THE EFFECT OF MANAGEMENT OF WORKING CAPITAL POLICIES ON FIRMS' PROFITABILITY
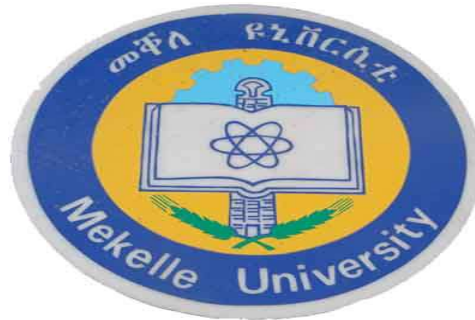
Evidence from Manufacturing Private Limited Companies in Tigray Region, Ethiopia

A Research Project Submitted To Mekelle University, Department Of Accounting & Finance for the Award of the Degree of Master of Science in Finance & Investment

By

Tewodros Abera Belay

Reg. No-- CBE/PR-031/01

Advisor:

Dr. FISSEHA GIRMAY, Ph.D.
Assistance professor of accounting & finance
Department of Accounting and Finance
College of Business & Economics
Mekelle University
Tigray – Ethiopia.

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Mekelle, Ethiopia

A Study On

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DEDICATION

In Memory Of My Brother **Birhanu Gezahegn** *with Love!*

You Are Always In My Thought!

DECLARATION

I, Tewodros Abera, hereby declare that the Project work entitled "**THE EFFECT OF MANAGEMENT OF WORKING CAPITAL POLICIES ON FIRMS' PROFITABILITY: Evidence from Manufacturing Private Limited Companies in Tigray Region, Ethiopia**" submitted by me for the award of the degree of Master of Science in Finance and investment of Mekelle University at Mekelle, is original work and it has not been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other university or institution.

Place: Mekelle   Signature:

 Date: June, 2010   Name: **Tewodros Abera**

CERTIFICATION

I certify that the project work entitled "**THE EFFECT OF MANAGEMENT OF WORKING CAPITAL POLICIES ON FIRMS' PROFITABILITY: Evidence from Manufacturing Private Limited Companies in Tigray Region, Ethiopia**" is a bona-fide work of Mr. Tewodros Abera who carried out the research under my guidance. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the bases of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Place: Mekelle   Signature:

Date: May, 2010   **Dr. FISSEHA GIRMAY, Ph.D.**
Assistance professor of accounting & finance
Department of Accounting and Finance
College of Business & Economics
Mekelle University
Tigray – Ethiopia.

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Tewodros Abera

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ABSTRACT

Research studies on the effects of management of working capital policies on firms' profitability in developing countries, especially in Ethiopia remained an ignored area of empirical research. Thus, this study examined the effect of working capital investment and financing policies on firms' profitability by using audited financial statements of a sample of 11 manufacturing private limited companies in Tigray region, Ethiopia for the period of 2005 to 2009. The study used return on assets, return on equity and operating profit margin as dependent profitability variables. Accounts receivable period, inventory holding period and accounts payable period are used as independent working capital investment policy variables. Moreover, cash conversion cycle and current assets to total assets ratio are used as comprehensive measures of working capital investment policy. On the other hand, current liabilities to total assets ratio is used as measure of working capital financing policy. The two traditional measures, current ratio and quick ratio, are used as liquidity indicators. In addition, the study used firm size as measured by logarithm of sales, firm growth rate as measured by change in annual sales, financial leverage and annual GDP growth rate as control variables. Both correlation analysis and pooled panel data regression models of cross-sectional and time series data were used for analysis. The results show that longer accounts receivable and inventory holding periods are associated with lower profitability. There is also negative relationship between accounts payable period and profitability measures; however, except for operating profit margin this relationship is not statistically significant. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms. No significant relationship between current assets to total assets ratio and profitability measures has been observed. On the other hand, findings show that a highly significant positive relationship between current liabilities to total assets ratio and profitability. Finally, negative relationships between liquidity and profitability measures have also been observed. Managers, therefore, can increase firms' profitability by improving the efficiency of management of working capital investment and financing policies while, also keeping in view the trade-off between liquidity and profitability.

Keywords: Working capital investment and financing policies, Profitability, Liquidity

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ACRONYMS

APP	Accounts Payable Period
ARP	Accounts Receivable Period
CATAR	Current Assets to Total Assets Ratio
CCC	Cash Conversion Cycle
CLTAR	Current Liabilities to Total Assets Ratio
CR	Current Ratio
GDP	Gross Domestic Product
ERCA	Ethiopian Revenue and Customs Authority
FGR	Firm Growth Rate
FL	Financial Leverage
FS	Firm Size
IHP	Inventory Holding Period
OLS	Ordinary Least Squares
OPM	Operating Profit Margin
QR	Quick Ratio
ROA	Return on Assets
ROE	Return on Equity

CHAPTER I
INTRODUCTION

1.1 Background of the Study

Corporate Finance decisions are generally divided into two main parts: the management of assets (investments decisions) and source of funds or liabilities and equity (financing decisions), in the long-term and the short-term (Pandey, 2007; Ross, et al., 2000). The management of short-term assets and related liabilities is called working capital management. Working capital is the capital available for conducting the day-to-day operations of an organization; it represents firms' investment in short term assets. Working capital policies of a firm are concerned with two decision areas. Determination of appropriate level of investment in current assets and mix of current assets and decisions as to what methods of financing to use to obtain funds for this investment. They are parts of investment and financing decisions respectively.

Although there is no standard fixed requirement, all businesses, to one degree or another, require working capital. The actual amount required will depend on many factors such as the age of the company, the type of business activity, credit policy, market and demand conditions, technology and manufacturing policy, operating efficiency, availability of credit from suppliers and price level changes (Pandey, 2007). It is indispensable that an appropriate amount of working capital is budgeted to meet anticipated future needs. Failure to budget correctly could result in the business being unable to meet its liabilities as they fall due. If a business finds itself in such a situation, it is said to be technically insolvent. In conditions of uncertainty, firms must hold some minimal level of cash and inventories based on expected sales plus additional safety stocks.

The management of working capital is very important to businesses of all sizes (Padachi, 2006). First, it consists of a large portion of firms' investment. It represents around 40 percent of total assets in a typical manufacturing firm and 50 percent to 60 percent of total assets in retailing and wholesales (Moyer, et al., 1995; Sebhatleab, 2002). Second, according to Smith (1980), the efficient management of working capital is important from the point of view of liquidity (risk) 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. Unnecessary investment in current assets will tie up funds idle and hence reduces firms' ability to invest in productive assets such as plant and machinery, thereby reducing profitability. On the other hand, inadequate investment in current assets reduces the liquidity position causing insolvency, which intern leads to bankruptcy.

In history, working capital management has evolved through different stages, mainly– the control, optimization and value creation (Sebhatleab, 2002). Initially, it was started as an organized way of controlling current assets like balances of cash, receivables and inventories. At this stage the main objective was to make sure that working capital is not embezzled. At that time both researchers and practitioners, therefore, were developed various control procedures. During the optimization phase, the main focus was not only on the physical safety of working capital items but also on the optimization of accounting profits by minimizing related costs and maximizing related income. At this stage particular models like cash optimization models and inventory optimization models were developed to ensure that firms do not get problems due to lack of liquidity or incur too many costs by holding excessive working capital levels. The last stage, the value creation stage, concentrated on how to help managers in the creation of value without disregarding the above two objectives. Particularly, the cash flows approach is has used as a main tool to measure the value created by firms. In this research, the researcher used the cash conversion cycle as a measure of continuous cash or liquidity flow to analyze the effect of working capital policies on firms' profitability.

1.2 Working Capital Management and the Researchers' View

While working capital assets and the related short-term liabilities affects firms' profitability and liquidity (risk) as well as market values of shares (Smith, 1980), habitually the corporate finance literature have focused on the study of long-term financial decisions such as long-term investments, capital structure, dividends or company valuation decisions, among other topics. To put it simply, many finance scholars does not view working capital management as important research topic that requires empirical investigation (Afza and Nazir, 2007). According to Lamberson (1995), however, working capital management has become one of the most important issues in the organizations where many financial executives are struggling to identify the basic working capital determinants and the appropriate level of working capital. In other words, in practice firms try to keep an optimal level of working capital that maximizes their profitability as well as value (Deloof, 2003). Working capital management of a business covers all the company's activities relating to vendor, customer and product (Sebhatleab, 2002). Then it requires a "Total" approach that considers such activities. This means that firms should have to manage efficiently both internal and external aspects of working capital (Hall, 2002; Sebhatleab, 2002). It requires, therefore, the focus of researchers' in identifying its determinants and examining its effect on firms' performance as well as risks. Consequently, companies can minimize risk and improve the overall performance by understanding the role and drivers of working capital from the studies.

1.3 Statement of the Problem

The effect of working capital management on corporate profitability has been studied substantially by different researchers (Deloof, 2003; Filbeck and Krueger, 2005; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Samiloglu and Demirgunes, 2008; Shin and Soenen, 1998). Most of these and other researchers identify significant relationship between efficiency in working capital management and firms' performance. However, almost all,

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these studies concentrated on large firms operating within well developed money and capital markets of developed economies. From such findings it is difficult to generalize for relatively small size Ethiopian firms that operate within an undeveloped financial sector (with limited financial markets), where firms mostly obtain funds for their needed investment in working capital from owner financing, trade credit and short term bank loans. Research studies on the effects of management of working capital policies on firms' profitability in developing countries, especially in Ethiopia remained an ignored area of empirical research. To the best of researcher's knowledge, no research has been done in Ethiopia in general, in Tigray in particular. Thus with this serious shortcomings of the current literature, this study contributes to the existing literature by studying the issue at hand specifically for Tigray region, Ethiopia. Generally, the researcher conducted this study with the aim of providing answers to the following basic research questions:

1. Does working capital investment policy affect profitability of Private Limited Companies in Tigray?

2. Does working capital financing policy affect profitability of Private Limited Companies in Tigray?

3. How are profitability and liquidity related in Tigray Private Limited Companies?

1.4 Justification for the Study

Working capital may be regarded as the life blood of business. Working capital is of major importance to internal and external analysis because of its close relationship with the current day-to-day operations of a business. It is common knowledge that a firm's value cannot be maximized in the long run unless it survives the short run. Firms fail most often because they are unable to meet their working capital needs; consequently, sound working capital management is a requisite for firm survival. About 60 percent of a financial manager's time is devoted to working capital management and many of the

potential employees in finance-related fields will find out that their first assignment on the job will involve working capital (Afza and Nazir, 2007; Sebhatleab, 2002). However, as explained above finance literature gives no or very little focus for the management of working capital (Afza and Nazir, 2007). For these reasons, management of working capital policy specially its effect on firms' profitability is an essential topic of study.

1.5 Objectives of the Study

1.5.5 General Objective

The general objective of this study is to investigate the effect of working capital investment and financing polices on profitability of manufacturing private limited companies in Tigray, Ethiopia. Whilst, also look into the relationship between the two goals of working capital management policies: liquidity and profitability.

1.5.2 Specific Objectives

The specific objectives of this study are:-

1. To examine the effect of working capital investment policy on firms' profitability.

2. To investigate the effect of working capital financing policy on firms' profitability.

3. To examine the relationship between the two objectives of working capital policies: liquidity and profitability.

1.6 Significance of the Study

The study is significant at least for the following two reasons. First, as it has been discussed in the problem statement part, no empirical research has been done yet to examine the effect of working capital management on firms' profitability in Tigray. Hence, the findings of this study have a great contribution to the body of knowledge by identifying how working capital management efficiency will affect the profitability of

manufacturing private limited companies in Tigray. Second, it can serve as a good base for the forthcoming researchers who want to do a further research on this topic in Tigray region, Ethiopia or else where. Thus, by developing a conceptual framework regarding the relationship between working capital management and profitability of companies, in this research presented hereafter, the researcher contributes to the current literature. Generally, stakeholders such as researchers, policy makers, professionals and managers can use the research to guide future research, reappraise current business practices, and provide basic guidelines for new working capital policies in a dynamic business environment.

1.7 Scope of the Study

In a nut shell, this research study is delimited to:

Topic: the topic of this study is delimited to examining the effects of management of working capital investment and financing policies on firms' profitability whilst, also look into the relationship between profitability and liquidity.

Variables Used: the variables used are delimited to the four types of variables-profitability, working capital policies, liquidity and control variables, that are described in chapter three.

Study area: The geographical scope of this study is delimited in to the boundary of Tigray Regional State, Ethiopia.

Sampling Units and size of sample: the sampling units of this study are delimited to 80 manufacturing private limited companies located and operating in Tigray and the sample size is delimited to 11companies.

Methodology used: the methodology is delimited only to quantitative method with descriptive statistics, correlation and econometrics analysis tools.

1.8 Limitations of the Study

The sample size for this study may no be large enough to study the issue and to represent the study population, for the very reason that, there are limited number of firms with an operating life of more than five years and also the problem of getting complete financial information for the study period. Moreover, primary data was not used due to time and financial constraints. These may limit the findings of the research.

1.9 Chapterization

This thesis consists of five chapters, including the first introductory chapter just discussed. The second chapter discusses the theoretical underpinnings and the works of previous researchers from which the conceptual framework for analysis and the hypotheses are derived. The research methodology with the description of variables and hypotheses of the study is presented in the third chapter. In the fourth chapter, the results and discussions of empirical data collected and analyzed using descriptive statistics, correlation analysis and econometrics models are presented. In the final chapter, summary of findings of the study, conclusion and possible recommendations are provided.

CHAPTER II
LITERATURE REVIEW

2.1. The Nature of Working Capital

While assets represent wealth of the firm, firms may not want to hold many of the assets appearing on the balance sheet (Bhattacharyya, 1987; Sebhatleab, 2002). In a perfect world, the production process takes very little time to convert the raw materials to finished products which gets sold immediately in cash when it completed the production process; and the input market is so perfect that any amount of raw material is available at any time at a fixed price. There is no uncertainty, no transaction costs, and no scheduling costs of production or constraints of technology. The unit costs of producing goods will not change with the amount produced. Firms can borrow and lend at the same interest rate. Capital, labor and product markets are perfectly competitive and reflect all available information. In such an ideal world firms may like to hold fixed assets like plant and machinery which produce goods and services; the sales of which generate a profit; current assets like accounts receivable, inventories or even cash are not likely to be held in the business.

However, this is an ideal situation difficult to have in the real world. Instead, the production process takes quite some time; the finished products are not sold so quickly which means a quantity of stocks remains in the warehouse. Moreover, the sales are not always in cash; some amount of credit has to be given and the input markets are so uncertain, so that, firms have to keep a certain amount of safety stock all the time. These 'non-ideal' conditions thus generate certain assets which are called current assets and the levels of these assets make a significant part of a firm's investment in its total assets. Current assets, therefore, block the funds which should have been otherwise available for meeting working expenses. Each and every current asset of a firm is, thus, nothing but congealed fund for working expenses. And because business is a continuous

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

2.2. 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.

The concept of working capital was, perhaps, first evolved by Marx (1867), thought in a somewhat different form. Marx used the term 'variable capital' meaning outlays for payrolls advanced to workers before the goods they worked on were complete. He contrasted this with 'constant capital', which according to him, is nothing but 'dead labor', i.e. outlays for raw materials and other instruments of production produced by labor in earlier stages which are now needed live labor to work with in the present stage. This 'variable capital' was the wage fund which remains blocked in terms of financial management, in work-in-process along with other operating expenses until it is released through sale of finished goods. Although Marx did not mention that workers also gave credit to the firm by accepting periodical payment of wages which funded a portion of work-in-process, the concept of working capital, as we understand today, was embedded in his 'variable capital'.

The working capital of a business enterprise can be said as portion of its total financial resources which is put to a variable operative purpose (Brigham and Gapenski, 1996). The facilities that are necessary to carry on the productive activity and represented by fixed assets investment (i.e. non- current asset investment) are to be operated by working capital. In an annual survey of industries by government of India (2008), the working capital is defined as "stocks of raw materials, stores, fuels, semi finished goods, including work in progress and finished products; cash in hand and at the bank and the algebraic sum of sundry creditors as represented by (a) outstanding factor payments e.g. rent, wages, interest and dividends; (b) purchase of goods and services; (c) short term loan and advances and sundry debtors comprising amounts due to the factory on the account of sale of goods and services and advances towards tax payments."

But with the evolution of the concept came there were controversy about the definition of working capital. Guthman and Dougall (1948) defined working capital as excess of current asses over current liabilities. This view was elaborated by Gladson (1951) when he defined working capital as the excess of current assets of a business (cash, accounts receivables, inventories, for example) over current items owed to employees and others (such as salaries and wages payables, accounts payables, taxes owed to government). This concept of working capital, as has been commonly understood by the accountants, more particularly understood as net working capital to distinguish it from gross working capital which represents total current assets (Sen and Oruc, 2009). Walker (1964) holds that this concept is useful to groups interested in determining the amount and nature of assets that may be used to pay current liabilities. These interested groups, as suggested by Walker, mostly composed of creditors, particularly the supply creditors who may be concerned to know the 'margin of safety' available to them when the realization of current assets be delayed for some reasons.

2.3 Working Capital Management

The term capital is used in deferent ways in economics and in finance (Bhattacharyya, 1987). In economics, the term capital represents goods consisting of a great variety of things, namely, machines of various kinds, plants, houses, tools, raw materials and goods-in-process. A finance manager of a firm looks for these things on the assets side of the balance sheet. For capital, he turns his attention to the other side of the balance sheet and never commits the mistake of adding the two together while taking the census of total capital of the business. Although economists regard fixes capital as what is represented by long-term assets, a finance manager defines fixed capital as that having long term maturity.

