variables in the model by industry shows that there is heterogeneity or individuality among the factories in various respects which indicates that pooled regression model does not fit the sample data. The correlation analysis, on the other hand, shows that there is a weak linear relationship among the variables. The fact that there is a weak linear relationship (below 0.5) among the explanatory variables indicates that there we can include all the explanatory variables in the model.

The study also tried to empirically tested the impact of ACP, APP, ICP, CR, DR and FS on ROA of selected tannery factories in the country employing fixed effect model. The result from the empirical examination found that only the ratio of average payment period and firm size as measured by the total asset of selected tannery factories have a statistically significant effect on the ratio of profit before income tax to total asset of the factories (ROA) based on these sample

data. The explanatory variables in the model are able to explain about 74% of the variation in the dependent variable(R-squared=0.74) and the overall model is jointly significant (F-statistic). The fact that our D-W statistic is close to two indicates that the model is also free from the problem of multicollinearity.

The sign of relationship between average payment period and the profitability of selected tannery factories (ROA) is against the relationship between the two in the literature. However, the relationship between sizes of factories with ROA is as expected by the researcher. In Ethiopia APP affects profitability of tannery factories negatively to the best the study sample data. The fact that there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability, implies that the longer a firm takes to pay its creditors, the more profitable it is. The study also conducted post estimation residual diagnostic tests and found that the residuals are normally distributed, free from the problem of heteroskedasticity, autocorrelation and multicollinearity.

5.2. Recommendations

Monitoring the working capital is important for the selected tannery factories' cash flow and their ability to meet their obligations when they fall due. However, they optimize this to ensure that their credit worthiness is not compromised, take advantage of discounts including avoiding incurring unnecessary interest costs.

According to the finding of this study, the researcher recommend that managers of selected tannery factories operating in Ethiopia should concentrate on efficiency of working capital management in general and the average payment period in particular because there is positive relationship APP and net operating profit shows that as APP increase, profitability of the firm increases. Therefore, the firms should adopt payment policy that slows down payment policies their payments.

The study has also revealed that firm size in terms of their total assets has positive significant relationship with profitability; therefore, the managers of the selected tannery factories are expected to safeguards for factories' total asset. As result, managers of these tannery factories are also expected to change the factors that negatively affected the total asset of these tannery factories.

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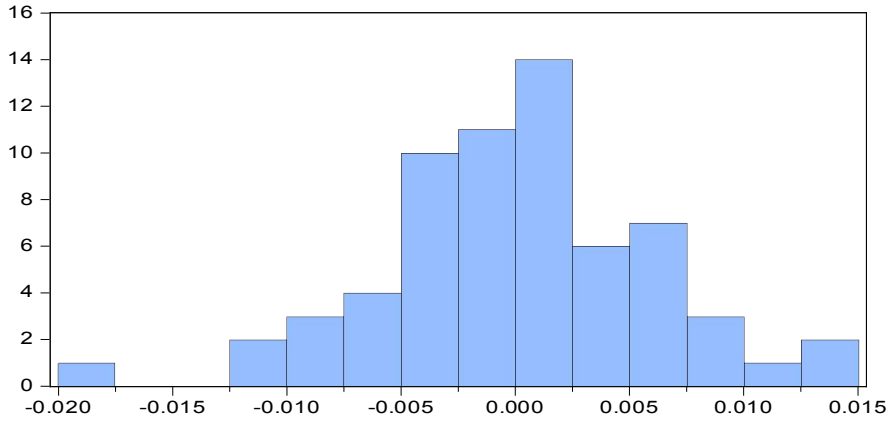
Appendixes

Appendix- 1 Normality test for CLRM



Series: RESID	
Sample 2006 2013	
Observations 64	
Mean	0.000000
Median	0.000126
Maximum	0.013239
Minimum	-0.019520
Std. Dev.	0.006034
Skewness	-0.344048
Kurtosis	3.803340
Jarque-Bera	2.983549
Probability	0.224973

