



**ST. MARY'S UNIVERSITY COLLEGE  
SCHOOL OF GRADUATE STUDIES**

**WORKING CAPITAL MANAGEMENT AND FIRM  
PERFORMANCE: EVIDENCE FROM PANEL DATA  
ANALYSIS OF SELECTED PUBLIC ENTERPRISES**

**BY**

**TEWODROS DINBERU**

**NOVEMBER 2013  
ADDIS ABABA, ETHIOPIA**

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## Acronyms

EBIT =Earnings before interest and tax (EBIT)

EBT= Earnings before tax

WCM=Working capital management

WC=Working capital

ROA= Return on assets

ROE =Return on equity

OPM =Operating profit margin

NDAR =Number of days accounts receivable

NDI =Number of days inventory

NDAP =Number of days accounts payable

CCC=Cash conversion cycle

SOF\_<sub>Size of the firm</sub>

SG\_<sub>Sales growth</sub>

IP = Investing policy

FP\_<sub>Financing policy</sub>

CR=Current ratio

QR=Quick ratio

TDTAR=Total debt to total assets ratio

PPESA=Privatization and Pubic Enterprises Supervising Agency



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## **ABSTRACT**

*Findings in previous researches show, there is strong association between firms' working capital management and firms' profitability. Unfortunately most of the researches were undertaken on private firms that operate in developed and organized economies that have money market and capital market. Thus, this study examined the working capital management and performance association of public enterprises of Ethiopia using five year data from 2008 to 2012 which is collected from ten selected public enterprises financial statements located in Addis Ababa. The study used 14 variables: (1) Working capital management measured by the number of days accounts receivable, number of days inventory, number of days accounts payable, cash conversion cycle, current ratio and quick ratio as proxy of liquidity, the ratio of the current assets to total assets as a proxy of the working capital investing policy and the ratio of the current liabilities to total assets as a proxy of the working capital financing policy. (2) Profitability measured by operating profit margin, return on asset and return on equity. (3) Other variables measured by the size of the firm, sales growth and total debt to total assets as proxy of financial leverage. The research methodology is limited to quantitative approach with descriptive, correlation and regression analysis tools. The results show that shorter number of days accounts receivable and number of days inventory are associated with higher profitability, however, the results show that the relationship between return on asset and return on equity with number of days inventory are statistically insignificant. There exist positive significant relationship between number of days accounts payable with return on asset and operating profit margin. But, no statistically significant relationship found between number of days accounts payable and return on equity. The results also show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled Enterprises, but no statistically significant relationship was found between cash conversion cycle and return on equity. The two traditional measure of liquidity (current ratio and quick ratio) affect return on asset and operating profit margin negatively and significantly, but both do not affect return on equity significantly. No statistically significant relationship between current assets to total assets ratio and profitability measures has been found. The findings also reveals that current liabilities to total asset ratio affect positively and significantly return on asset, return on equity and operating profit margin. As per the findings the researcher concludes that Managers can increase public enterprises' profitability by improving the efficiency of working capital management.*

# CHAPTER ONE

## BACKGROUND

### 1.1 Background of the Study

The chief finance executive functions are broadly divided into two as treasury function and control function (Shah 2009). The controller's office handles cost and financial accounting, tax payments, and management information systems. The treasurer's office is responsible for managing the firm's cash and credit, its financial planning, and its capital expenditures. These treasury activities are all related to the three basic types of questions the financial manager must be concerned with. The first question concerns the firm's long term investments. The process of planning and managing a firm's long term investment is called capital budgeting. The second question for the financial manager concerns ways in which the firm obtains and manages the long-term financing it needs to support its long-term investments. The third question concerns working capital management. The term working capital refers to a firm's short-term assets, such as inventory, and its short-term liabilities, such as money owed to suppliers. Managing the firm's working capital is a day to day activity that ensures that the firm has sufficient resources to continue its operations and avoid costly interruptions (Ross, Westerfield, Jordan and Roberts 2005). It involves a number of day to day operations and decisions that determine the following:-

1. The firm's level of current assets.
2. The proportions of short term debt the firm will use to finance its assets.
3. The level of investment in each type of current asset.
4. The specific sources and mix of short term credit (current liabilities) the firm should employ.

Working capital differs from fixed capital in terms of time required to recover the investment in a given asset. In the case of fixed capital, or long term assets (such as land, building, and equipment), a company needs several years or more to recover the initial

investment. In contrast, working capital is turned over, or circulated at a relatively rapid rate. Investment in inventories and accounts receivable recovered during a firm's normal operating cycle, when inventories are sold and receivables are collected (Moyer, Mcguigan & Kretlow 1995)

The size and nature of firm's investment in current asset is a function of a number of different factors, including the following:

1. The type of products manufactured
2. The length of operating cycle
3. The sales level(because higher sales require more investment in inventories and receivables)
4. Inventory policy(for example the amount of safety stocks maintained; that is, inventories needed to meet higher than expected demand or anticipated delays in obtaining new inventories)
5. Credit policy
6. How efficiently the firm manages current assets(obviously, the more affectivity management economizes on the amount of cash, marketable securities, inventories and receivables employed, the smaller the working capital requirements) (Moyer 1995 et al. ).