It is not necessary to restrict utilization of the fixed capital to finance fixed asset only; rather, to use the fixed capital to finance a part of current assets also in addition to financing fixed assets is preferred. There may also be a situation where all the fixed and current assets are financed from fixed capital only. In the latter case, the firm will have current assets but no current liability, but we cannot say that the firm does not have any need for working capital. The firm might not desire to contract current liability, but its operations would have generated current assets which have to be funded to ensure continuity of production. This fund is, in fact, an additional fund over and above the fund required to meet working expenses of the firm.

Working capital management refers to all those decisions and activities a firm undertakes in order to manage efficiently the elements of current assets (Brigham and Gapenski, 1996; Pandey, 2007). Van-Horne and Vachowicz (2004) defined the working capital management as that aspect of financial activity that is concerned with the "safeguarding and controlling of the firm's current assets and the planning for sufficient funds to pay current bills." Management of current assets is, therefore, distinct from the management of fixed assets. But more important than this tautology is that because of the dynamism of the current assets, the finance manager has to be constantly on guard

to ensure that their dynamic stability is not impaired to affect the net worth of the firm negatively. Gross current assets should, therefore, be understood by their own meaning, connotation and effect on the firms and should not mechanically equated with gross working capital just because arithmetically the two may appear to be same in a balance sheet. Besides, the funding operations of the current assets are quite distinct from the management of current assets. A modern day finance manager first projects the level of current assets of the firm under projected sales and then tries to find out sources to finance these current assets in such a way that cost of capital is optimized.

Management of gross current assets and gross working capital, or simply working capital, is not one and the same. The total of projected current assets is an aggregate figure for which capital has to be raised and the two may not have any bearing on each other. The profiles of the types of capital so raised in regard to the risk opportunity for gain or loss and also the cost are different from that of current assets.

Working capital is so much in use in common parlance and is so much misunderstood. Even among the professional managers the controversy and confusion persist. While an accountant will regard working capital as current assets minus current liabilities and call it as net working capital, a finance manager will consider gross current assets as the working capital. Both may be true, but their concerns differ. The former's concern is arithmetical accuracy trained as he is to tally the two sides of the balance sheet. But the finance manager's concern is to find fund for each item of current assets at such costs and risks that the evolving financial structure remains balanced between the two.

When one asks a production controller: what is working capital? His answer is very simple and straightforward that working capital is the fund needed to meet the day-to-day working expenses, i.e. to pay for materials, wages and other operating expenses. Is there any difference between the statements of ultimate analysis; the latter may be true, but according to the accountant or the finance manager it is the very working expenses that get blocked in current assets along the productive-distributive line of an enterprise,

and net working capitals that liquidity which takes care of the working expenses if the line gets extended due to any reason.

2.4 Working Capital and Liquidity

According to Moyer, et al., (1998), the dual goals of working capital management are liquidity and profitability. Managing liquidity, costs related to excesses and shortages of working capital, can increase firms' profitability. Firms have to determine the individual and joint impact of the levels of short-term investment and financing on the dual objectives of working capital management. These goals imply that decisions that tend to maximize profitability tend to minimize liquidity and vice versa. Conversely, focusing almost entirely on liquidity will tend to reduce the potential profitability of the firm (Brigham and Gapenski, 1996; Eljelly, 2004; Ross, et al., 2000).

However, the notion of the liquidity itself has undergone considerable changes with the advances in financial management during the recent years. Liquidity has so far been defined as a pyramid of current assets in descending order of realisability with cash holding the top position and inventory, the last. This notion has given rise to liquidity ratios such as current ratio or quick ratio, and later to the concept of *net working capital*. The pyramid is no upside down with inventory at the top. When we examine the pipeline theory of working capital, we will find that pipeline of the productive-distributive system of an enterprise consists of only inventories which, at different stages, take on different names like work-in-progress, finished goods, accounts receivable, cash balance, etc. Working capital structure is being so designed today in efficient organizations as to take care of this fundamental liquidity of an enterprise with zero or even negative net working capital.

Firms may have an optimal level of working capital that maximizes their value. Large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduce the risk of the stock-out and trade credit may stimulate sales because it allows customers to assess product quality before paying (Deloof and Gegers, 1996; Long, et al.,

1993). Because suppliers my have significant cost advantages over financial institutions in providing credit to there customers, it can also be an inexpensive source of credit for customer (Peterson and Rajan, 1997). The flip side of granting trade credit and keeping inventories is that money is locked up in working capital.

2.5 Working Capital Policies

Working capital policies refer to decisions relating to the level of current assets and the way they are financed (Ross, et al., 2000). These policies have been divided into two categories by Weinraub and Visscher (1998). A firm may adopt an aggressive working capital investment (asset management) policy with a low level of current assets as percentage of total assets. On the other hand, aggressive working capital financing policy uses high level of current liabilities as percentage of total liabilities. Excessive levels of current assets may have a negative effect on the firm's profitability whereas a low level of current assets may lead to lower level of liquidity and stock-outs resulting in difficulties in maintaining smooth operations (Van-Horne and Wachowicz, 2004). Moreover, aggressive working capital financing policy that utilize higher levels of normally lower cost short-term debt increase the risk of a short-term liquidity problem.

Therefore, more aggressive working capital policies are associated with higher return and higher risk while conservative working capital policies are concerned with the lower risk and return (Carpenter and Johnson, 1983; Gardner, et al., 1986; Weinraub and Visscher, 1998). The main objective of working capital management is to maintain an optimal balance between each of the working capital components. Business success heavily depends on the ability of financial executives to effectively manage receivables, inventory, and payables (Filbeck and Krueger, 2005). Firms can reduce their financing costs and/or increase the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Most of the financial managers' time and effort are allocated in bringing non-optimal levels of current assets and liabilities back toward optimal levels (Lamberson, 1995).

An optimal level of working capital would be the one in which a balance is achieved between risk and efficiency. It requires continuous monitoring to maintain proper level in various components of working capital i.e. cash receivables, inventory and payables etc. The optimal level of working capital is determined to a large extent by the methods adopted for the management of current assets and liabilities. It requires incessant management to maintain proper level in various components of working capital i.e. cash, receivables, inventory and payables etc. In general, current assets represent important component of total assets of a firm.

A firm may be able to reduce the investment in fixed assets by renting or leasing plant and machinery, whereas, the same policy cannot be followed for the components of working capital. The high level of current assets may reduce the risk of liquidity associated with the opportunity cost of funds that may have been invested in long-term assets. The impact of working capital policies is highly important. These profitability assumptions suggest maintaining a low level of current assets and a high proportion of Current liabilities to total liabilities. This strategy will result in a low, or conceivably negative, level of a working capital. Offsetting the profitability of this strategy, however, is the increased risk to the firm. In determining the appropriate amount, or, level, of current assets, management must consider the trade- off between profitability and risk.

Many surveys have indicated that managers spend considerable time on day-to-day problems that involve working capital decisions. One reason for this is that current assets are short-lived investment that are continually being converted into other assets types (Rao, 1989). For example, cash is used to purchase inventory items eventually become accounts receivable when they are sold on credit; and finally, the receivable are transformed into cash when they are collected. With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. The ability to match short term obligations has only improved from a liquidation perspective and not from a going concern approach (Shulman and Dambolena, 1986). A firm's net working capital is also

often used as a measure of its liquidity position. That is, it represents the risk or probability that a firm will be unable to meet is financial obligations as they come due.

Therefore, the more net working capital a firm has, the greater its ability to satisfy credits demands. Moreover, because net working capital serves as liquidity risks measure the firm' net working capital position will affect its ability to acquire debt financing. For example, commercial banks often impose minimum working capital constraint in their loan agreements with firms similarly; bond indentures may contain such restrictions. Due to the credit squeeze, the problem of working capital management has acquired special importance. The shift in the emphasis from security to purpose of advance has affected a large number of borrowers. Beside this, norms for inventory and debtors have also been laid down. To aim at a sense of discipline in the working capital management all these developments have been introduce.

The level and nature of firms' investment depend on the firms' product types, its operating expenses, and management policy. As sales increase over time, more cash, receivable, and inventories usually are needed. Even within a firm's normal operating cycle, seasonal sales patterns cause the level of current assets to be relatively high or low at any particular point. Moreover, the firms' credit and inventory policies, and how efficiently it manages its current assets, can drastically affect a firms working capital need. For example, a conservative manufacturer may maintain a high level of inventory to satisfy unexpected demands or to hedge against delays in acquiring new inventory. On the other hand, a more aggressive manufacturer may function with a much lower investment in inventories. Current assets provide the liquidity necessary to support the realization of the expected returns from firms' long-term investments. The cash flows associated with long-term investments are uncertain and irregular, and it is the non synchronous nature of the cash flows that makes working capital necessary. Otherwise, a mismatch between cash inflows and outflows could a liquidity crisis. This, in turn, could disrupt or reduce the long-term returns expected from a firm's fixed asset investment. Current assets therefore act as a buffer to reduce the mismatch between

cash outflows for goods and services and the cash receipts generated by the sales revenues.

2.6 Significance of the Management of Working Capital

A research by Lamberson (1989) provided an insight into the importance and utilization 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. The 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.

For the success of an enterprise proper management of working capital is very important. 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.

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

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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.

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.

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 trade offs 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 then 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 shot-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.

2.7 Effect of Working Capital Policies on Firms' Profitability: Review of Previous Studies

Many researchers have studied working capital from different views in different environments. The following ones are very useful for this research:

In finance literature, there is a long argument on the determinants and the risk/return tradeoff between the different working capital policies. More aggressive working capital policies are associated with higher return and higher risk while conservative working capital policies are concerned with the lower risk and return. In this regard, Belt (1979) highlighted the determinants of working capital policies and the rewards & risks of an aggressive working capital policy. The author claimed that there might be two real determinants of the level of net working capital of a firm. The first determinant is the operational aspect that describes how much liquidity is needed in the current assets of the firm whereas the second determinant is the deferability of current liabilities of the company, which is the ability to postpone or delay the payments to creditors for some period. The author also asserted that the rewards and risks of an aggressive working capital policy vary between industries and within industries. Generally, the benefits might be attained by reducing the holding costs of fast moving inventory, lower collection costs associated with lower level of receivables and somewhat less costly short-term debt. However, higher returns of an aggressive working capital policy are often associated with risk of liquidity as well. The use of large level of current liabilities,

i.e. aggressive financing policy of working capital increases the chances of financial embarrassments that can lead to corporate failure and bankruptcy.

In addition, Carpenter and Johnson (1983) empirically investigated the relationship between the level of current assets and the operating risk of firms. The sample firms included were the large firms from various industrial sectors in the United States. The sample data was collected for a period of four years i.e. 1978-1982. The regression analysis showed no significant linear relationship between the level of current assets and revenue systematic risk or operating systematic risk. However, some indications of a possible non-linear relationship were found which were not highly statistically significant.

Gentry, et al. (1990) introduced a new concept of weighted cash conversion cycle in order to examine the working capital management of firms. The weighted cash conversion cycle measures the weighted number of days the funds are tied up in the accounts receivables, accounts payables and inventories less number of days payments are deferred to suppliers of the firms where the weights are calculated by dividing the amount of cash tied up in each component of working capital by the final value of product. The proposed weighted cash conversion cycle is an aggregate measure of the amount and speed that the funds flow through working capital accounts of a firm and concentrates on the real resources committed to the total working capital process.

Soenen (1993) investigated the relationship between the net trade cycle and return on investment in United States firms. The study also checked the impact of cash conversion cycle across industries on the profitability of firms. The annual financial data for 2000 firms and 20 industries had been used for analysis purpose for the period of 1970-1989. The firms were divided into four quadrants on the basis of the median values of net trade cycle and return on assets. A chi-square test was applied to measure the association between the quadrants of firms, which indicated negative relationship between the length of net trade cycle and return on assets. Furthermore, this inverse

relationship between net trade cycle and return on assets was found different across industries depending on the type of industry. A significance relationship for about half of industries studied indicated that results might vary from industry to industry.

Lamberson (1995) studied empirically how small firms respond to changes in economic activities by changing their working capital positions and level of current assets and liabilities. Small firms were expected to increase the level of current assets and liabilities as the economy expands. The hypothesis was tested on 50 small firms in United States and the data about financial statements and economic activities was collected from Moody's industrial manual for a period of 1980-1991. Current ratio, current assets to total assets ratio and inventory to total assets ratio were used as measure of working capital while index of annual average coincident economic indicator was used as a measure of economic activity. Correlation analysis was conducted to check the relationship between the economic expansion/contraction and the level of working capital while the significance of relationship has been measured by t-test. Contrary to the expectations, current ratio and quick ratio increased during expansion period while the other two ratios remained relatively stable during the period of economic expansion. Overall, the study found that there is very small relationship between changes in economic conditions and changes in working capital.

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.

As validation of the results found by Soenen (1993) on large sample and with longer time period, 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.

Bhattacharyya and Raghavacahari (1997) examined the determinants of effective working capital management in 72 large Indian companies. A questionnaire was mailed to the mangers to view the perceptions in their working capital management process in their respective organization. The Discriminate analysis indicated that the prime determinants of effectiveness of working capital management in order to their relative importance were: 1) profit after tax as percentage of sales, 2) sales as number of times to total assets, 3) quick assets as percentage of current liabilities and 4) receivables as numbers of day's sales. The authors recommended that the financial managers and analysts should pay more formal and explicit attention to these four factors while conducting their financial analysis.

Shin and Soenen (1998) empirically examined the relationship between efficiency of working capital management and the corporate profitability of firms by taking net trade cycle as a measure of working capital management. The study used 58,985 firm years record for a period of 20 years from 1975 to 1994. The Pearson linear and Spearman rank correlation analysis indicated a significant inverse relationship between the net trade cycle and accounting measure as well as market measure of profitability. The pooled and cross sectional regression analysis confirmed the results of correlation analysis that firms with shorter trade cycle earned more profits. However, the negative relationship between the current ratio and profitability indicate a trade off between liquidity and profitability of a firm. Therefore, firms can improve corporate profitability by enhancing efficiency of working capital management by keeping in view the liquidity of firms.

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

Hall (2002) introduced a "Total" approach to working capital management and argued that this "Total" approach covered all the company's activities relating to vendor, customer and product. Accounts receivables management was termed as Revenue

Management, which included searching for customers to collecting cash form them for credit sales. Inventory management, also named as Supply Chain Management, started from the forecasting of the customer claimed and ended with the fulfillment of the forecasted demand. The third working capital component, account payables was proxied with expenditure management, included the whole process of purchasing from vendors to pay the cash. The study argued that this integrated or "Total" approach to working capital management would reduce inefficiencies in the business processes as well as improve firm performance.

Deloof (2003) investigated the relationship between the working capital management and corporate profitability for a sample of 1009 large Belgian non-financial firms for the period of 1992-1996. The cash conversion cycle has been used as a comprehensive measure of working capital management, whereas gross operating income has been used as a measure of corporate profitability. In addition, size of the firm, sales growth, the financial debt and ratio of fixed financial assets to total assets were introduced as control variables. Using correlation and regression tests he found a significant negative relationship between gross operating income and cash conversion cycle. On basis of these results he suggested that managers can create value for shareholders by maintaining the cash conversion cycle and its components to an optimal level.

Ghosh and Maji (2004) made an attempt to examine the efficiency of working capital management practices of the Indian cement companies during 1992/93 to 2001/02. Three measures; performance index of working capital, utilization index of working capital and efficiency index of working capital were used to measure the overall efficiency of Indian cement manufacturing firms instead of using some common working capital management ratios. Setting industry norms as target-efficiency levels of the individual firms, this paper also tested the speed of achieving that target level of efficiency by an individual firm during the period of study. Findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during this period in terms of working capital management.

Eljelly (2004) empirically analyzed 29 Saudi joint stock companies for a period of 1996-2000 to examine the relationship between liquidity and profitability. The study used net operating income as dependent profitability measure and cash gap (cash conversion cycle) and current ratio as independent liquidity measures. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. A strong negative relationship has been reported between the liquidity measures and net operating income by Pearson correlation and pooled regression analysis. Moreover, the size was also affecting the profitability of firms and these results were stable over the period of study.

Another study by Teruel and Solano (2005) provided empirical evidence of impact of working capital management on profitability of small and medium sized Spanish firms. Cash conversion cycle along with its components has been taken as independent variables whereas return on assets has been used as dependent measure for profitability. The data set was consisted of 8,872 SMEs covering the period of 1996-2002 was obtained from ABADEUS database of Spain. A strong negative relationship between return on assets and cash conversion cycle along with its components i.e. days accounts receivables, days inventory and days accounts payable was indicated by correlation analysis. The multivariate regression analysis confirmed this negative relationship that shortening the cash conversing cycle, firms can generate more profits for shareholders. The regression results were found significant for negative relation between return on assets and inventory turnover as well as days accounts receivables. However, impact of delaying payment to suppliers on return on assets remained inconclusive because it was not significant at 5 percent level of significance.

Lazaridis and Tryfonidis (2006) investigated the relationship between working capital management and corporate profitability using quarterly date of 131 firms listed at Athens Stock Exchange of Greece. Cash conversion cycle has been used as a measure of working capital management whereas gross profit has been taken as profitability measure. The size of the firms as measured by natural logarithm of sales, financial debt

of firm and fixed financial assets to total assets ratio were used as control variables. Pearson correlation analysis showed a negative relationship between gross profit and cash conversion cycle as well as number of days of accounts receivables and inventory while a positive relationship between gross profit and number of days of accounts payables. In order to validate the robustness of correlation results, four regressions were run to examine the individual impact of cash conversion cycle and its components on gross profit. The regression results provides that cash conversion cycle, number of days accounts receivables and inventory were negatively while the number of days accounts payables were positively related to gross profit. All results were statistically significant at 1 percent level of significance indicating that managers can create profits by keeping current assets and current liabilities to an optimal level.