Appendix- 2 Results of panel least square with random effect

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 05/08/15 Time: 15:39
Sample: 2006 2013
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.243429	0.364568	0.667720	0.5070
ACP	-1.00E-05	1.71E-05	-0.585953	0.5602
APP	0.000541	0.000148	3.655771	0.0006
ICP	-5.70E-06	1.47E-05	-0.387128	0.7001
CR	0.001629	0.003898	0.417893	0.6776
DR	-0.013843	0.037782	-0.366398	0.7154
FS	-0.024080	0.045986	-0.523626	0.6026

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.129749	1.0000

Weighted Statistics			
R-squared	0.180996	Mean dependent var	0.084301
Adjusted R-squared	0.094785	S.D. dependent var	0.145909
S.E. of regression	0.138822	Sum squared resid	1.098477
F-statistic	2.099451	Durbin-Watson stat	2.141651
Prob(F-statistic)	0.067322		

Unweighted Statistics			
R-squared	0.180996	Mean dependent var	0.084301

Sum squared resid	1.098477	Durbin-Watson stat	2.141651

Appendix -3 Results of Hausman test: Fixed effect versus Random effect

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.239591	6	0.0185

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ACP	0.000027	-0.000010	0.000000	0.0131
APP	0.000666	0.000541	0.000000	0.1289
ICP	-0.000011	-0.000006	0.000000	0.4049
CR	0.002360	0.001629	0.000004	0.7170
DR	-0.029168	-0.013843	0.000222	0.3036
FS	0.212398	-0.024080	0.006770	0.0041

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/08/15 Time: 15:41
Sample: 2006 2013
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.640873	0.747131	-2.196231	0.0327
ACP	2.68E-05	2.27E-05	1.181287	0.2431
APP	0.000666	0.000169	3.933725	0.0003
ICP	-1.08E-05	1.59E-05	-0.676494	0.5018
CR	0.002360	0.004389	0.537721	0.5932
DR	-0.029168	0.040613	-0.718189	0.4760
FS	0.212398	0.094259	2.253345	0.0287

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.372417	Mean dependent var	0.084301
Adjusted R-squared	0.209245	S.D. dependent var	0.145909
S.E. of regression	0.129749	Akaike info criterion	-1.055795
Sum squared resid	0.841736	Schwarz criterion	-0.583539
Log likelihood	47.78543	Hannan-Quinn criter.	-0.869749
F-statistic	2.282362	Durbin-Watson stat	2.135624
Prob(F-statistic)	0.018652		

Appendix- 4: Results of panel least square including dummy variables

Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/08/15 Time: 15:48
Sample: 2006 2013
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64
ROA=C(1)+C(2)*ACP+C(3)*APP+C(4)*ICP+C(5)*CR+C(6)*DR+C(7)*FS
+C(8)*DC+C(9)*DE+C(10)*DETH+C(11)*DW+C(12)*DAA+C(13)*DB
+C(14)*DM

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.5911	0.3032	-1.9498	0.0508
C(2)	0.0000	0.0000	-0.3025	0.7635
C(3)	0.0713	0.0088	8.0701	0.0000
C(4)	0.0000	0.0000	-0.3396	0.7356
C(5)	0.0016	0.0015	1.0925	0.2798
C(6)	-0.0092	0.0092	-1.0023	0.3210
C(7)	0.0791	0.0382	2.0733	0.0433
C(8)	0.2131	0.1028	2.0735	0.0433
C(9)	0.3366	0.1275	2.6396	0.0110
C(10)	0.1452	0.0982	1.4775	0.1458
C(11)	0.0702	0.0684	1.0266	0.3095
C(12)	0.2777	0.1076	2.5798	0.0129
C(13)	0.0265	0.0874	0.3036	0.7627
C(14)	0.0846	0.0882	0.9588	0.3423

R-squared	0.372417	Mean dependent var	0.084301
Adjusted R-squared	0.209245	S.D. dependent var	0.145909
S.E. of regression	0.129749	Akaike info criterion	-1.055795
Sum squared resid	0.841736	Schwarz criterion	-0.583539
Log likelihood	47.78543	Hannan-Quinn criter.	-0.869749
F-statistic	2.282362	Durbin-Watson stat	2.135624
Prob(F-statistic)	0.018652		

Appendix 5: Result of Wald coefficient restriction test

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	2.178663	(7, 50)	0.0520
Chi-square	15.25064	7	0.0329

Null Hypothesis: C(8)=C(9)=C(10)=C(11)=C(12)=C(13)=C(14)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(8)	0.213129	0.102787
C(9)	0.336583	0.127511
C(10)	0.145153	0.098240
C(11)	0.070180	0.068361
C(12)	0.277696	0.107640
C(13)	0.026542	0.087430
C(14)	0.084562	0.088194

Restrictions are linear in coefficients.