Most governments discharge their economic function by establishing independent corporate bodies called public enterprises. In almost every country, public enterprises have practically become economic tools for governments for various national purposes. In view of the variety of uses to which it has been put in developing countries and as more and more of the burden of national development is placed on it,.....though public enterprises exist for the purpose of serving a sensitive public interest side-by- side with the profit-making end, they must be capable of resisting the stiff competition exerted by private enterprises (Dagnachew and Addissie, 2009). To survive from these stiff competitions public sector enterprise is expected to improve their performance from time to time, so that they will be able to cop up the stiff competition.

Findings in previous studies revealed that improvement in working capital can result in improved firm performance (Alipour, 2011; Azam & Haider, 2011; Deloof, 2003;).Therefore, this study will examine the effect of Working capital management on firm performance in the case of selected public enterprises in Addis Ababa.

## **1.2 Statement of the problem**

Working capital management is considered to be a very important element to analyze the organizations' performance while conducting day to day operations, by which balance can be maintained between liquidity and profitability. Maintaining liquidity on daily base operation to make sure it's running and meets its commitment is a crucial part required in managing working capital. It is a difficult task for managers to make sure that the business function running in well organized and advantageous manner. There are chances of inequality of current assets and current liabilities during this procedure. Firm's growth and profitability will be affected if this occurs and firm managers wouldn't be able to manage it efficiently (Azam & Haider, 2011). Therefore, it can be expected that the way in which working capital is managed will have a significant impact on the profitability of firms. Accordingly, for many firms working capital management is a very important component of their financial management (Deloof, 2003).

Findings in previous researches show, there is strong association between firms' working capital management and firms' profitability (Alipour, 2011; Azam & Haider, 2011; Raheman and Nasr (2007); Deloof, 2003; Ahmadi, Arasi and Garajafary, 2012 ;). Based on their findings these researchers suggest that managers can create value for their stockholders by making use of efficient working capital management :- (1) Managers can make positive value and profitability for stockholders through shortening of accounts receivable collection period and inventory turnover period. (2) They also can make positive value and profitability for stockholders through extending average payment period; this can be done by proper management of payments and use of creditors' conditions. (3)In general managers can make positive value and profitability for

stockholders by shortening cash conversion cycle, through proper management of payments and collections, liquidity planning and suitable use of opportunities for finance.

But most of these and other researches were undertaken on private firms that operate in developed and organized economies that has money market and capital markets. Money market is a part of financial market where short term securities can be issued. The money market was created as some businesses have a surplus of cash, while the other businesses were looking for loans that can be used to finance their working capital. A capital market is also part of financial market that is created and works like the money market, but it allows long term trading of debt and equity backed securities only like stocks and bonds. It can be expected that these studied firms have so many sources of funds and are enjoying the well-developed financial sector of their country. As a result it is not fair enough to conclude about firms that are operating in different environment based on the aforementioned findings .In addition, it is not also easy to convince stakeholders like owners, financial managers, accountants, economists business practitioners based on the findings of developed world unless empirical evidence provided about the relationship between working capital management and profitability from the developing countries like Ethiopia. Therefore, it worth's to study the working capital management and performance association of public enterprises that operate in countries like Ethiopia that has no developed money market, capital market and the main source of fund is the government.

### **1.3Basic Research Questions**

Based on the statements of the problem the following basic research questions are formulated and expected to be answered by this research.

1. Does working capital management of public enterprises of Ethiopia affect performance of the same measured by profitability?
2. To what extent do elements of working capital management (accounts receivable, inventory, accounts payable, cash conversion cycle, current ratio, quick ratio,

ratio of the current assets to total assets & the ratio of the current liabilities to total assets) affect profitability of the firm?

## **1.4 Objective of the study**

### **1.4.1 General Objective**

The general objective of this study is to provide empirical evidence about the impact of working capital management on performance of selected public enterprises in Addis Ababa, Ethiopia.

### **1.4.2 Specific Objective**

The focus of this study specifically is:-

1. Determining the relationship between number of days account receivable, number of days inventory and number of days account payable with profitability (measured by return on asset, return on equity and operating profit margin).
2. Determining the relationship between working capital investing and financing policy with profitability measures.
3. Determining the relationship between traditional measures of liquidity and profitability measures.
4. Determining the relationship between cash conversion cycle and profitability measures.

## **1.5 Hypothesis**

To get answer for the research questions and to attain the research objectives, the following Hypothesis formulated.

H1: There is a significant negative relation between number of days account receivable and profitability measures.



H2: There is a significant negative relation between number of days inventory and profitability measures.

H3: There is a significant positive relation between number of days account payable and profitability measures.

H4: There is a significant negative relation between cash conversion cycle and profitability measures.

H5: There is a significant negative relation between current ratio and profitability measures.

H6: There is a significant negative relation between quick ratio and profitability measures.

H7: There is a significant negative relation between ratio of the current assets to total assets and profitability measures.

H8: There is a significant positive relation between the ratio of the current liabilities to total assets and profitability measures.

## **1.6 Significance of the Study**

The findings of this study are expected to be significant for the following reasons.