Padachi (2006) examined the trends in working capital management and its impact on firms' performance for a sample of 58 Mauritian Small Manufacturing Firms operating in five major industry groups (food and beverages, leather garments, paper products, prefabricated metal products and wood furniture) which are both registered and organized as proprietary/private companies. The relationship between working capital management and corporate profitability was investigated by using panel data analysis for the period 1998 – 2003. The trend in working capital needs and profitability of firms are examined to identify the causes for any significant differences between the industries. The dependent variable, return on total assets defined as profit before interest and tax divided by total assets, was used as a measure of profitability. The efficiency ratios, namely accounts receivable period, inventory period and accounts payable period were used as measures of working capital. The Cash Conversion Cycle (CCC) was used as a comprehensive measure of working capital. The regressions were also include the ratio of current liabilities to total assets to measure the degree of aggressive financing policy, with a high ratio being relatively more aggressive. Sales a proxy for size (the natural logarithm of sales), the gearing ratio (financial debt/total assets), the gross working capital turnover ratio (sales/current assets) and the ratio of

current assets to total assets were included as control variables in the regressions. The regression results showed that high investment in inventories and receivables is associated with lower profitability. An analysis of the liquidity, profitability and operational efficiency of the five industries showed significant changes and how best practices in the paper industry have contributed to performance. The findings also reveal an increasing trend in the short-term component of working capital financing.

Raheman and Nasr (2007) in this research, they have selected a sample of 94 Pakistani non-financial firms listed on Karachi Stock Exchange for a period of 6 years from 1999 – 2004 to investigate the effect of different variables of working capital management including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio on the Net operating profitability of Pakistani firms. Debt ratio, size of the firm (measured in terms of natural logarithm of sales) and financial assets to total assets ratio have been used as control variables. Pearson's correlation, and regression analysis (Pooled least square and general least square with cross section weight models) were used for analysis. The results showed that there was a strong negative relationship between variables of the working capital management and profitability of the firm. It means that as the cash conversion cycle increases it will lead to decreasing profitability of the firm, and managers can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level. A significant negative relationship between liquidity and profitability has been founded. They also find that there was a positive relationship between size of the firm and its profitability. There was also a significant negative relationship between debt used by the firm and its profitability.

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

financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the period of study. The aggressive investment working capital policies were accompanied by aggressive working capital financing policies. Finally, ordinary least square regression analysis found a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. These results were further confirmed by Afza and Nazir (2008) on a longer period of time (i.e. 1998-2005) and using market measures of return. Moreover, the later study also took into consideration the impact of aggressiveness of working capital policies on the risk of firm. In conformity with Carpenter and Johnson (1983), the study found no significant relationship between the aggressiveness/conservativeness of working capital policies of firms and their operating and financial risk.

Ganesan (2007) tried to examine the working capital management efficiency of firms from telecommunication equipment industry in India. The relationship between working capital management efficiency and profitability is examined using correlation and regression analyses. Working capital management efficiency was measured by days sales outstanding, days inventory outstanding and days payable outstanding. Days of working capital was also use as a comprehensive measure. The firm's profitability was measured using the operating income plus depreciation related to total assets (IA). This measure is indicator of the raw earning power of the firm's assets. Another profitability measure used for this analysis was the operating income plus depreciation related to the sales (IS). ANOVA analysis was done to study the impact of working capital management on profitability. Using a sample of 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001-2007, this study found evidence that even though "days working capital" is negatively related to the profitability, it was not significantly impacting the profitability of firms in telecommunication equipment industry.

Samiloglu and Demirgunes (2008) investigated the effect of working capital management on firms' profitability for a sample of manufacturing firms listed in Istanbul Stock Exchange (ISE) for the period 1998-2007. The data was taken from the quarterly financial statements of the sampled firms from ISE database and 5,843 firm-quarter data was used. The dependent variable, firm profitability, was measured by return on assets. Accounts receivable period, inventory period and cash conversion cycle were used as proxies for working capital management policies. Like other many working capital literatures, firm size, firm growth, leverage and fixed financial assets were used as control variables. The data has been analyzed under a multiple regression model. The empirical results of the study showed that accounts receivable period, inventory period and leverage significantly negatively affect profitability of the sample firms, while firm growth (in sales) significantly and positively. However, it was also concluded that cash conversion cycle, size and fixed financial assets have no statistically significant effects on profitability of the sampled firms.

Christopher and Kamalavalli (2009) investigated the relationship between working capital management and corporate profitability for a sample of 14 corporate hospitals, in India, listed in the Bombay Stock Exchange (BSE) for the period of 10 years (i.e. 1996/7-2005/6). The independent variables were Current Ratio, Quick Ratio, Inventory Turnover Ratio, Debtor's Turnover Ratio, Working Capital Turnover Ratio, Ratio of Current Asset to Total Asset, Ratio of Current Assets to Operating Income, Comprehensive Liquidity Index, and Net Liquid Balance. The dependent variable 'profitability' was measured in terms of Return on Investment (ROI) ratio. Size, Leverage and Growth were also used as control variables. Working capital management variables associated with ROI was examined through Correlation analysis. Impact of working capital management variables on ROI was assessed through multiple regression analysis. The most prominent variables that influence ROI were studied by employing Step-wise regression analysis. Direct and indirect effect of selected variables on ROI was analyzed through Path analysis. Correlation analysis reveals that eight

variables (inventory turnover ratio, debtors turnover ratio, working capital turnover ratio, current assets to total assets ratio, comprehensive liquidity index, net liquid balance, growth rate and size) were significantly positively associated with ROI. From regression analysis it is evident that an increase of one unit in current ratio, cash turnover ratio, current assets to operating income and leverage decreases profitability. Current ratio, quick ratio, cash turnover ratio, current assets to operating income and leverage were showed negative association with return on investment. Step wise regression analysis has identified seven prominent variables (cash turnover ratio, leverage, debtors turnover ratio, size, current ratio, growth rate and quick ratio) that were significantly influence profitability. Path analysis showed 'quick ratio' has the highest direct effect on profitability while 'current ratio' has the least direct effect.

Nobanee (2009) examined the relationship between working capital management and firm's profitability for a sample of 5802 non-financial firms listed in the New York Stock Exchange, American Stock Exchange, NASDAQ Stock Market and the Over the Counter Market for the period of 1990-2004 (87030 firm-year observations). To measure working capital management efficiency, optimal cash conversion cycle which is an additive function of optimal inventory conversion period, optimal receivable collection period and optimal payable deferral period was used. Profitability was measured by operating income to sales ratio. To investigate the relationships between chosen variables a Generalized Method of Moment System Estimation (GMM) applied to dynamic panel data. In contrast with other findings, the estimated coefficients showed that the length of the cash conversion cycle, the length of the receivable collection period and the length of the inventory conversion period had positive impact rather than negative impact on the company's profitability. The results also showed that the payable deferral period had significant negative impact on profitability instead of having a positive impact as reported on other existing literatures. In addition, the results showed that an increase in the quick ratio was negatively associated with firm's profitability, this result certify the traditional trade off between profitability and liquidity. Finally, this study was

suggested an optimal cash conversion cycle as more accurate and comprehensive measure of working capital management that maximizes sales, profitability and market value of firms.

Sen and Oruc (2009) in their study aimed to determine the relationship between efficiency levels of working capital management and return on total assets of 49 production firms being traded in ISE (Istanbul Stock Exchange) by using 3 month-table data of 15 years (i.e. 1993-2007) for the total of 60 periods. They tried to explain the relationship between different indicators relating to efficiency in working capital management (cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period) and return on total assets through two models. According to the results, in terms of both models, in all the firms involved in the study and sectors there is significant negative relationship between cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period and return on total assets. In this study it was concluded that finance directors positively affect firm profitability through efficiency increase in management of this assets group.

Zariyawati, et al. (2009) examined the relationship between working capital management and firm profitability for a sample of 148 firms listed in Bursa Malaysia. This study was used panel data of 1628 firm-year for the period of 1996-2006 that consist of six different economic sectors. Cash conversion cycle was used as measure of working capital management. The coefficient results of Pooled OLS regression analysis was provide a strong negative significant relationship between cash conversion cycle and firm profitability. This reveals that reducing cash conversion period results to profitability increase. Like most of other working capital literatures, this study was also suggested that, in purpose to create shareholder value, firm manager should concern on shorten of cash conversion cycle till optimal level is achieved.

In Africa, a little work has been found in finance literature, specifically with reference to short-term financial management and working capital. In this regard, Smith and Begemann (1997) examined the trade off between the liquidity and profitability of firm by investigating the association between return on investment and alternative measures of working capital. The study evaluated the association between traditional and alternative working capital measures and return on investment (ROI), specifically in industrial firms listed on the Johannesburg Stock Exchange (JSE) for a period of 1984 to 1993. The problem under investigation was to establish whether the more recently developed alternative working capital concepts showed improved association with return on investment to that of traditional working capital ratios or not. Results indicated that there were no significant differences amongst the years with respect to the independent variables. The results of their step-wise regression corroborated that total current liabilities divided by funds flow accounted for most of the variability in Return on Investment (ROI). The statistical test results showed that a traditional working capital leverage ratio, current liabilities divided by funds flow, displayed the greatest associations with return on investment. Well known liquidity concepts such as the current and quick ratios registered insignificant associations whilst only one of the newer working capital concepts, the comprehensive liquidity index, exhibited strong negative correlation with return on investment as 5 percent level of significance.

A study by Enyi (2005) examined the relationship between the operational size of the firm and the adequacy of the working capital requirements in Nigeria. Relative solvency ratio has been used to measure the level of working capital that can be considered adequate for the firm size and operational level. A relative solvency ratio greater than one was considered to be adequate for working capital level requirements relative to the operational size of the firms. The data has been collected from the annual published repots of 25 companies listed in Nigeria Stock Exchange together with the interviews of selected officials of the firms. T-test has been applied to compare the relative solvency ratio and return on capital employed as the performance measure of firms having

relative solvency ratio greater than one with those that were less than one. The results indicated that firms having relative solvency ratio greater than 1 i.e. adequate working capital relative to its operational size perform better than firms who have inadequate working capital.

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

Another study by Mathuva (2009) investigated the impact of working capital management components (average collection period, inventory conversion period, and

average payment period) on corporate profitability measured by the net operating profit for a sample of 30 firms listed on Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. Both the pooled OLS and the fixed effects regression models were used. The key findings from the study were: (1) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability. This means that more profitable firms take the shortest time to collect cash from their customers; (2) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability. This means that firms which maintain sufficiently high inventory levels reduce costs of possible interruptions in the production process and loss of business due to scarcity of products. This reduces the firm supply costs and protects them against price fluctuations: (3) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability. This means that the longer a firm takes to pay its creditors, the more profitable it is. Based on the findings, the management of a firm can create value for their shareholders by increasing inventories to a reasonable level, taking long to pay creditors to the optimum level and reducing the cash conversion cycle to its minimum.

Finally, no research has been done in spite of the learned impact in the area of the provision of empirical evidence in support of the effect of management of working capital policies on profitability of firms in Ethiopia in general and in Tigray region in particular. Given this lack of empirical studies, it is hoped that this study fill a gap and provide useful support for better understanding of the effect of management of working capital policies on profitability of Manufacturing Private limited companies in Tigray regional state, Ethiopia.

2.8 Conceptual Framework for Analysis

From the literature review mentioned above, the researcher has developed the following schematic representation of the conceptual framework/ model for this study:

Figure1: Conceptual framework for analysis

Working Capital Investment Policy

Accounts Receivable Period

Inventory Holding Period

Accounts Payable Period

Cash Conversion Cycle

Current Assets to Total Assets Ratio

Working Capital Financing Policy

Current Liability to Total Assets Ratio

**FIRMS'
PROFITABILITY:**
Return on Assets
Return on Equity
Operating Profit Margin

Liquidity

Current Ratio

Quick Ratio

Control Variables

Firm Size

Firm Growth Rate

Financial Leverage

GDP

Source: Researcher's own design

CHAPTER III
METHODOLOGY

3.1 Research Design

The explanatory type of study with a quantitative approach was employed to analyse the data collected. The research design used in this study is a pooled panel data analysis of cross-sectional and time series data. Pooled panel data analysis, 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 (Gujarati, 2003). This study is conducted on selected sample of firms in Tigray with the intention to provide evidence for the effects of the management of working capital policies on the profitability of private limited companies in Tigray.

3.2 Data Source and Collection Methods

The data required for the purpose of analysis was obtained from secondary sources; audited financial statements including balance Sheet and Income Statement of sample companies for a period of five years (2005-2009). The researcher considers five years because of limited number of firms having an operating life of more than five years. Most of the required data was obtained from the financial statements submitted to the Ethiopian Revenues and Customs Authority (ERCA) Mekelle regional branch, for income tax purpose. However, due to incompleteness of data obtained from ERCA some of the data used was obtained directly from the respective companies.

3.3 Sampling Design

The total population of the study is all manufacturing private limited companies located and operating with in the boundary of Tigray Regional State. In selecting firms included in this study, convenience and purposive sampling designs have been used. Tigray

region is found to be convenient to obtain the required data with the limited time and fund available for the study. The sampling method used is also designed to be purposive due to the following requirements in order to be included in the sample.

The first criterion used in selecting sample units to be included in the study is holding a complete 6 years financial statement data. The data pertaining to year 2004 is only used to compute the variable growth whose indicator is change in total sales and it is used to compute the sales growth only for the year 2005 of all observations.

The researcher further conducted two stage restriction criterions to arrive at defining the study population. The study first selected the manufacturing industry sector from the business classification, i.e. agriculture, industry and service, according to data from Mekelle branch Ministry of Trade Industry and Transport. In so doing, the sample considers companies that are engaged in the manufacturing sector of the economy only. The data from the bureau also shows that there have been 210 manufacturing industry sector firms of various sizes that took business license in the year (2005) 1997 E.C and before. (See appendix A).

 The researcher then made the second level sample restriction that the manufacturing companies need to hold the legal status of 'Private Limited Company'. In this case, based on 2009 (2001E.C.) data from Ethiopian Revenues and Customs Authority (ERCA) regional Mekelle branch, 80 private limited companies were running businesses in Tigray Regional State.

The above restrictions are made in an attempt to avoid bias that may result from, first, industrial classification i.e. since firms operating in different class of economy have different decision criteria in selecting sources of funds needed for executing investment opportunities and different working capital requirements. In order to mitigate this problem the researcher limited the study population only to those companies engaged in manufacturing industry.

Secondly, the approach followed by tax authority in collecting tax from business organizations in Ethiopia is progressive in nature. Therefore; it basically uses size of sales turnover as its criteria for categorizing business firms. Since different tax category firms have different capacity in appropriating tax shield advantage from their capital structure choice (Equity versus debt financing), in an effort to minimize this size bias, researcher includes those firms having a legal status of private limited company only in constructing sample elements.

According to the data from Ethiopian Revenues and Customs Authority (ERCA) and interview with regional officials, all firms operating in the boundary of Federal Democratic Republic of Ethiopia with a legal status of 'Private Limited Company' are automatically eligible for paying Value Added Tax (VAT). The Ethiopian taxation law, Proclamation 246/2000, for Value Added Tax (VAT) clearly specifies VAT payers as firms having an annual sales turnover of more than Birr 500,000.

The researcher tried to make the sample representative of the population-manufacturing private limited companies operating in the boundary of Tigray Regional State. The researcher, therefore, selected and collected 16 companies' financial statements of which only 11 (13.75% of the target population) are found workable. Since most of the eighty companies have started their operation on and after the year 1998 E.C. further increase of sample size becomes impossible.

The researcher also used a stratified sampling technique where each sample element will be selected purposively in objective to make the sample representative of available strata-sub classifications in the manufacturing industry as well as the area distribution.

3.4 Data Analysis

Descriptive statistics were used as the first step in the analysis and it was use to describe relevant aspects of observable facts about the variables and provide detailed information about each relevant variable. At this stage, mean, standard deviation,

maximum and minimum values of the required variables have been computed. The data obtained were also analyzed by using two quantitative analysis methods. First, Pair wise Correlation analysis was used to measure the degree of association between the dependent variables and explanatory variables. Second, linear panel data regression modes were used to analyze the causal relationships of profitability variables with working capital investment and financing policies, liquidity and control variables. "By combining time series of cross-section observations, panel data gives more informative data, more variability, less co-linearity among variables, more degrees of freedom and more efficiency" (Baltagi cited by Gujarati 2003:637). STATA SE 9 software was used for the purpose of analysis and tables are used to present the results from the analysis.

3.5 Description of Variables and Research Hypotheses

In order to analyze the effects of management of working capital policies on firms' profitability the researcher identifies key variables that indicate profitability, working capital investment and financing policies, liquidity and other factors that influence profitability. The chosen variables include dependent, independent and some control variables.