Appendix 6 :Estimation result using fixed effect model

Dependent Variable: ROA
Method: Panel Least Squares
Date: 05/08/15 Time: 16:05
Sample: 2006 2013
Periods included: 8
Cross-sections included: 8
Total panel (balanced) observations: 64

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.591140	0.303177	-1.949818	0.0568
ACP	-5.23E-06	1.73E-05	-0.302538	0.7635
APP	0.071300	8.008400	8.070078	0.0000
ICP	-1.04E-06	3.06E-06	-0.339593	0.7356
CR	0.001634	0.001495	1.092504	0.2798
DR	-0.009199	0.009178	-1.002314	0.3210
FS	0.079121	0.038162	2.073284	0.0433

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.743446	Mean dependent var	0.124860
Adjusted R-squared	0.676742	S.D. dependent var	0.207659
S.E. of regression	0.118870	Sum squared resid	0.706502
F-statistic	11.14546	Durbin-Watson stat	1.731311
Prob(F-statistic)	0.000000		

Appendix 7: Raw Data

ROA	ACP	APP	ICP	CR	DR	firms size
-0.00524177	84.4634297	48.3617219	163.7804133	28.81970306	0.033171538	8.240971882
-0.027405892	79.4269705	54.58665372	155.4495045	1.943831471	0.362867795	8.329143571
0.000888442	58.6321315	57.86496845	172.4294694	17.4648865	0.055180915	8.361526854
0.006769156	55.32304858	50.4405363	200.8346328	1.865822701	0.040374957	8.304534868
0.080594091	367.786116	71.43625332	156.722757	2.517375939	0.380364821	8.429414074
0.019244838	561.2282156	73.75862977	137.8854753	1.806545181	0.519220203	8.632997416
-0.065053478	787.4353178	86.80884595	195.0568589	2.243705399	0.529440185	8.559236461
0.0203295	793.7503263	135.9723843	214.3120152	2.105202211	0.5911909	8.565956306
0.173867824	64.02168387	10.95660544	139.2737228	0.71020429	0.714313992	7.726280145
0.038460991	133.3606338	41.94113392	203.1275568	0.07764022	0.03973505	7.5473013
0.056152739	90.51926183	25.91435459	161.2503133	0.76494506	0.496950238	7.677562444
0.109137496	39.01540616	35.4850362	142.7961019	0.07256636	0.031352508	7.815076633
0.070682824	46.88376842	26.06909188	56.20718719	8.46890663	3.46704858	7.968471377
0.0712976	69.25569704	25.82383321	142.325968	0.08760455	0.041220984	7.894112548
-0.017860401	62.86504725	37.46353228	279.3543848	1.04004936	0.523206113	7.757648818
0.021749669	75.51982953	54.55286896	293.055858	1.03080051	0.519886569	7.813742408
0.006389969	9673.161209	35.4850362	59.89195606	0.38879388	0.307432822	5.60289087
0.000174284	158.961477	15.71207708	67.6764253	0.58512095	0.414705146	7.508013295
0.003300416	274.047697	63.51946011	84.78180277	0.77842574	0.505898327	7.372717834
-0.010842614	257.1437425	12.44517711	222.7688697	0.92038456	0.602392798	7.270268659
0.156632256	134.4406325	102.3316395	162.6116953	1.06422665	0.60566419	7.287368789
0.008289808	97.52821677	76.70548268	170.0311191	0.99288775	0.733796511	7.330500826
0.90960281	33.293436	225.3598231	92.42903144	0.65271447	0.465860519	7.969529169
0.089392443	39.01540616	94.72604868	154.2795728	0.97000793	0.899299373	7.658295825
0.000669762	106.2191925	63.51946011	18.18142357	0.08502454	0.083371371	7.39113117
0.002964853	7.36691076	77.67050108	246.8049374	1.07087597	0.741904641	7.642891439
0.0034241	75.16382434	85.6188706	174.9760697	0.99822707	0.775113571	7.847516642
0.006965168	72.2089468	81.51593023	154.2795728	0.97000793	0.749336433	7.658295825
0.079807094	77.2089468	1.251247803	2.130264927	0.09742642	0.076537761	8.017046443
0.089392443	105.3493538	46.08235415	98.54700468	0.89919865	0.880649153	8.021272014
0.65480344	54.62603172	19.71192661	243.6864393	0.91481911	0.899299373	8.049325759
0.001401981	61.37349554	804.9673166	320.0612904	0.09242749	0.091132222	8.118242439
0.050773214	9.74130101	0.279913517	495.9129964	0.2008751	0.469511137	8.269606986
0.059580619	3.407709846	46.47734982	424.1346629	3.304852523	0.172559793	8.300708844
0.077198123	8.497850593	62.66402206	413.696302	0.306556619	0.313796276	8.226532553
0.052906202	9.74130101	47.61985086	237.7361787	4.185572366	0.130506276	8.339399503
0.183337826	30.74420762	22.83042456	352.407026	12.65150163	0.078442073	8.387239785
0.071467549	15.04278632	16.82587449	457.1454688	4.344581826	0.275134826	8.471350807
-0.015704954	11.15929383	13.8772153	286.0591306	4.489003685	0.235332431	8.537708849
-0.025137608	14.57026791	17.42319048	471.2108876	4.546613543	0.361165881	8.428902024
0.376827791	96.2416939	16.72244088	65.65781604	1.834920227	0.272927455	7.292166278