3.5.1 Dependent Variables

Dependent Variables are variables that are used to measure the profitability of firms. Due to the absence of secondary market in Ethiopia it is impossible to use market indicators such as share price, only accounting measures of profitability were used to analyze the effect of working capital policies on the profitability of firms. In the accounting measures, *Return on Assets (ROA), Return on Equity (ROE) and Operating Profit Margin (OPM)* are best known and most frequently used profitability measures (Ross et al, 2000). To establish a true relationship between the operating "success" or "failure" of firms and working capital policies and to avoid the effect of tax incentives (if available), Earning Before Interest and Tax (EBIT) was used as a base to calculate return on assets and operating profit margin as follows:

Return on Assets (ROA) = <u>Earning Before Interest and Tax (EBIT)</u>

Total Assets (TA)

Operating Profit Margin (OPM) = <u>Earning Before Interest and Tax (EBIT)</u>

Net Sales (NS)

To measure the return to the equity owners, earning before tax was used. The formula is:

Return on Equity (ROE) = <u>Earning Before Tax (EBT)</u>

Total Equity (TE)

3.5.2 Independent Variables and Respective Research Hypotheses

With regard to the independent variables, Accounts Receivable Period (ARP), Inventory Holding Period (IHP) and Accounts Payable Period (APP) were used to measure specific working capital investment policy. Moreover, Cash Conversion Cycle (CCC) and Current Assets to Total Assets Ratio (CATAR) were used as compressive measures of working capital investment policy. Current Liabilities to Total Assets Ratio (CLTAR) was used as a measure of working capital financing policy whilst the two conventional measures, Current Ratio (CR) and Quick Ratio (QR), were used as indicators of liquidity (Eljelly, 2004; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Raheman and Nasr, 2007).

Accounts Receivable Period (ARP), was used as proxy for Collection Policy, and represents the average time it takes to collect payments from customers from sales of goods and services. The longer the accounts receivable period, the higher will be the investment in accounts receivable. Theoretically, the higher the investment in account receivable, the lower will be the profitability. Thus, the researcher has formulated the following testable hypothesis:

H01: There is significant inverse relationship between accounts receivable period and profitability of firms.

The formula used to calculate the account receivable period is:

Accounts Receivable Period (ARP) = [Ending Accounts Receivable /Net Sales] X 365 days

Inventory Holding Period (IHP), was used as proxy for the Inventory Policy, and stands for the average time it takes to acquire and sell inventory. The longer the inventory storage period, the higher will be the investment in inventory. In the same manner, the higher the amount invested in inventory, the lower will be the profitability of firms. The hypothesis of the researcher in this regard was:

H02: There is significant negative relationship between inventory holding period and profitability.

Inventory Holding Period was calculated by the following formula:

Inventor Period (IP) = [Ending Inventories /Costs of Good Sold] X 365 days

Accounts Payable Period (APP), was used as proxy for the Payment Policy, and represents the average time between purchases of inventory and payment for it. The higher the value, the longer it takes to settle payment commitments to suppliers and hence, the lower will be the investment in working capital.

Therefore, other hypothesis was:

H03: There is a significant positive relationship between accounts payable period and profitability.

The following formula was used to calculate Accounts Payable Period:

Account Payable Period (APP) = [Ending Accounts Payable/ Net Purchases] X 365 days

In addition, the *Cash Conversion Cycle (CCC)* and *Current Assets to Total Assets Ratio (CATAR)* were used as comprehensive measures of working capital investment policy. The Cash Conversion Cycle (CCC) represents the average time between cash

disbursement for inventory and cash collection from receivables. The shorter the Cash Conversion Cycle (CCC), the lower will be the investment in inventories and receivables. The longer the Cash Conversion Cycle the greater the investment in current assets hence the greater the need for financing of current assets. The hypothesis was, thus:

H_{04}: *There is strong negative relationship between cash conversion cycle and profitability of firms.*

The formula to calculate the Cash Conversion Cycle (CCC) is:

Cash Conversion Cycle (CCC) = Accounts Receivable Period (ARP) + Inventory Period (IP) – Account Payable Period (APP)

Current Assets to Total Assets Ratio (CATAR) represent the proportion of current assets in the total assets of the firm. The higher the value, the higher will be the investment in current assets. Hypothesis in this regard was:

H_{05}: *There is strong inverse relationship between current assets to total assets ratio and profitability of firms.*

Current Assets to Total Assets Ratio is calculated by the following formula:

Current Assets to Total Assets Ratio (TCATAR) =Total Current Assets (TCA)

Total Assets (TA)

To measure working capital financing policy efficiency *Current Liabilities to Total Assets* Ratio, which measures the Degree of Aggressiveness in Working Capital Financing, was used (Weinraub and Visscher, 1998; Afza and Nazir, 2007). Degree of Aggressiveness in working capital financing (DOAWCF) represents the extent to which the firm uses current liabilities to finance its working capital. The higher the value, the more the firm is aggressive in using current liabilities. Theoretically, aggressive working

capital financing police relate with higher profitability. Thus, other research hypothesis was:

H06: There is significant positive relationship between current liabilities to total assets ratio and profitability of firms.

The following formula was used to calculate current liabilities to total assets ratio

Current Liabilities to Total Assets Ratio (CLTAR) = <u>Total Current Liabilities (TCL)</u>

Total Assets

Liquidity, one of the two objectives of working capital management is liquidity. In this study, the researcher has tried to examine the relationship between the two objectives of working capital management policies: liquidity and profitability. Liquidity refers to the ability to meet current liabilities from available current assets. In this study the traditional measures of liquidity: **Current Ratio (CR)** and **Quick Ratio (QR)** were used.

The hypotheses here were that:

H07: There is significant negative relationship between current ratio and profitability of firms.

H08: There is significant negative relationship between quick ratio and profitability of firms.

The formulas are:

Current Ratio (CR) = <u>Current Assets</u>

Current Liabilities

Quick Ratio (QR) = <u>Current Assets- Ending Inventory</u>

Current Liabilities

3.5.3 Control Variables

In order to have a reliable analysis of the effect of working capital management policies on profitability, it is common in working capital literature to use some control variables to account for various factors that may influence profitability of firms (Deelof, 2003; Eljelly, 2004; Lazaridis and Tryfonidis, 2006; Padachi, 2006; Afza and Nazir, 2007). Accordingly, together with the above working capital variables, some control variables that are specific to firms and general to the economy as a whole were taken into account in this study. *Firm Size (FS), Firm Growth Rate (FGR)* and *Financial Leverage (FL)* are control variables that are specific to the firm. In order to account for Firm Size (FS), as used by different prior researchers, the natural logarithm of sales was used (Deloof, 2003; Eljelly, 2004; Padachi, 2006; Raheman and Nasr, 2007). As a proxy for Firm Growth Rate (FGR) change in annual sales $[(Sales_t - Sales_{t-1})/Sales_{t-1}]$ was used. Total debt to total assets ratio was used as a proxy for Financial Leverage (FL). Finally, since change in economic conditions affect operating efficiency of firms and tend to be reflected in firms' profitability (Lamberson 1995), *GDP Growth Rate (GDP)* of the country was also used as a control variable.

3.6 Model Specifications

As mentioned above, the effect of working capital management policies on firms' profitability has been estimated by using quantitative models. The general model formulated was as follows:

$$Y_i = \beta_0 + \sum \beta_i X_i + \varepsilon_i$$

Where

Y_i are the ith observation of dependent variables (ROA, ROE and OPM)

β_0 is the intercept of the equation

β_i are coefficients of X_i variables

X_i are the different independent variables

ε_i is the error term

Specifically, when the above general model is converted into the specified Variables of this study the following regression equations were run to estimate the impact of working capital policies on the profitability of selected companies:

Accounts Receivable Period and Profitability Measures:

ROA i = β_0 + $\beta_1(ARP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε………….(1)

ROE i = β_0 + $\beta_1(ARP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………..(2)

OPM i = β_0 + $\beta_1(ARP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ +$\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………..(3)

Inventory holding period and profitability measures:

ROA i = β_0 + $\beta_1(IHP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε……………(4)

ROE i = β_0 + $\beta_1(IHP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………….(5)

OPM i = β_0 + $\beta_1(IHP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε……………(6)

Accounts payable period and profitability measures:

ROA i = β_0 + $\beta_1(APP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………..(7)

ROE i = β_0 + $\beta_1(APP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………..(8)

OPM i = β_0 + $\beta_1(APP_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………..(9)

Cash Conversion Cycle and Profitability Measures:

ROA i = β_0 + $\beta_1(CCC_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε…………(10)

ROE i = β_0 + $\beta_1(CCC_i)$ + $\beta_2(FS_i)$ + $\beta_3(FGR_i)$ + $\beta_4(FL_i)$ + $\beta_5(GDP_t)$ + ε………….(11)

OPM i = β0 + β1(CCCi) + β2(FSi) + β3(FGRi)+ β4(FLi) + β5(GDPt) + ε………….(12)

Current Assets to Total Assets Ratio and Profitability Measures:

ROA i = β0 + β1(CATARi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……..(13)

ROE i = β0 + β1(CATARi) + β2(FSi) + β3(FGRi) + β 4 (FLi) + β5(GDPt) + ε……..(14)

OPM i = β0 + β1(CATARi) + β2(FSi) + β3(FGRi)+ β4(FLi) + β5(GDPt) + ε………(15)

Current Liabilities to Total Assets Ratio and Profitability Measures:

ROA i = β0 + β1(CLTARi) + β2(FSi) + β3(FGRi)+ β 4 (FLi) + β5(GDPt) + ε……...(16)

ROE i = β0 + β1(CLTARi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……....(17)

OPM i = β0 + β1(CLTARi) + β2(FSi) + β3(FGRi) + β 4 (FLi) + β5(GDPt) + ε……..(18)

Current Ratio and Profitability Measures:

ROA i = β0 + β1(CRi) + β2(FSi) + β3(FGRi) + β 4 (FLi) + β5(GDPt) + ε……...........(19)

ROE i = β0 + β1(CRi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……..............(20)

OPM t = β0 + β1(CRi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……..............(21)

Quick Ratio and Profitability Measures:

ROA i = β0 + β1(QRi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……..............(22)

ROE i = β0 + β1(QRi) + β2(FSi) + β3(FGRi) + β4(FLi) + β5(GDPt) + ε……..............(23)

OPM i = β0 + β1(QRi) + β2(FSi) + β3(FGRi)+ β4(FLi) + β5(GDPt) + ε……..............(24)

Where:

ROA i = Return on Assets of observation i

ROE i = Return on Equity of observation i

OPM i = Operating Profit Margin of observation i

ARP$_i$ = Accounts Receivable Period of observation i

IHP $_i$ = Inventory Holding Period of observation i

APP$_i$= Accounts Payable Period of observation i

CCC$_i$= Cash Conversion Cycle of observation i

CATAR$_i$ = Current Assets to Total Assets Ratio of observation i

CLTAR$_i$ = Current Liabilities to Total Assets Ratio of observation i

CR$_i$ = Current Ratio of observation i

QR$_i$= Quick Ratio of observation i

FS$_i$ = Firm Size of observation i

FGR$_i$ = Firm Growth Rate of observation i

Fl$_i$ = Financial Leverage of observation i

GDP$_t$ = Gross Domestic Product Growth Rate of Ethiopia for time period t

ε =error term of the model

β$_0$ = intercept

CHAPTER IV
RESULTS AND DISCUSSION

4.1. Demographic Distribution of Sample Firms

The geographical area of the sampled firms includes the following towns; Mekelle, Adwa, Adigrat, Quiha and Wukro and they are from cement and construction materials, Industrial Engineering, Leather, Alcohol, Flour, plastic, Stone Crasher, Textile and pharmaceutical industries(See appendix A).

4.2 Descriptive Statistics for the Study Variables

In this section the results from descriptive statistics are discussed. The descriptive statistics was used in order to get insight into the trend of working capital management, profitability, liquidity and other chosen variables among the sample firms and it is used as base to forward recommendations after determining the relationship between the variables from correlation and regression analyses.

Table 4.1 presents the descriptive statistics of the sample firms including the mean distribution, standard deviations, minimum and maximum values of study variables for the study period i.e. 2005 to 2009. The study has used fifteen variables for the analysis purpose including twelve independent variables and three dependent profitability measures. Six independent variables are proxies for working capital investment and financing policies of the sample firms. Two independent variables were used to measure liquidity. Other four independent control variables used are firm size as measured by the natural logarithm of sales, firm growth rate measured by the relative change in sales as compared to previous year, leverage of the firms and the GDP growth rate of Ethiopia.

From table 4.1, the mean value of return on asset is 5.22 percent and the standard deviation is 16.52 percent. The minimum value of return on asset is -22.03 percent while the maximum is 49.01 percent. The profitability of the sample firms, on average, is 1.29 percent as measured by return on equity. It deviates from the mean value to both sides by 37.41 percent. The minimum and maximum values are -125.18 percent and 88.59 percent respectively. Operating profit margin, on the other hand, is -5.73 percent on average with standard deviation of 40.35 percent. It means that, on average, out of one birr of sales 5.73 cents are losses and these results may be deviated to both sides by 40.35 percent. The minimum operating profit margin among the sample firms is -171.82 percent and the maximum is 56.42 percent.

Table 4.1: Descriptive Statistics for the Study Variables					
Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	55	.0522218	.1651699	-.2203	.4901
ROE	55	.0128945	.3740873	-1.2518	.8859
OPM	55	-.0573164	.4034827	-1.7182	.5642
CR	55	5.338545	12.44557	.31	89.94
QR	55	2.966982	5.731446	.011	39.72
ARP	55	120.4364	166.7682	0	810.98
IHP	55	314.2238	398.6511	0	1598.52
APP	55	120.2178	156.5305	0	586.1
CCC	55	313.5207	558.2731	-315.64	2264.77
CATAR	55	.4810218	.2060634	.0425	.7935
CLTAR	55	.2441176	.1845109	.0013	.7252
FS	55	16.82964	2.007783	11.8	20.87
FG	55	1.153084	4.438855	-.3577	31.8182
FL	55	.7177382	.6434607	.0068	3.5163
GDP	55	10.76	1.010427	8.9	11.6

Source: STATA data summary statistics result based on annual reports of sample firms for the study period- Appendix B Attach the Financial Statements

To study the relationship between profitability and liquidity, the researcher has used the traditional liquidity measures, current and quick ratios. The average current ratio for the sampled Tigray Manufacturing Private Limited Companies is 5.34, which is by far

greater than the preferred current ratio, as a rule of thumb, 2. The standard deviation 12.45 indicates a wide variation in current ratio among the sampled companies. The minimum and the maximum values of current ratio are 0.31 and 89.94 respectively. Regarding quick ratio, the mean value is 2.97, which is also highly greater than the standard quick ratio 1 (in finance literature, as a rule of thumb the preferred/standard quick ratio is 1). The standard deviation is 5.73. The minimum value of quick ratio is 0.011 while the maximum is 39.72.

In the same way, the descriptive statistics for working capital investment and financing policies are also presented in the same table. There are three specific variables as measures of efficiency of working capital investment policy, namely, accounts receivable period, inventory holding period and accounts payable period. Accounts receivable period, a proxy for collection policy, is 120 days on average. It means that firms in the sample wait for 120 days on average to collect cash from credit sales. The standard deviation 167 days, however, indicates the existence of large difference in accounts receivable period among the sampled firms. Account receivable period ranged from zero to 811 days among the sampled firms.

Inventory holding period, a proxy for inventory policy, is 314 days on average. That is, firms in the sample take on average 314 days to sell inventory. The standard deviation of inventory holding period is 399 days with zero and 1599 days as minimum and maximum values respectively. Here, the maximum time, 1599 days, to convert inventory into sales is a very long period. Accounts payable period, a proxy for payment policy, is 120 days on average with standard deviation of 157 days. The minimum value, zero days, indicates that the firm makes no credit purchases. The maximum time taken by a firm for the purpose of payment of accounts payables is 586 days.

In addition to the above three specific variables, other two variables are used as comprehensive measures of the efficiency of working capital asset management/investment policy. Cash conversion cycle, one of the two comprehensive

measures, is 314 days on average and the standard deviation is 558 days. The minimum value of -316 days shows that a firm records a large inventory turn-over and/or cash collections from credit sales before making a single payment for credit purchases. It means that the accounts receivable period and/or the inventory holding period are very short and/or the accounts payable period of the firm is very long. On the other hand, the maximum time for cash conversion period is 2265 days which is a very long period.

The other compressive measure of working capital investment policy used is the proportion of current assets in the total assets of firms. It measures the firms' degree of aggressiveness/conservativeness in working capital investment. The lower the amount of the investment in current assets, the more aggressive is the firm in working capital investment. Here, the current assts to total assets ratio is 48.10 percent on average. It means that in the sampled firms, the amount of current assets represent, on average, 48.10 percent of the total assets invested. This amount can deviate by 20.61 percent to both sides. The minimum value is 4.25 percent and this value related with highly aggressive condition while the maximum value of current assets to total assets ratio is 79.35 percent which represent the higher conservative condition in the sampled firms during the study period. The average value of 48.10 percent is in middle of the two extreme observations and shows that on average manufacturing private limited companies in Tigray are neither too mach conservative nor aggressive while managing their current assets.

In measuring working capital financing policy, current liabilities to total assets ratio is used. It measures the firm's degree of aggressiveness/conservativeness in financing its working capital requirements. The higher the value of current liabilities to total assets ratio, the more aggressive is the firm in financing its working capital requirements. The average current liabilities proportion in financing the total assets of the sampled companies is 24.41 percent and the standard deviation is 18.45 percent. The minimum value is 0.13 percent which represents the more conservative condition in working capital financing while the maximum is 72.52 percent which indicates highly aggressive

approach in working capital financing. When we look at the average current assets proportion in total assets of sampled firms (48.10 percent) and the average proportion of current liabilities used in financing total assets (24.41 percent) together, the sampled firms are relatively conservative in financing their working capital requirements than in their investment policy.

Table 4.1 also includes the descriptive statistics of control variables used in the study. The first control variable, firm size, as measured by the natural logarithm of annual sales, is 16.83 on average (Br. 20,378,683.78 in terms of annual sales) and the standard deviation is 2.01. The minimum and maximum values of firm size, as measured by the natural logarithm of sales, are 11.8 and 20.87 respectively. The second control variable, firm growth rate is 115.31 percent on average, as measured by changes in annual sales. This indicates that there is a higher sales growth rate among the sampled firms. However, there is also higher deviation, 443.98 percent, from mean value of sales growth to both directions. The sales growth among the sampled firms is ranged from -37.77 percent to 3181.82 percent. The third control variable, financial leverage is 71.77 percent on average and the standard deviation is 64.35 percent. Finally, the annual average GDP growth rate of Ethiopia is 10.76 percent for the study period. The lower and higher annual GDP growth rates during the study period are 8.9 percent and 11.6 percent.

4.3 Correlation Analysis: Relationship between Working Capital Policies and Firms' Profitability

The descriptive statistics showed the average values, with their respective variations, and the minimum and maximum values of profitability measures, proxy variables for working capital investment and financing policies and other chosen variables of the firms in the sample. The correlation analysis was done to analyze the relationship between the working capital assets management/investment and financing policies and profitability. Moreover, correlation analysis was also done to examine the relationship of

profitability with liquidity and the control variables. To examine the relationship among these variables, Pearson correlation coefficients were calculated. In this section of the study the results and discussions of the correlation analysis are presented.

Table 4.2: Correlation Analysis of Profitability with Accounts Receivable Period and Control Variables

	ROA	ROE	OPM	ARP	FS	FGR	FL
ROA	1.0000						
ROE	0.8207 (0.0000)	1.0000					
OPM	0.7875 (0.0000)	0.8813 (0.0000)	1.0000				
ARP	-0.3808 (0.0041)	-0.6728 (0.0000)	-0.6185 (0.0000)	1.0000			
FS	0.3996 (0.0025)	0.3278 (0.0146)	0.2284 (0.0935)	-0.0027 (0.9844)	1.0000		
FGR	-0.0470 (0.7333)	-0.0032 (0.9814)	-0.0036 (0.9790)	0.0943 (0.4935)	-0.0213 (0.8772)	1.0000	
FL	-0.3199 (0.0173)	-0.2030 (0.1372)	-0.4491 (0.0006)	0.1570 (0.2523)	0.2291 (0.0924)	-0.0309 (0.8231)	1.0000

Source: STATA correlation results based on annual reports of sample firms for the study period

Above, Table 4.2 shows the correlation matrix that predicts the likely relationship of the three profitability measures with accounts receivable period and the control variables of the study. The P-values are listed in parenthesis. In view of the fact that efficient working capital management is expected to improve companies' profitability, one should expect negative correlation between accounts receivable period and the profitability measures i.e. return on assets, return on equity and operating profit margin.

Initially, the research hypothesis was that there will be a negative correlation between accounts receivable period and the three measures of profitability. In line with the research hypothesis and the findings made by Padachi (2006), the correlation matrix in Table 2 above produced significant negative correlation of accounts receivable period

with return on assets, return on equity and operating profit margin at the 1 percent level. From the above table, the correlation coefficients of accounts receivable period with return on assets, return on equity and operating profit margin are -38.08 percent, -67.28 percent and -61.85 percent respectively and they also indicate strong association between accounts receivable period and profitability of firms. It can be interpreted as longer accounts receivable period is associated with lower profitability and vice versa.

As it can be vividly seen in Table 4.2 there is statistical evidence that firm size is significantly and positively correlated with return on assets, return on equity and operating profit margin at the 1 percent, 5 percent and 10 percent levels with correlation coefficients of 39.96 percent, 32.78 percent, and 22.84 percent respectively. Similarly, financial leverage has significant negative correlations with return on assets and operating profit margin at the 5 percent and 1 percent levels respectively. However, no significant correlation is found between firm growth rate and the three profitability measures.

In the same manner, another correlation analysis has been done to investigate the relationship of profitability variables with inventory holding period, accounts payable period, cash conversion cycle and current assets to total assets ratio. If efficient working capital assets management increases profitability, one should expect negative relationship between the measures of profitability and working capital assets management variables.

Below, Table 4.3 presents the correlation results, along with the P-values in parenthesis, for the three dependent profitability variables, return on assets, return on equity and operating profit margin, with inventory holding period, accounts payable period, cash conversion cycle and current assets to total assets ratio.

As it has been put in chapter three of this paper, the second research hypothesis expects that there will be significant negative relationship between profitability measures and inventory holding period. In agreement with this hypothesis, the correlation matrix in

Table 3 reveals that inventory holding period is significantly and negatively correlated with return on assets, return on equity and operating profit margin at the 1 percent level. The correlation coefficients, -38.70 percent with return on assets, -61.57 percent with return on equity and -53.82 percent with operating profit margin, are all indicators of strong negative relationship between inventory holding period and profitability.

Table 4.3: Correlation Analysis of Profitability Measures with Inventory Holding Period, Accounts Payable Period, Cash Conversion Cycle and Current Assets to Total Assets Ratio

	ROA	ROE	OPM	IHP	APP	CCC	CATAR
ROA	1.0000						
ROE	0.8207	1.0000					
	(0.0000)						
OPM	0.7875	0.8813	1.0000				
	(0.0000)	(0.0000)					
IHP	-0.3870	-0.6157	-0.5382	1.0000			
	(0.0035)	(0.0000)	(0.0000)				
APP	-0.1231	-0.0595	-0.2973	0.0677	1.0000		
	(0.3704)	(0.6664)	(0.0275)	(0.6234)			
CCC	-0.3564	-0.6246	-0.4862	0.9462	-0.2142	1.0000	
	(0.0076)	(0.0000)	(0.0002)	(0.0000)	(0.1164)		
CATAR	0.2403	0.3102	0.3668	-0.0436	-0.1305	-0.0381	1.0000
	(0.0772)	(0.0212)	(0.0059)	(0.7522)	(0.3422)	(0.7823)	

Source: STATA correlation results based on annual reports of sample firms for the study period

Similarly, it was hypothesized that there will be significant positive relationship between accounts payable period and profitability as measured by return on assets, return on equity and operating profit margin. Contrary to the research hypothesis, the correlation matrix in Table 4.3 above produced negative relationship between accounts payable period and profitability measures. However, these relations are not statistically significant except for return on equity, the result for which statistical significance at the 5 percent level was observed.

Moreover, the correlation coefficients of -12.31 percent with return on assets, -5.95 percent with return on equity and -29.73 with operating profit margin shows relatively weak relationship between the accounts payable period and firms' profitability. The negative relationship between accounts payable period and profitability goes with the view that less profitable firms wait longer to pay their bills. In this situation, profitability may affect the accounts payable period and vice versa (Deloof, 2003; Falope and Ajilore, 2009; Raheman and Nasr, 2007).

In the same manner, the hypothesis that there is significant negative relationship between the cash conversion cycle (one of the comprehensive measures of working capital assets management policies) and profitability of firms was tested. Accordingly, the result of the correlation matrix in Table 4.3 above indicates that the cash conversion cycle is significantly and negatively correlated with return on assets, return on equity and operating profit margin at the 1 percent level. This strong relationship is also evidenced from the correlation coefficients of 35.64 percent, 62.46 percent and 48.62 percent with return on assets, return on equity and operating profit margin respectively. This finding is inline with finding made by Jose, et al. (1996), Sen and Oruc (2009), and Falope and Ajilore (2009).

The other hypothesis that was stated in chapter three is that there is significant negative relationship between the current assets to total assets ratio (the second comprehensive measure of working capital assets management/investment policy) and the profitability variables. Contrary to the hypothesis, however, the last row of the correlation matrix of Table 4.3 indicate positive and significant correlation of current assets to total assets ratio with return on assets, return on equity and operating profit margin at the 10 percent, 5 percent, and 1 percent levels respectively. The correlation coefficients, 24.03 percent for return on assets, 31.02 percent for return on equity and 36.68 percent for operating profit margin, also indicate comparatively strong positive correlation between the current assets to total assets ratio and firms' profitability.

This finding is similar with the findings of Afza and Nazir (2007) and implies that there is negative relationship between aggressiveness in working capital investment policy and firms' profitability. As current assets to total assets ratio increases, degree of aggressiveness in working capital investment policy decreases (working capital investment is considered to be aggressive when investment in current asses is low) and profitability of firms increases. (Discussion of the justifications is left for the regression part)

The third correlation analysis has been carried out following the same approach in order to look into the likely relationship of profitability variables with current liabilities to total assets ratio (the explanatory variable used as proxy of working capital financing efficiency) and the two conventional measures of liquidity, current ratio and quick ratio. If efficient working capital financing policy increases profitability, one should expect negative relationship between the measures of profitability and working capital financing policy i.e. Return on assets, return on equity and operating profit margin on one hand and current liabilities to total assets ratio on the other hand.

In finance literature, there is a trade off between profitability and liquidity, so we should expect negative correlation between profitability measures and the two traditional liquidity measures. Below, Table 4.4 reports the correlation results, along with the P-values in parenthesis, for the three dependent profitability variables, return on assets, return on equity and operating profit margin, with current liabilities to total assets ratio, current ratio and quick ratio.

The hypothesis that was stated in chapter three related to working capital financing policy was that there is significant positive relationship between the current liability to total assets ratio and the profitability variables. In agreement to the hypothesis, Table 4.4 below exhibits the result that indicates there is statistical evidence that the profitability measures are positively related to the working capital financing efficiency.

However for operating profit margin, even though current liabilities to total assets ratio is positively correlated, the statistical evidence is not significant. For the remaining two measures of profitability, return on assets and return on equity, the correlation with current liabilities to total assets ratio is statistically significant at the 1 percent and 5 percent level respectively.

Table 4.4: Correlation Analysis of Profitability Measures with Current Liabilities to Total Assets Ratio, Current Ratio, Quick Ratio and GDP

	ROA	ROE	OPM	CLTTAR	CR	QR	GDP
ROA	1.0000						
ROE	0.8207	1.0000					
	(0.0000)						
OPM	0.7875	0.8813	1.0000				
	(0.0000)	(0.0000)					
CLTAR	0.3877	0.2967	0.1991	1.0000			
	(0.0035)	(0.0278)	(0.1451)				
CR	-0.2592	-0.1295	-0.0820	-0.3362	1.0000		
	(0.0560)	(0.3462)	(0.5519)	(0.0121)			
QR	-0.3297	-0.1904	-0.1623	-0.3999	0.9706	1.0000	
	(0.0140)	(0.1639)	(0.2364)	(0.0025)	(0.0000)		
GDP	0.0331	0.0135	0.0565	0.0519	0.0536	0.0500	1.0000
	(0.8105)	(0.9222)	(0.6822)	(0.7069)	(0.6977)	(0.7171)	

Source: STATA correlation results based on annual reports of sample firms for the study period

The correlation coefficients for return on assets, return on equity and operating profit margin are 38.77 percent, 29.67 percent and 19.91 percent respectively. This implies that there is positive relationship between degree of aggressiveness in working capital financing policy and firms' profitability. The higher the current liabilities to total assets ratio, the higher is the degree of aggressiveness in working capital financing policy, and the higher will be the profitability. The firm is said to be aggressive in working capital policy when it used large amounts of current liabilities to finance its working capital requirements.

If efficiency in managing working capital investment and financing policies is related only to profitability, the issue could have been easy. However, the issue at hand is also highly related to the concept of liquidity which is quite opposite to the requirements for profitability. Put it simply, the long term success of firms, in fact, is measured by their profitability. On the other hand, their short term survival, which is the base for long term success, depends on the availability of liquid assets to meet financial obligations on time when they are due. Therefore, in finance theories there is a trade off between profitability and liquidity. In line with this theoretical framework, it was hypothesized that there is significant negative relationship (trade-off) between profitability measures and the traditional measures of liquidity.

The correlation matrix in Table 4.4 shows the absence of significant relationship between current ratio and the measures of profitability, except for return on assets for which the result is significant at the 10 percent level. Similarly, the relationship between quick ratio and profitability measures is insignificant, except for return on assets having a result which is again significant at the 5 percent level. However, the correlation coefficients show negative relationship between liquidity, as measured by both current ratio and quick ratio, and the profitability measures. As indicated in the above table the correlation coefficients for current ratio with return on assets, return on equity and operating profit margin are -25.92 percent, -12.95 percent and -8.2 percent respectively. Likewise, the correlation coefficients for quick ratio with return on assets, return on equity and operating profit margin are -32.97 percent, -19.04 percent and -16.23 percent respectively. Finally, GDP has no significant relationship with profitability measures.

To sum up the discussion on the correlation analysis, although the pair wise correlations give proof of relationship between two variables; these measures do not allow us to identify causes and effect relationships between such variables. From the results of correlation analysis, it is difficult to say whether a shorter accounts receivable period leads to higher profitability or shorter accounts receivable period is a result of the higher profitability. In the same way, it is impossible to interpret the negative relationship

between inventory holding period and profitability variables by stating that a higher profit is the result of shorter inventory holding period and vice versa. Simply the correlation result shows the coefficient and the direction of relationship between two variables with the level of significance. Another shortcoming of correlation analysis is that it does not provide reliable indicators or coefficients of association in a manner which control for additional explanatory variables. This means care must be exercised when interpreting the pair wise correlation coefficients. In examining effect of some variables on the other variables, the main analysis will be derived from econometrics/regression analysis that overcomes the problems of correlation analysis.

4.4. Econometrics Analysis: Effect of Working Capital Policies on Firms' Profitability

So far we established a framework of literature and data analysis including descriptive statistics and correlation analysis in order to investigate the relationship between working capital assets management/investment and financing policies and profitability. In order to shed more light on the relationship between working capital management and firms' profitability and to further investigate the impact of management of working capital investment and financing policies on firms' profitability (in order to answer the research questions in this study properly) eighteen (18) pooled linear panel data (analysis of cross sectional and time series data) regression models have been run. Moreover, six (6) additional regressions have been run in order to examine the relationship between firms' profitability and the traditional measures of liquidity. This section of the study presents the results and discussions of the regression/econometrics analysis.

Before running the regressions, the data sets have been tested for normality, outliers (Observations that are very extreme compared to other observations that may cause problems in estimating the regression coefficients), leverage (an observation with an extreme value on a predictor variable) and influence (an observation is said to be

influential if removing the observation substantially changes the estimate of coefficients) and some correction actions have been taken. Accounts receivable period and financial leverage were skewed to the right and were transformed into their square roots to correct non-normality of the variables. Similarly firm growth rate was skewed to the right and transformed into its inverse to correct the non-normality of the variable. GDP was also transformed into its inverse value to validate the normality assumption.

4.4.1 Accounts Receivable Period and Profitability

Three regressions were run to investigate the effect of accounts receivable period on firms' profitability. After running the three models, the results were tested for the Classical linear regression model (CLRM) assumptions (See appendix C-1). Models with Return on equity and operating profit margin as dependent variables were having heteroscedasticity problem. Robust standard error was used to minimize the problem of heteroscedasticity. However, tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis thus mitigating the autocorrelation problem by ignoring the time effect.

Table 4.5, below, illustrates the summary of the three regression models that have been run to investigate the effect of accounts receivable period on firms' profitability. The explanatory power of the three models, as can be seen on Table 4.5 from the R squared values are equal to 43.48 percent (adjusted), 61.35 percent and 59.54 percent for return on assets, return on equity and operating profit margin respectively. This implies that 43.48 percent of the changes in the return on assets, 61.35 percent of variability in the return on equity and 59.54 percent of changes in operating profit margin are successfully explained by the variables used in the models. However, the remaining 56.52 percent changes in the return on assets, 38.65 percent variability in the return on equity and 40.46 percent of changes in the operating profits are caused by other factors that are not included in the models. Moreover, the overall significance of the models,

when measured by their respective F statistics of 9.31, 15.00 and 17.31 with P-values of 0.0000, indicate that the models are well fitted at 1 percent level of significance.

Table 4.5: Regression Analysis of Profitability Measures and Accounts Receivable Period

	ROA		ROE		OPM	
	Coef. (Std.Err.)	t-value (p-value)	Coef. (Std.Err.)	t-value (p-value)	Coef. (Std.Err.)	t-value (p-value)
ARPsqrt	-.122347 (.0292067)	-4.19*** (0.000)	-.2404972 (.00663)	-6.11*** (0.000)	-.0358454 (.0100699)	-3.56*** (0.001)
FS	.0419997 (.0086808)	4.84*** (0.000)	.0817736 (.0153526)	5.33*** (0.000)	.0752128 (.0186922)	4.02*** (0.000)
FGRinv	-.0013519 (.0007737)	-1.75* (0.087)	-.003226 (.0013233)	-2.44** (0.018)	-.0033623 (.0011724)	-2.87*** (0.006)
FLsqrt	-.111591 (.0538784)	-2.07** (0.044)	-.1674931 (.1774134)	-0.94 (0.350)	-.4494253 (.1630243)	-2.76*** (0.008)
GDPinv	.3440713 (1.730205)	0.20 (0.843)	2.420281 (3.405698)	0.71 (0.481)	.2331876 (3.239536)	0.07 (0.943)
Number of obs	55		55		55	
F(5, 49)	9.31*** (P=0.0000)		15.00*** (P=0.0000)		17.31*** (P=0.0000)	
R-squared	0.4871		0.6135		0.5954	
AdjR-squared	0.4348		-		-	
Root MSE	0.12418		0.24413		0.26942	

*** *Significant at the 1 percent Level*

** *Significant at the 5 percent Level*

* *Significant at the 10 percent Level*

Source: STATA regression results based on annual reports of sample firms for the study period

In addition, Table 4.5 reveals the result of the regressions analysis in which accounts receivable period (in its square root value) and firm size are both statistically significant at the 1 percent level in all the three regressions. Firm growth rate (in its inverse value) affects return on assets, return on equity and operating profit margin negatively and significantly at the 10 percent, 5 percent and 1 percent levels respectively.