0.041545437	50.73549978	8.314154434	76.76341498	1.991409177	0.26934239	7.440680262
0.069607844	95.89990692	7.886275252	76.88187223	3.11746826	0.333394386	7.527038303
0.030676581	74.89097055	8.054542808	49.8258666	1.854255056	0.303101346	7.597309546
0.012030664	94.34668477	5.401868165	57.14638401	4.226436883	0.338785689	7.662015107
0.009335574	46.27402984	10.5560673	41.04349524	3.786229731	0.266382087	7.856728033
-0.05350419	25.4624684	7.925202878	33.76330124	1.212355042	0.415032703	7.763761568
0.000136543	23.66148042	6.193031629	89.89420195	4.544745407	0.537980704	7.835356713
0.058518221	16.91251657	7.62071977	400.2486524	1.353307868	0.542431596	7.920463175
0.077360056	19.15151408	94.72604868	383.1902916	1.547579658	0.587197811	7.993808973
0.048461328	15.38866602	280.5156438	470.7738685	1.744918514	0.64862269	8.033433893
0.071467808	14.12915147	291.3813588	391.49566	1.143101444	0.581443371	8.071336824
0.037793499	13.37491983	168.4457403	293.3954904	0.896968063	0.598196773	8.113284613
0.064224722	18.93461353	221.8096346	256.6811888	0.975512018	0.570002969	8.13161715
0.032543394	17.18759763	121.5556293	400.7560132	0.772039484	0.632800638	8.021123645
0.056768779	16.81045472	108.665294	375.4416619	0.601696315	0.616370059	8.260064998
0.01448069	10.81496443	144.0219	88.6928415	0.616397276	0.377677535	7.758862793
0.005840238	10.03693949	1.744918514	162.2127285	0.744944629	0.456440776	7.936298482
0.012714915	24.74215876	6.365242279	71.06009855	0.753329555	0.430912164	8.05393564
0.011789303	28.18387813	1.579602034	244.340141	0.790555022	0.518062351	7.86258045
0.003266117	29.95400488	56.4984739	210.5323532	0.936135288	0.594436392	7.889055951
0.000178097	1458.847719	122.0155289	9513.614942	0.004995436	0.004965139	8.263123097
0.006827329	9.185139234	2.53967952	168.2309032	0.138209549	0.093769413	8.25710401
0.016779308	9.166287772	-4.267592084	129.1520253	0.534465966	0.394995799	8.42034921