Similarly, financial leverage, in its square root value, affect return on assets and operating profit margin negatively and significantly at the 5 percent and 1 percent levels respectively, but it has no significant effect on the return on equity. While, GDP does not have significant relationship with profitability measures used in this study.

Bearing in mind the third chapter of the report, the first research hypothesis was that there is significant negative relationship between profitability measures and accounts receivable period. In conformity with the hypothesis, all the three indicators of profitability, return on assets, return on equity, and operating profit margin, are negatively and significantly related with accounts receivable period at the 1 percent level and these results are consistent with the findings made by Folope and Ajilore (2009), Mathuva (2009), Padachi (2006), Samiloglu and Demirgunes (2008) and Sen and Oruc (2009) who found significant negative relationship between accounts receivable period and firms' profitability.

The implication is that the increase or decrease in accounts receivable will significantly and negatively affect profitability of the firms. It means that the shorter the firm's accounts receivable period, the higher will be the profitability and vice versa. This is may be due to two reasons. One, if a firm collects its accounts receivable quickly the fund will be available for productive usage. In this sense, the negative relationship between accounts receivable period and firms' profitability is consistent with the view that the lesser the time it takes customers to pay their bills, results more cash available to replenish the inventory. This in tern leads to more sales which ultimately results in an increase in profitability. Two, it is also possible to minimize loss from uncollectable accounts by speeding up the receivable period.

4.4.2 Inventory Holding Period and Profitability

In a similar fashion, three regressions were run in order to examine the effect of inventory holding period on the three measures of profitability-return on assets, return on equity and operating profit margin. While making tests for the Classical linear

regression model (CLRM) assumptions, the problems of heteroscedasticity and normality were found (See appendix C-2). Robust standard error was used to minimize the problem of heteroscedasticity and inventory holding period, the main independent variable, was transformed into its square root value to correct the problem of normality.

Table 4.6: Regression Analysis of Profitability Measures and Inventory Holding Period

	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (p-value)	Coef. (Std. Err.)	t-value (p-value)	Coef. (Std. Err.)	t-value (p-value)
IHPsqrt	-.0061802 (.0016738)	-3.69*** (0.001)	-.0205429 (.0056947)	-3.61*** (0.001)	-.0158092 (.0075589)	-2.09** (0.042)
FS	.035144 (.0089613)	3.92*** (0.000)	.0590075 (.0198291)	2.98*** (0.005)	.0570857 (.0239497)	2.38** (0.021)
FGRinv	-.0008997 (.0005172)	-1.74* (0.088)	-.0017246 (.0014301)	-1.21 (0.234)	-.0021598 (.0013363)	-1.62 (0.112)
FLsqrt	-.1106097 (.0663499)	-1.67 (0.102)	-.1638124 (.1839651)	-0.89 (0.378)	-.4580804 (.1701976)	-2.69*** (0.010)
GDPinv	-.3937911 (1.613907)	-0.24 (0.808)	-.0215481 (3.592665)	-0.01 (0.995)	-1.942466 (3.532805)	-0.55 (0.585)
Number of obs	55		55		55	
F(5, 49)	6.92*** (P=0.0001)		6.30*** (P=0.0001)		13.05*** (P=0.0000)	
R-squared	0.4185		0.4691		0.4574	
Adj R-squared	-		-		-	
Root MSE	0.13222		0.28613		0.312	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

However, tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis and thus mitigating the autocorrelation problem by ignoring the time effect.

Above, Table 4.6 shows the results of regression models in which the impact of inventory holding period on the three profitability measures (return on assets, return on equity and operating profit margin) have been examined. The explanatory power of the three models, as can be seen on Table 4.6 from the R squared values, are 41.85 percent, 46.91 percent and 45.74 percent respectively. This is an indication that the variables used in the models explain 41.85 percent of the changes in the return on assets, 46.91 percent of variability in the return on equity and 45.74 percent of changes in operating profit margin.

Similar to the explanations given in previous paragraphs, the remaining percentages reflect the portion which is not explained by the variables included in the models. Moreover, the overall significances of the models when measured by their respective F statistics of 6.92, 6.30 and 13.05 with P-values of 0.0001, 0.0001 and 0.0000 respectively indicate that the models are well fitted at the 1 percent level of significance.

Furthermore, Table 4.6 presents the result of the regressions analysis in which inventory holding period (in its square root value) and firm size are both statistically significant at the 1 percent level in all the three regressions. In these models, firm growth rate (in its inverse value) affects only return on assets negatively and significantly at the 10 percent level. Similarly, financial leverage, in its square root value, showed a strong negative relationship with operating profit margin at the 1 percent level, but it has no significant relationships with return on assets and return on equity. While, in these regressions also, GDP has no any significant relationship with profitability measures used in this study.

The result from this study is inline with the initial hypothesis which states that there is significant negative relationship between inventory holding period and profitability of

firms. This means that inventory holding period affects firms' profitability, as measured by return on assets, return on equity and operating profit margin, negatively and significantly at the 1 percent, 1 percent and 5 percent levels respectively and this result is conforms to findings of Folope and Ajilore (2009), Padachi (2006), Samiloglu and Demirgunes (2008). The implication is that the increase or decrease in inventory holding period will significantly and negatively affect profitability of the firms. In simple terms, the shorter the firm's inventory holding period, the higher will be the profitability and vice versa. It can be also interpreted as if the inventory takes more time to sell, it will adversely affect profitability. The reason for this could be tied up of more funds and/or deterioration and obsolescence of inventory due to longer inventory period leads to lower profitability.

4.4.3 Accounts Payable Period and Profitability

In a similar way, three regression models were run in order to examine the effect of accounts payable period on the three measures of profitability-return on assets, return on equity and operating profit margin. Heteroscedasticity problem was found while testing the assumptions of the Classical Linear Regression Model (CLRM) (See Appendix C-3).

Robust standard errors were used so as to mitigate the heteroscedasticity problem witnessed in the process of testing the three regression outputs. However, tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis and thus mitigating the autocorrelation problem by ignoring the time effect.

Below, Table 4.7 presents the results of regression models in which the impact of accounts payable period on the three profitability measures, return on assets, return on equity and operating profit margin, has been examined. The explanatory power of the three models, as can be vividly seen on Table 4.7 from the R squared values, are 30.86 percent for return on assets 22.26 percent for return on equity and 35.76 percent for operating profit margin. This implies that 30.86 percent of the changes in the return on

assets, 22.26 percent of variability in the return on equity and 35.76 percent of changes in operating profit margin are successfully explained by the variables used in the models. However, the remaining 69.14 percent changes in the return on assets, 77.74 percent variability in the return on equity and 64.24 percent of changes in the operating profits are caused by other factors that are not included in the models.

Table 4.7: Regression Analysis of Profitability Measures and Accounts Payable Period

	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (p-value)	Coef. (Std. Err.)	t-value (p-value)	Coef. (Std. Err.)	t-value (p-value)
APPsqrt	-.0031788 (.0049338)	-0.64 (0.522)	-.0037108 (.0108071)	-0.34 (0.733)	-.0175474 (.0100719)	-1.74* (0.088)
FS	.0463 (.0124358)	3.72*** (0.001)	.0833942 (.0274939)	3.03*** (0.045)	.1030606 (.0227026)	4.54*** (0.000)
FGRinv	-.0011289 (.0005318)	-2.12** (0.0389)	-.0027015 (.0014858)	-1.82* (0.075)	-.0024503 (.0012792)	-1.92* (0.061)
FLsqrt	-.1114977 (.0765491)	-1.46 (0.152)	-.2317322 (.272558)	-0.85 (0.399)	-.3711186 (.2227243)	-1.67 0.102
GDPinv	-.3895509 (1.795767)	-0.22 (0.829)	-.0969339 (4.491132)	-0.02 (0.983)	-1.808718 (3.695348)	-0.49 (0.627)
Number of obs	55		55		55	
F(5, 49)	7.04*** (P=0.0000)		5.31*** (P=0.0000)		16.21*** (P=0.0000)	
R-squared	0.3086		0.2226		0.3576	
Adj R-squared	-		-		-	
Root MSE	0.14418		0.34626		0.3395	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

Moreover, consistent with the above two sets of regression results, the overall significance of the models when measured by their respective F statistics of 7.04, 5.31

and 16.21 with P-values of 0.0000 indicate that the models are well fitted at the 1 percent level of significance.

When we compare the results of these regressions with the above two sets of results, there are significant differences. The R squared value of 30.86 percent for return on assets is by far smaller than the R squared results for return on assets in the accounts receivable period and inventory holding period results of regressions. By the same analysis, the R squared values of 22.26 percent for return on equity and 35.76 percent for operating profit margin are smaller than that of the corresponding R squared values of regressions for accounts receivable period and inventory holding period. This implies that the explanatory power of the independent variable, accounts payable period, is relatively weaker than that of the two variables. Put simply, variability in accounts payable period does not explain the variability of profitability variables as strongly as accounts receivable period and inventory holding period.

In addition to what has been discussed above, Table 4.7 presents the result of the regressions analysis in which accounts payable period (in its square root value) has no significant impact on firms' profitability as measured by return on assets and return on equity but it has significant impact on profitability when it is measured by the operating profit margin at the 10 percent level. The positive effect of firm size on profitability measures is statistically significant at the 1 percent level in all the three regressions, which is consistence with the above two sets of regressions. In these models, firm growth rate (in its inverse value) affects all the three measures of profitability, return on assets, return on equity and operating profit margin, negatively and significantly at the 5 percent, 10 percent and 10 percent levels respectively. Finally, no significant relationship is found between financial leverage as well as GDP and the three measures of profitability.

The study has found that there is no positive significant relationship between accounts payable and profitability of firms, which is against the initial hypothesis. It means that

virtually no significant relationship is obtained between the accounts payable period and profitability of firms from the regression analysis, except for the significant negative effect of accounts payable period on operating profit margin at the 10 percent level. The result is basically consistent with the findings of Teruel and Solano (2005) who founds insignificant relationship between accounts payable period and profitability.

The researcher accepts these results for three reasons. First, in the literature of working capital, research findings indicated both negative and positive significant relationships between accounts payable period and profitability of firms (Falope and Ajilore, 2009; Lazaridis and Tryfonidis, 2006; Nobanee, 2009; Raheman and Nasr, 2007). A positive significant relationship between accounts payable period and profitability can be explained by the increased availability of funds caused by the delayed payment of accounts payable. Such funds can thus be used for productive purposes that can increase profitability. On the other hand, a negative significant relationship between accounts payable period and profitability can be explained by the benefits of early payment discounts. What if these two benefits off-set each other? There will be no significant relationship between accounts payable period and profitability of firms.

Second, most of the firms included in this study import the raw materials from abroad and make purchases on accounts in accordance with the credit policy of the suppliers due to low bargaining power. In this case, there may be no significant relationship between accounts payable period and profitability. Finally, after all it is not delaying payment or making it fast that matters. What matters is for what purpose we use the fund at hand i.e. if we make it idle we expect no additional profits from delaying payments for accounts payable. On the other hand, if we use it for productive purpose we can expect some additional profits. Therefore, there may not be a significant relationship between accounts payable period and profitability of firms. On the other hand, the negative significant effect of accounts payable period on the operating profit margin is consistent with the view that speeding up payment to suppliers might

increase profitability of firms due to substantial discounts for quick payment (Falope and Ajilore, 2009).

4.4.4. Cash Conversion Cycle and Profitability

In the same manner, three regressions were run in order to examine the effect of cash conversion cycle, one of the comprehensive measures of working capital investment policy, on the three measures of profitability-return on assets, return on equity and operating profit margin. Cash conversion cycle is an additive function of accounts receivable period, inventory holding period and accounts payable period. Tests were done for the Classical linear regression model (CLRM) assumptions. While making these tests, the heteroscedasticity problems were encountered and robust standard errors was used to minimize these problems (See Appendix C-4).

However, tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis and thus it mitigates the autocorrelation problem by ignoring the time effect.

Table 4.8 reveals the results of regression models in which the impact of cash conversion cycle on the three profitability measures, return on assets, return on equity and operating profit margin, has been examined. The explanatory power of the three models, as can be seen on Table 4.8 from the R squared values, are 36.35 percent, 51.82 percent and 50.06 percent respectively. From this it is possible to infer that 36.35 percent, of the changes in the return on assets, 51.82 percent of variability in the return on equity and 50.06 percent of changes in operating profit margin are successfully explained by the variables used in the models.

However, a large part, 63.65 percent changes in the return on assets, the remaining 48.18 percent of variability in the return on equity and 49.94 percent of changes in the operating profits are caused by other factors that are not included in the models. Moreover, the overall significances of the models when measured by their respective F

statistics of 7.11, 9.70 and 11.44 with P-values of 0.0000 indicate that the models are well fitted at 1 percent level of significance.

Table 4.8: Regression Analysis of Profitability Measures and Cash Conversion Cycle

	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)
CCC	-.0000751 (.000026)	-2.88*** (0.006)	-.0003779 (.0000788)	-4.80*** (0.000)	-.0003078 (.0001294)	-2.38** (0.021)
FS	.0350369 (.0093288)	3.76*** (0.000)	.0494587 (.0183126)	2.70*** (0.009)	.0485209 (.0224504)	2.16** (0.036)
FGRinv	-.0012657 (.0005411)	-2.34** (0.023)	-.0030047 (.0014535)	-2.07** (0.044)	-.0031532 (.0013117)	-2.40** (0.020)
FLsqrt	-.1321814 (.0715291)	-1.85* (0.071)	.272631 3.579496)	0.08 (0.940)	-.4987009 (.1767569)	-2.82*** (0.007)
GDPinv	-.3480056 (1.681015)	-0.21 (0.837)	-.2193717 (.1870148)	-1.17 (0.246)	-1.697286 (3.517731)	-0.48 (0.632)
Number of obs	55		55		55	
F(5, 49)	7.11*** (P=0.0000)		9.70*** (P=0.0000)		11.44*** (P=0.0000)	
R-squared	0.3635		0.5182		0.5006	
Adj R-squared	-		-		-	
Root MSE	0.13833		0.2726		0.29934	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

Moreover, Table 4.8 presents the result of the regressions analysis in which cash conversion cycle and firm size significantly influence return on assets and return on equity both at the 1 percent level also affecting operating profit margin significantly at

the 5 percent level. In these models, firm growth rate (in its inverse value) affects all the three measures of profitability negatively and significantly at the 5 percent level. Similarly, financial leverage, in its square root value, showed a strong negative relationship with return on assets and operating profit margin at the 10 percent and 1 percent levels respectively. These regressions also show no significant relationship between GDP and profitability measures.

The result from this study is complements with the hypothesis which was forwarded at the beginning which states that there is a significant negative relationship between cash conversion cycle and profitability of firms. This means that cash conversion cycle affects firms' profitability negatively and significantly at the 1 percent level (for return on assets and return on equity) and at the 5 percent level (for operating profit margin). This result is consistent with some previous findings (Deloof, 2003; Falope and Ajilore, 2009; Jose, et al., 1996; Raheman and Nasr, 2007; Shin and Soenen, 1998; Zariyawati, et al., 2009).

The implication is that the increase or decrease in cash conversion cycle will significantly and negatively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher will be the profitability and vice versa. As stated earlier, cash conversion cycle is an additive function of accounts receivable period, inventory holding period and accounts payable period; i.e. cash conversion cycle is equal to accounts receivable period plus inventory holding period minus accounts payable period. Managing cash conversion cycle efficiently, therefore, means efficient management of these three items. By managing efficiently the accounts receivable period, inventory holding period and accounts payable period (by making short accounts receivable period and inventory holding period and/or making long accounts payable period) managers can control the efficiency of cash conversion cycle and its impact on profitability.

4.4.5. Current Assets to Total Assets Ratio and Profitability

The above four measurements of working capital assets management policy, namely accounts receivable period, inventory holding period, accounts payable period and cash conversion cycle, indicate how efficient are firms in managing their collection, inventory and payment policies. Investment in working capital assets, however, is broader than managing collection, inventory and payment policies. It also includes management of cash and other short term assets. For this reason, we need to have another comprehensive measurement of working capital investment policy. In this study, the researcher used current assets to total assets ratio as an additional comprehensive measure of working investment policy.

In order to examine the effect of current assets to total assets ratio on measures of profitability-return on assets, return on equity and operating profit margin, three regression models were run. Robust standard error was used to mitigate heteroscedasticity problem witnessed when testing the three regressions outputs for the Classical linear regression model (CLRM) assumptions (See appendix C-5). However, like all the other regressions, tests for autocorrelations were not made since the data analysis technique was pooled cross sectional analysis and thus mitigating the autocorrelation problem by ignoring the time effect.

Table 4.9, below, exhibits the regressions results of the effect of current assets to total assets ratio on firms' profitability as measured by the return on assets, return on equity and operating profit margin. The explanatory powers of the three regressions as measured by the R squired values are 30.35 percent for return on assets, 23.76 percent for return on equity and 34.19 percent for operating profit margin.

These R squared values show relatively lower explanatory powers of the regressions particularly in the one in which the dependent variable is return on equity. In this case, the independent variables explain the variability of the dependent variable only to the extent of 23.76 percent. The remaining 76.24 percent of variability in return on equity is

caused by other factors that are not included in the regression. Similarly, the explanatory variables are able to explain the variability in return on assets and operating profit margin only to the extent of 30.35 percent and 34.19 percent respectively.

Table 4.9: Regression Analysis of Profitability Measures and Current Assets to Total Assets Ratio

		ROA		ROE		OPM	
		Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)
CATAR		.0089697 (.0980119)	-0.09 (0.927)	.2819629 (.3065822)	0.92 (0.362)	.2453645 (.258425)	0.95 (0.347)
FS		.0407193 (.0108746)	3.74*** (0.000)	.0668963 (.0212242)	3.15*** (0.003)	.062188 (.0202532)	3.07*** (0.003)
FGRinv		-.001218 (.000516)	-2.36** (0.022)	-.0031537 (.0016061)	-1.96* (0.055)	-.0032933 (.0012675)	-2.60** (0.012)
FLsqrt		-.1444938 (.0758139)	-1.91* (0.063)	-.1766515 (.2503764)	-0.71 (0.484)	-.4588792 (.2106716)	-2.18** (0.034)
GDPinv		-.448844 (1.7934)	-0.25 (0.803)	.4142309 (4.295842)	0.10 (0.924)	-1.55079 (3.600351)	-0.43 (0.669)
Number of obs		55		55		55	
F(5, 49)		6.20*** (P=0.0002)		4.91*** (P=0.0010)		12.58*** (P=0.0000)	
R-squared		0.3035		0.2376		0.3419	
Adj R-squared		-		-		-	
Root MSE		0.14471		0.34289		0.34361	

*** *Significant at the 1 percent Level*

** *Significant at the 5 percent Level*

* *Significant at the 10 percent Level*

Source: STATA regression results based on annual reports of sample firms for the study period

The remaining 69.65 percent variability in the return on assets and 65.81 percent of variability in operating profit margin are caused by variables that are excluded from the models. The overall significances of the three models, however, when measured by their

respective F statistics of 6.20, 4.91 and 12.58 with P-values of 0.0002, 0.0010 and 0.0000 indicate that the models are well fitted at the 1 percent level of significance.

The results of the regressions analysis, in which current assets to total assets ratio has shown insignificant positive effect on profitability measures, has been presented in Table 4.9. From the same table, on the other hand, it can be learned that firm size has positive significant influence on return on assets, return on equity and operating profit margin at the 1 percent level. Firm growth rate (in its inverse value) affects return on assets, return on equity and operating profit margin negatively and significantly at the 5 percent, 10 percent and 5 percent levels respectively. Similarly, financial leverage, in its square root value, showed a strong negative relationship with return on assets and operating profit margin at the 10 percent and 5 percent levels respectively. In these regressions as well, GDP has no significant relationship with profitability measures.

In chapter three, it was hypothesized that current assets to total assets ratio affects firms' profitability negatively and significantly. The results from this study, however, show positive relationship between current assets to total assets ratio and firms' profitability even though the relationship is not statistically significant. The result may be acceptable because most of firms included in the study have not yet fully used their fixed production capacities. This means that if they want to increase their profitability, they have to increase their investment in current assets until they reach the cost indifference point. Keeping fixed assets constant (even decreasing through depreciation) and investing more on current assets will then result in increased current assets to total assets ratio. So, it may not be surprising to see positive relationship between current assets to total assets ratio and profitability.

In agreement with the findings by Afza and Nasir (2007), the positive coefficients of current assets to total assets ratio indicates a negative effect of the degree of aggressiveness of working capital investment policy on firms' profitability. It means that as current assets to total assets ratio increases, degree of aggressiveness decreases, and

hence firms' profitability increases. Accordingly, aggressiveness in working capital investment policy affects the profitability of Tigray manufacturing private limited companies negatively.

4.4.6. Current Liabilities to Total Assets Ratio and Profitability

To this point, the regression analyses were related to working capital investment policy. In examining the effect of management of working capital on firms' profitability, it is also equally important to see the effect of working capital financing policy. Working capital financing policy is measured by the relative aggressiveness/conservativeness in using current liabilities to finance working capital assets. In measuring the effect of working capital financing policy current liabilities to total assets ratio is used.

In order to examine the effect of working capital financing policy, as measured by current liabilities to total assets ratio, on the profitability measures (return on assets, return on equity and operating profit margin) three regression models were run. Robust standard errors were used to mitigate the heteroscedasticity problem witnessed when testing the three regressions outputs for the Classical linear regression model (CLRM) assumptions (See appendix C-6). However, like all the other regressions, tests for autocorrelations were not made since the data analysis technique was pooled cross sectional analysis and thus it mitigates the autocorrelation problem by ignoring the time effect.

Below, Table 4.10 gives an idea about the regression results of the effects of current liabilities to total assets ratio on firms' profitability. The explanatory powers of the three regressions as measured by the R squared values are 44.88 percent for return on assets, 30.24 percent for return on equity and 39.34 percent for operating profit margin. This implies that 44.88 percent, of the changes in the return on assets, 30.24 percent of variability in the return on equity and 39.34 percent of changes in operating profit margin are successfully explained by the variables used in the models. However, the remaining 55.12 percent of changes in the return on assets, 69.76 percent of variability in

the return on equity and 60.66 percent of changes in the operating profits are caused by other factors that are not included in the models. Moreover, the overall significance of the models when measured by their respective F statistics of 10.77, 8.97 and 21.85 with P-values of 0.0000 indicates that the models are well fitted at the 1 percent level of significance.

Table 4.10: Regression Analysis of Profitability Measures and Current Liabilities to Total Assets Ratio

	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)
CLTAR	.3721595 (.1115135)	3.34*** (0.002)	.6301734 (.2410324)	2.61** (0.012)	.5948474 (.211135)	2.82*** (0.007)
FS	.0342887 (.0099854)	3.43*** (0.001)	.0661515 (.0203305)	3.25*** (0.002)	.0607752 (.0171789)	3.54*** (0.001)
FGRinv	-.0004086 (.0004578)	-0.89 (0.377)	-.0014294 (.0013365)	-1.07 (0.290)	-.0016904 (.0010855)	-1.56 (0.126)
FLsqrt	-.20777 (.0552216)	-3.76*** (0.000)	-.3789055 (.1643432)	-2.31*** (0.025)	-.6431404 (.1532235)	-4.20*** (0.000)
GDPinv	-.0949818 (1.408725)	-0.07 (0.947)	.4236779 (3.984892)	0.11 (0.916)	-1.500607 (3.190837)	-0.47 (0.640)
Number of obs	55		55		55	
F(5, 49)	10.77*** (P=0.0000)		8.97*** (P=0.0000)		21.85*** (P=0.0000)	
R-squared	0.4488		0.3024		0.3934	
Adj R-squared	-		-		-	
Root MSE	0.12874		0.32799		0.32989	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

Besides, Table 4.10 displays the results of the regressions analysis in which current liabilities to total assets ratio influence return on assets, return on equity and operating profit margin positively and significantly at the 1 percent, 5 percent and 1 percent levels respectively. On the other hand, there is significant statistical evidence on the same table that indicates firm size strongly and positively influences return on assets, return on equity and operating profit margin at the 1 percent level.

In these models, financial leverage (in its square root value) affects return on assets, return on equity and operating profit margin negatively and significantly at the 1 percent, 5 percent and 1 percent levels respectively. Firm growth rate and GDP do no have significant relationship with profitability measures.

The result from this study is in line with what was hypothesized, which states that there is a positive significant relationship between current liabilities to total assets ratio and profitability of firms. This means that current liabilities to total assets ratio affect return on assets, return on equity and operating profit margin positively and significantly at the 1 percent level (for return on assets and operating profit margin) and at the 5 percent level (for return on equity). In contrary with the findings by Afza and Nasir (2007), the positive coefficients of current liabilities to total assets ratio in this study point out the positive effect of aggressive working capital financing policy on firms' profitability.

The implication is that the increase or decrease in current liabilities to total assets ratio will significantly and positively affect profitability of the firms. The higher the amount of current liabilities the firm uses to finance its working capital assets, the more profitable the firm will be. This implies that there is strong positive relationship between aggressiveness in working capital financing and firms' profitability. Moreover, the coefficients of the regressions shows that profitability variables are strongly related with working capital financing policy (as measured by current liabilities to total assets ratio) than working capital investment policy. This means that working capital financing

policy affects firms' profitability strongly than working capital investment policy in sampled Tigray Manufacturing Private Limited Companies.

4.5. Trade-Off between the Two Objectives of Working Capital Management: Profitability and Liquidity

Finally, six regressions were run to examine the relationship between the two objectives of working capital assets management and financing policies; liquidity and profitability. Theoretically, there is a trade-off between these two objectives. This means that the higher the liquidity position of the firm, the lower will be the profitability and vice versa. Thus, these regressions were run to get empirical evidence from the sampled firms as to weather the trade-off between profitability and liquidity exists or not. The two conventional measures of liquidity, current ratio and quick ratio, are used for the purpose of analysis.

4.5.1. Current Ratio and Profitability

Three regressions were run in order to examine the effect of current ratio on return on assets, return on equity, and operating profit margin. Tests were done for the Classical linear regression model (CLRM) assumptions. While making these tests the problem of heteroscedasticity was found and robust standard error was used to minimize this problem (See appendix C-7). However, like all the other regressions tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis and thus it mitigates the autocorrelation problem by ignoring the time effect.

Table 4.11, below, put on display the regressions results of the effect of current ratio on firms' profitability as measured by the return on assets, return on equity and operating profit margin. The explanatory powers of the three regressions as measured by the R squared values are 63.66 percent, 31.41 percent and 42.86 percent for return on assets, return on equity and operating profit margin respectively.

Table 4.11: Regression Analysis of Profitability Measures and Current Ratio

	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)
CRlog	-.0891275 (.0133319)	-6.69*** (0.000)	-.1066065 (.0389875)	-2.73*** (0.009)	-.1176235 (.0387017)	-3.04*** (0.004)
FS	.0351598 (.0082887)	4.24*** (0.000)	.0702385 (.0180701)	3.89*** (0.000)	.0636314 (.0150778)	4.22*** (0.000)
FGRinv	-.0003613 (.0003429)	-1.05 (0.297)	-.0017806 (.0016625)	-1.07 (0.289)	-.0018566 (.0013573)	-1.37 (0.178)
FLsqrt	-.2318271 (.0444307)	-5.22*** (0.000)	-.3747938 (.2053318)	-1.83* (0.074)	-.6564576 (.1794662)	-3.66*** (0.001)
GDPinv	-.8880556 (1.305696)	-0.68 (0.5000)	-.692009 (3.986608)	-0.17 (0.865)	-2.640887 (3.08039)	-0.86 (0.395)
Number of obs	55		55		55	
F(5, 49)	24.58*** (P=0.0000)		11.45*** (P=0.0000)		32.36*** (P=0.0000)	
R-squared	0.6366		0.3141		0.4284	
Adj R-squared	-		-		-	
Root MSE	0.10453		0.32523		0.32023	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

These R squared values show relatively higher explanatory powers of the regressions. Particularly in the case of return on assets the independent variables explain the variability of the dependent variable to the extent of 63.66 percent. Only the remaining 36.34 percent of variability in return on assets is caused by other factors that are not included in the regression. Similarly, the explanatory variables are able to explain the variability in return on equity and operating profit margin to the extent of 31.41 percent and 42.86 percent respectively. The remaining 68.59 percent variability in the return on equity and 57.14 percent of variability in operating profit margin are the result of

variables that are excluded from the models. In addition, the overall significances of the three models when measured by their respective F statistics of 24.58, 11.45 and 32.36 with P-values of 0.0000 indicate that the models are well fitted at the 1 percent level of significance.

Besides, Table 4.11 summarizes the result of the regressions analysis in which current ratio have significant negative effect on all profitability measures. On the other hand, the above same table will help us to observe the positive significant influence that firm size has on return on assets, return on equity and operating profit margin at the 1 percent level. Similarly, financial leverage, in its square root value, showed a strong negative relationship with return on assets, return on equity and operating profit margin at the 1 percent, 10 percent and 1 percent levels respectively. However, firm growth rate and GDP have no significant relationship with profitability measures.

Current ratio was hypothesized to have significant negative effect on firms' profitability. In conformity with this hypothesis, all the three indicators of profitability (return on assets, return on equity, and operating profit margin) are negatively and significantly related with current ratio at the 1 percent level. This finding is similar with the findings of Christopher and Kamalavalli (2009), Eljelly (2004), Raheman and Nasr (2007), Sen and Oruc (2009) and Shin and Soenen (1998). The implication is that the increase or decrease in current ratio will significantly and negatively affect profitability of the firms. In other words, the lower the firm's current ratio, the higher will be the profitability and vice versa.

4.5.2. Quick Ratio and Profitability

The last three regressions were run in order to examine the effect of quick ratio on return on assets, return on equity, and operating profit margin. Tests were done for the Classical linear regression model (CLRM) assumptions. Robust standard errors were basically used so as to minimize the problem of heteroscedasticity which was observed while carrying out the tests (See appendix C-8). However, like all the other regressions,

tests for autocorrelations were not made since data analysis technique was pooled cross sectional analysis and thus mitigating the autocorrelation problem by ignoring the time effect.

Table 4.12: Regression Analysis of Profitability Measures and Quick Ratio						
	ROA		ROE		OPM	
	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)	Coef. (Std. Err.)	t-value (P-value)
QRlog	-.0523866 (.011586)	-4.52*** (0.000)	-.0572673 (.028252)	-2.03** (0.048)	-.0766366 (.0283134)	-2.71*** (0.009)
FS	.0450691 (.0099291)	4.54*** (0.000)	.0816118 (.0188707)	4.32*** (0.000)	.0773756 (.0129626)	5.97*** (0.000)
FGRinv	-.0009178 (.0003346)	-2.74*** (0.008)	-.0024782 (.0015828)	-1.57 (0.124)	-.0025464 (.0012881)	-1.98* (0.054)
FLsqrt	-.198145 (.0502971)	-3.94*** (0.000)	-.3286874 (.2030682)	-1.62 (0.112)	-.6200995 (.1774368)	-3.49*** (0.001)
GDPinv	-.773813 (1.548902)	-0.50 (0.620)	-.520075 (4.204165)	-0.12 (0.902)	-2.539196 (3.13894)	-0.81 (0.422)
Number of obs	55		55		55	
F(5, 49)	15.44*** (P=0.0000)		9.03*** (P=0.0000)		33.02*** (P=0.0000)	
R-squared	0.5441		0.2773		0.4175	
Adj R-squared	-		-		-	
Root MSE	0.11707		0.33385		0.32327	
*** *Significant at the 1 percent Level*						
** *Significant at the 5 percent Level*						
* *Significant at the 10 percent Level*						
Source: STATA regression results based on annual reports of sample firms for the study period						

Table 4.12, above, presents the regressions results of the effect of quick ratio on firms' profitability as measured by the return on assets, return on equity and operating profit margin. The explanatory powers of the three regressions as measured by the R squared values are 54.41 percent for return on assets, 27.73 percent for return on equity and 41.75

percent for operating profit margin. These R squared values show relatively higher explanatory powers of the regressions. This is mainly the case in relation to the return on assets in which case the independent variables explain the variability of the dependent variable to the extent of 54.41 percent. Only the remaining 45.59 percent of variability in return on assets is caused by other factors that are not included in the regressions.

Similarly, the explanatory variables are able to explain the variability in return on equity and operating profit margin to the extent of 27.73 percent and 41.75 percent respectively. This means, the remaining 72.27 percent of variability in the return on equity and 58.25 percent of variability in operating profit margin are as a result of variables that are excluded from the models. The overall significances of the three models when measured by their respective F statistics of 15.44, 9.03 and 33.02 with P-values of 0.0000 indicate that the models are well fitted at the 1 percent level of significance.

Additionally, Table 4.11 provides the results of the regressions analysis in which quick ratio has significant negative effect on all profitability measures. On the other hand, the table reveals the positive significant influence that firm size has on return on assets, return on equity and operating profit margin at the 1 percent level. Firm growth rate, in its inverse value, affects negatively and significantly return on assets and operating profit margin at the 1 percent and 10 percent levels respectively. Similarly, financial leverage, in its square root value, showed a strong negative relationship with return on assets and operating profit margin at the 1 percent, level. Like all the previous regressions, it has been noticed that there is no significant relationship between GDP and profitability measures.

Quick ratio was hypothesized to have significant negative effect on firms' profitability. In conformity with the hypothesis, all the three indicators of profitability (return on assets, return on equity, and operating profit margin) are negatively and significantly related with quick ratio at the 1 percent, 5 percent and 1 percent levels respectively and

this finding is also consistent with the findings of some of the previous researchers (Christopher and Kamalavalli, 2009; Nobanee, 2009). The implication of this finding is that the increase or decrease in quick ratio will significantly and negatively affect profitability of the firms. This means that the lower the firm's quick ratio, the higher will be the profitability and vice versa. Thus, quick ratio affects firms' profitability negatively and significantly and it is possible to increase profitability of Manufacturing Private Limited Companies in Tigray by keeping quick ratio lower to the optimal level.

Finally, from the last two sets of regressions, we can learn that profitability and liquidity (as measured by both current ratio and quick ratio) are related inversely among Manufacturing Private Limited Companies operating in the Tigray region. This means is that as liquidity of firms increases, profitability will be decreases and vice versa. This finding is basically complement with the findings made by Elljelly (2004), Raheman and Nasr (2007) and Sen and Oruc (2009). From this finding we can infer that there is a trade-off between the two objectives of working capital management- liquidity and profitability, in Tigray Manufacturing Private Limited Companies. This implies that these companies can earn a better return by decreasing their liquidity position to a reasonable minimum level.

CHAPTER V
CONCLUSION AND RECOMMENDATIONS

While working capital assets and the related short-term liabilities affect the firms' profitability, liquidity (risk) as well as market values of shares (Smith, 1980). Research studies on the effects of management of working capital policies on firms' profitability in developing countries, especially in Ethiopia remained an ignored area of empirical research. To the best of researcher's knowledge, no research has been done on the effects of management of working capital policies on firms' profitability in Ethiopia in general and in Tigray in particular. Thus, this study examined the effect of working capital investment and financing policies on firms' profitability by using audited financial statements of a sample of 11 manufacturing private limited companies in Tigray region, Ethiopia for the period of 2005 to 2009.

The study used return on assets, return on equity and operating profit margin as dependent profitability variables. Accounts receivable period, inventory holding period and accounts payable period were used as independent working capital investment policy variables. Moreover, cash conversion cycle and current assets to total assets ratio were used as comprehensive measures of working capital investment policy. On the other hand, current liabilities to total assets ratio is used as measure of working capital financing policy. The two traditional measures, current ratio and quick ratio, were used as liquidity indicators. In addition, the study used firm size as measured by logarithm of sales, firm growth rate as measured by the change in annual sales, financial leverage and annual GDP growth rate as control variables.

Descriptive statistics were used to examine the trend of the chosen variables among the sampled firms. Both correlation analysis and pooled panel data regression models of cross-sectional and time series data were used to analyze the relationships among working capital investment and financing policies' variables and profitability variables.

The profitability positions of the 11 companies included in this study, as measured by return on assets, return on equity and operating profit margin, are on average 5.22 percent, 1.19 percent and -5.73 percent respectively. Whilst, their liquidity positions, as measured by the current and quick ratios, are on average 5.34 and 2.97 respectively. Similarly, the average accounts receivable period, inventory holding period and accounts payable period are 120 days, 314 days and 120 days respectively. On the other hand, cash conversion cycle and current assets to total assets ratio, the two comprehensive measures of working capital investment policy, are on average 314 days and 48.10 percent respectively. Current liability to total assets ratio, used as measure of working capital financing policy, is 24.41 percent on average among the manufacturing private limited companies of Tigray. On average the size of manufacturing private limited company in Tigray is Br. 20,378,683.78 in terms of annual sales with growth rate of 115.31 percent, even if there is a higher variation in growth rate of individual sampled firms. The financial leverage of the sampled firms, as measured by total liabilities to total assets ratio, is 71.77 percent on average.

Findings of correlation analysis reveals that there exist strong negative relationships between profitability measures and account receivable period, inventory holding period and cash conversion cycle at the 1 percent level. Similarly, the correlation analysis shows that accounts payable period is negatively related to the three measures of profitability but this relationship is not statistically significant.

On the other hand, current assets to total assets ratio shows strong positive relationship with return on assets, return on equity and operating profit margin at the 10 percent, 5 percent and 1 percent levels respectively. This finding is similar with the findings of Afza and Nazir (2007). This finding implies that there is negative relationship between aggressiveness in working capital investment policy and firms' profitability. As current assets to total assets ratio increases, the degree of aggressiveness in working capital investment policy decreases (working capital investment is considered to be aggressive when investment in current asses is low) and profitability of firms increases.

Similarly, the correlation analysis indicates strong positive relationship between current liabilities to total assets ratio and profitability measures. By the same interpretation, there is positive relationship between degree of aggressiveness in working capital financing policy and firms' profitability. A firm is said to be aggressive in working capital financing policy when it uses large amounts of current liabilities relative to total sources of funds. The higher the current liabilities to total assets ratio, the higher is the degree of aggressiveness in working capital financing policy, and so is the corresponding level of profitability.

The correlation analysis also shows that the absence of significant relationship between current ratio and the measures of profitability, except for return on assets, for which the result is significant at the 10 percent level. Similarly, the relationship between quick ratio and profitability measures is insignificant, except for return on assets for which the result is significant at the 5 percent level. However, the correlation coefficients show negative relationship between liquidity, as measured by both current ratio and quick ratio, and the profitability measures.

The regressions analyses reveal that, all the three indicators of profitability- return on assets, return on equity and operating profit margin, are negatively and significantly related to accounts receivable period at the 1 percent level. These results are consistent with most of previous studies. The implication is that the increase or decrease in accounts receivable period will significantly and negatively affect profitability of the firms. This means that the shorter the firm's accounts receivable period, the higher will be their profitability and vice versa. Thus, this result communicates that managers can increase the profitability of firms by reducing the accounts receivable period to the possible minimum level. As one can see from the findings, the accounts receivable period is relatively long for Tigray manufacturing private limited companies. The researcher, therefore, recommends them to decrease their accounts receivable period to a reasonable minimum level.

Likewise, from the findings of the regression analyses, inventory holding period negatively and significantly affects firms' profitability, as measured by return on assets, return on equity and operating profit margin, at the 1 percent, 1 percent and 5 percent levels respectively. This result is also consistent with most of previous studies. The implication is that the increase or decrease in inventory holding period will significantly and negatively affect profitability of the firms. This means that the shorter the firm's inventory holding period, the higher will be the profitability and vice versa. It can also be interpreted as, if the inventory takes more time to sell, it will adversely affect profitability. Therefore, it is possible to maximize the profitability of firms by speeding the inventory turnover. The researcher recommends the finance managers of manufacturing companies in Tigray to speedup the inventory turnover as much as possible thereby to reduce the inventory holding period to a reasonable minimum level.

Accounts payable period shows a negative effect on the firms' profitability. This result, however, is not significant for return on assets and return on equity. The interpretation for this can be profitability of Tigray manufacturing privet limited companies does not depend upon accounts payable period. The significant negative relationship between accounts payable period and operating profit margin is consistent with the view that speeding up payments to suppliers might increase profitability of firms due to substantial discounts for quick payment. In a condition where there is a higher discount for early payments managers can maximize profitability by reducing the accounts payable period. However, the amount of the discount should be large enough to cover the opportunity cost of early payment and to make some profit.

The cash conversion cycle negatively and significantly affects firms' profitability at the 1 percent level (for return on assets and return on equity) and at the 5 percent level (for operating profit margin). These results are also consistent with some of previous studies. The implication is that the increase or decrease in cash conversion cycle will significantly and negatively affect profitability of the firms. It means that the shorter the firm's cash conversion cycle, the higher will be the profitability and vice versa. Thus,

Tigray manufacturing private limited companies can increases their profitability by making their cash conversion cycle shorter to the optimal level. Thus, the researcher recommends that Tigray manufacturing private limited companies should make their cash conversion cycle short to the optimal level.

The results of the regression analyses also indicate that current liabilities to total assets ratio positively and significantly influences return on assets, return on equity and operating profit margin at the 1 percent, 5 percent and 1 percent levels respectively. The implication is that the increase or decrease in current liabilities to total assets ratio will significantly and positively affect profitability of the sampled firms. It means that the higher the amount of current liabilities the firm uses to finance its working capital assets, the more profitable it will be. This implies that there is strong positive relationship between aggressiveness in working capital financing and the firms' profitability.

Moreover, the coefficients of the regressions show that profitability variables are strongly related with working capital financing policy, as measured by current liabilities to total assets ratio, than working capital investment policy. It means that working capital financing policy affects firms' profitability strongly than working capital investment policy. Tigray manufacturing firms, therefore, can increase profitability by using more aggressive way of financing for their working capital requirements. Thus, the researcher recommends that Tigray manufacturing private limited companies to use more aggressive way of financing such as trade credit and short term bank loan for their working capital requirements.

Finally, both measures of liquidity- current ratio and quick ratio, show significant negative relationship between profitability and liquidity of Tigray manufacturing private limited companies. This result is consistent with the view that there is a trade-off between liquidity and profitability. Thus, Tigray manufacturing private limited firms can increase profitability by reducing their liquidity position at least to the commonly

known level (2 for current ratio and 1 for quick ratio). Managers, therefore, can increase firms' profitability by improving the efficiency of management of working capital investment and financing policies while, also keeping in view of the trade-off between liquidity and profitability.

Further Research Directions

This study has highlighted a number of issues that warrant further research in order to examine the effects of working capital policies on firms' profitability. The three key directions for this research are: increasing the scope of this study to include other factors, using large sample size and using primary sources of data. Taking the previous studies and the current work as a stepping stone, studies should be strengthen on the effects of working capital policies on firms' profitability to other economic sectors (particularly in merchandising sector) in Ethiopia. Also as reliable findings results from observations that are large enough to represent the study population and to study the issue at hand by using the appropriate methodology, studies based on the use of long time series data and increased number of observations (sample companies) are needed to gain more insights into the issue at hand. Furthermore, it is equally vital to study the effect of working capital policies on firms' operating and financial risks while doing a research on this topic. Moreover, it is also important to examine the difference in working capital policies followed by different industries and determinants of working capital policies for each industry. Finally, it is important to use primary source of data particularly to provide company specific recommendations.

REFERENCES

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

2. Afza, T. and Nazir, M. S. (2008). Working Capital Approaches and Firm's Returns. *Pakistan Journal of Commerce and Social Sciences*, 1(1), 25-36.

3. Belt, B. (1979). Working Capital Policy and Liquidity in the Small Business. *Journal of Small Business Management*, 17(3), 43-51.

4. Bhattacharyya, S.K. (1987). Towards a Comprehensive Theory of working capital A Techno-Finance Approach. Website: *http://www.jstor.org/pss/4377438* (Accessed on January 2, 2010)

5. Bhattacharyya, S.K. and Raghavacahari, M. (1997). Determinants of Effective Working Capital Management - A Discriminate Analysis Approach. *Working Paper, No. 151, Indian Institute of Management Ahmadabad, India.*

6. *Brigham, E.F. and Gapenski, L.C. (1996) Financial Management Theory and Practice*, 7th edition, USA: The Dryden Press.

7. Carpenter, M. D., and Johnson, K. H. (1983). The Association between Working Capital Policy and Operating Risk. *The Financial Review,* 18(3), 106-116.

8. Christopher, S. B., and Kamalavalli, A. L. (2009). Sensitivity of Profitability to Working Capital Management in Indian Corporate Hospitals. Website: *http://ssrn.com/abstract=1331500*, (Accessed on January 2, 2010).

9. Deloof, M. (2003). Does Working Capital Management Affects Profitability of Belgian Firms? *Journal of Business Finance & Accounting,* 30(3 & 4), 573 – 587.

10. Deloof, M., and Jegers, M. (1996). Trade Credit, Product Quality and Intra Group Trade: Some European Evidence. *Financial Management*, 25(3), 33-43.

11. Eljelly, A. M. A. (2004). Liquidity – Profitability Tradeoff: An Empirical Investigation in an Emerging Market. *International Journal of Commerce and Management*, 14(2), 48-61.

12. Enyi, E. P. (2005). Applying Relative Solvency to Working Capital Management-The Break-Even Approach. Website: *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=744364#*, (Accessed on February 12, 2010).

13. Falope, O. I., and Ajilore, O. T. (2009). Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria. *Research Journal of Business Management*, 3(3), 73-84.

14. Filbeck, G., and Krueger, T. (2005). Industry related differences in working capital management. *Mid-American Journal of Business*, 20(2), 11-18.

15. Ganesan, V. (2007). An Analysis of Working Capital Management Efficiency in Telecommunication Equipment Industry. *Rivier Academic Journal, 3(2, Fall 2007), 1-10.*

16. Gardner, M.J., Mills, D.L., and Pope, R.A. (1986). Working Capital Policy and Operating Risk: An Empirical Analysis. *The Financial Review,* 21(3), 31-31.

17. Gentry, J. A., Vaidyanathan, R., and Lee, H. W. (1990). A Weighted Cash Conversion Cycle. *Financial Management*, 19(1), 90-99.

18. Ghosh, S. K., and Maji, S.G. (2004). Working Capital Management Efficiency: A Study on the Indian Cement Industry. *The Management Accountant,* 39(5), 363- 372.

19. Gladson, JW (1951). The Accountant's Part in Creative Management. *National Association of Cost Accountants NACA Bulletin*, 33(1), 3-12.

20. Government of India Ministry of Statistics and Programme Implementation (2008). Annual Survey of Industries (ASI)', Website: *http://www. mospi.nic.in/stat_act_t3.htm*. (Accessed on January 2, 2010).

21. Gujirati, D.N. (2003) *Basic econometrics*, 4th edition, McGraw-Hill Higher Education.

22. Guthmann, Harry G., and Douglall, Herbert E. (1948). *Corporate and Financial Policy*, 1st edition, Prentice-Hall, New York.

23. Hall, C. (2002). 'Total' Working Capital Management. *AFP Exchange*, 22(6), 26-32.

24. Harris, A. (2005). Working Capital Management: Difficult, but Rewarding. *Financial Executive,* 21(4), 52-53.

25. Howorth, C., and Westhead, P. (2003). The Focus of Working Capital Management in UK Small Firms. *Management Accounting Research*, 14(2), 94-111.

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

27. Lamberson, M. (1995). Changes in Working Capital of Small Firms In Relation To Change in Economic Activity. *Mid-American Journal of Business*, 10(2), 45-50.

28. Lazaridis, I. and Tryfonidis, D. (2006). The Relationship between working capital management and profitability of listed companies in the Athens Stock Exchange. Website: *http://ssrn.com/abstract=931591* (Accessed on January 15, 2010).

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

30. Marx, K. (1867). *Das Kapital,* Gateway Edition (2000), Washington DC: Regnery Publishing Incorporation.

31. Mathuva, D. M. (2009). The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms. *Research Journal Of Business Management*, 3(3), 1-11

32. Moyer, R. C., Mcguigan, J. R., and Kretlow, W.J. (1995). *Contemporary Financial Management*, West Publishing Co, Cincinnati, Ohio.

33. Nobanee, H. (2009). Working Capital Management and Firm's Profitability: An Optimal Cash Conversion Cycle. Website: *http://ssrn.com/abstract=1471230* (Accessed on January 5, 2010).

34. Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research Papers,* 2(2), 45 -58.

35. Pandey, IM (2007). *Financial Management*, 9th edition, VIKAS Publishing House PVT LTD.

36. Peterson, M.A., and Rajan, R.G. (1997). Trade credit: Theories and evidence. *The Review of Financial Studies*, 10(2), 661–691.

37. Rafuse, M.E. (1996). Working Capital Management: An Urgent Need to Refocus. *Management Decision*, 34(2), 59-63.

38. Raheman, A., and Nasr, M. (2007). Working Capital Management and Profitability – Case of Pakistani Firms. *International Review of Business Research Papers.* 3(1), 279 – 300.

39. Rao, RKS (1989). *Fundamentals of Financial Management*, USA: MaCmillan Publishing Company.

40. Ross, S. A., Westerfield, R. W., and Jordan, B. D. (2000). *Fundamentals of Corporate Finance*, 5th edition, McGraw-Hill Higher Education.

41. Samiloglu, F., and Demirgunes, K. (2008). The Effect of Working Capital Management on Firms' Profitability: Evidence from Turkey. *The International Journal of Applied Economics and Finance*, 2 (1), 44-50.

42. Sebhatleab Tewolde (2002). Working Capital Management: The Case of Government-Owned, Transitional, and Privatized Manufacturing Firms in Eritrea. PhD Dissertation. Website: *http://dissertatios.ub.rug.nl/FILES/faculties/management/2002/s.tewolde/titlecol.pdf* (Accessed on March 15, 2010).

43. Sen, M., and Oruc, E. (2009). Relationship between Efficiency Level of Working Capital Management and Return on Total Assets in Ise. *International Journal of Business and Management*, 4(10), 109-114.

44. Shin, H.H., and Soenen, L. (1998). Efficiency of Working Capital Management and Corporate Profitability. *Financial Practice and Education, 8(2)*, 37-45.

45. Shulman, J.M., and Dambolena, I.G. (1986). Analyzing Corporate Solvency. *Journal of Cash Management*, 6(5), 35-38.

46. Smith, K. (1980). Profitability versus Liquidity Tradeoffs in Working Capital Management. *In Readings on the Management of Working Capital*. Ed. K. V. Smith, St. Paul, West Publishing Company, pp. 549-562.

47. Smith, M.B. and Begemann, E. (1997). Measuring Association between Working Capital and Return on Investment. *South African Journal of Business Management*, 28(1), 1-5.

48. Soenen, L.A. (1993). Cash Conversion Cycle and Corporate Profitability. *Journal of Cash Management*, 13(4), 53-57.

49. Teruel, PJG, and Solano, PM (2005). Effects of Working Capital Management on SME Profitability. *International Journal of Managerial Finance*, 3(2), 164-177.

50. Van-Horne, JC and Wachowicz, JM (2004). *Fundamentals of Financial Management*, 12th Edition, USA: Prentice Hall Publishers.

51. Walker, Ernest W. (1964). Toward a Theory of Working Capital. *The Engineering Economist*, 9(2), 21-35.

52. Weinraub, H. J. and Visscher, S. (1998). Industry Practice Relating To Aggressive Conservative Working Capital Policies. *Journal of Financial and Strategic Decisions* 11(2), 11-18.

53. Zariyawati, M.A., Annuar, M.N., Taufiq, H., and Abdulrahim, A.S. (2009). Working Capital Management and Corporate Performance: Case of Malaysia. Journal of Modern Accounting and Auditing, 5(11), (Serial No.54), 47-54.

APPENDICES