1. Because the findings expected to enable practitioners, specifically the managements of Enterprises' to be aware of the perceived and actual benefits of efficient Working capital management and give insight on how to use it to improve performance of firms.
2. The findings may also be considered as important additions to the existing knowledge and literature in the area for the public at large.
3. The study may create interest on those who are interested to conduct a detailed and comprehensive study on the area.

## **1.7 Scope of the Study**

The study subject is limited to effects of working capital management on performance. Profitability was used as a measure of performance. With regard to the variables the research is limited to 14 variables: (1) Working capital management measured by the number of days accounts receivable, number of days inventory, number of days accounts payable, cash conversion cycle, current ratio and quick ratio as proxy of liquidity, the ratio of the current assets to total assets as a proxy of the working capital investing policy and the ratio of the current liabilities to total assets as a proxy of the working capital financing policy. (2) Profitability is measured by operating profit margin, return on asset and return on equity. (3) Other/Control variables measured by the size of the firm, sales growth and total debt to total assets as proxy of financial leverage. The research methodology is limited to quantitative approach with descriptive statistics, correlation and regression analysis tools.

# **CHAPTER TWO**

## **REVIEW OF RELATED LITERATURE**

### **2.1 Definition and Concept of Working Capital**

According to Shah (2009), the phrase working capital is the combination of two words working and capital. In business, the word working with reference to capital means circulation of capital from one form to another form during day to day operations of the business. The word capital refers to the monetary values of all assets (tangible and intangible) of the business. Thus, working capital means the part of the total assets of the business that change from one form to another form in ordinary course of business operations. But, there is no agreement with this interpretation of working capital. There is a lot of difference of opinions among accountants, financial experts, entrepreneurs and economists. Therefore, it is essential to understand the different concept of working capital. The two important concepts among the different concepts are traditional or balance sheet concept and operating cycle concept.

As per traditional or balance sheet concept, working capital depicts the position of the firm at certain point of time. It is calculated on the basis of the balance sheet prepared at a specific date. With this point of view, working capital is of two types: gross working capital and net working capital. Gross working capital refers to the firm's investment in current assets, whereas net working capital according to balance sheet concept is the difference between current assets and current liabilities or the excess of total current assets over total current liabilities. Here current asset and liability represents assets which can be converted in to cash in ordinary course of business during accounting year and claims of outsiders which are payable within a short period time normally, one accounting year respectively. The second concept is operating cycle concept, in this concept working capital represented by the excess of current assets over current liabilities identifying the relatively liquid portion of the total enterprise capital which constitutes a

margin for meeting obligations within the ordinary operating cycle of the business. In other words working capital is the amount required in different forms at successive stages of operation during the net operating cycle period of an enterprise. The net duration of operating cycle is calculated by adding the number of days involved in the different stages of operation commencing from purchase of raw materials and ending with collection of sales proceeds from debtors after adjusting the number of days' credit allowed by suppliers (Shah 2009).

## **2.2 Working Capital Management**

According to Barine (2012) decisions relating to working capital involve managing relationships between a firm's short-term assets and liabilities to ensure a firm is able to continue its operations, and have sufficient cash flows to satisfy both maturing short-term debts and upcoming operational expenses at minimal costs and increasing corporate profitability.

Working capital management is an important issue during financial decision making since its being a part of investment in asset that requires appropriate financing investment. However, working capital always being ignored in financial decision making since it involve investment and financing in short term period. There are the possibilities of divergence of current asset and current liability during this process. If this happens and firm's manager cannot manage it properly then it will affect firm's growth and profitability. This will further accompany to financial distress and finally firms can go insolvent (Bhunia & Das 2012).

Working capital management involves different basic questions that must be answered. Some of these questions are: (1) what is the appropriate amount of working capital, both in total and for each specific account, how much cash and inventory should we keep on hand? (2) How should working capital be financed? (3) Should we sell on credit? If so, what terms should we offer, and to whom should we extend them? (3) How do we obtain any needed short term financing? Will we purchase on credit or borrow short term and pay cash? If we borrow short term, how and when should we do it? In general working

capital management raises these and other issues in managing a firm's working capital (Brigham and Ehrhardt, 2011; Ross et al., 2005).

### **2.3 Working Capital Investment and Financing Policy and Profitability**

According to Nazir and Afza (2009) a conservative investment policy places a greater proportion of capital in liquid assets with the opportunity cost of less profitability. If the level of current assets increases in proportion to the total assets of the firm, the management is said to be more conservative in managing the current assets of the firm. In order to measure the degree of aggressiveness of working capital investment policy, where a lower ratio means a relatively aggressive policy. On the other hand, an Aggressive Financing Policy utilizes higher levels of current liabilities and less long-term debt. In contrast, a conservative financing policy uses more long-term debt and capital and less current liabilities. The firms are more aggressive in terms of current liabilities management if they are concentrating on the use of more current liabilities which put their liquidity on risk. The degree of aggressiveness of a financing policy adopted by a firm is measured by working capital financing policy.

### **2.4 Working Capital and Liquidity**

Working capital management is of crucial importance in corporate financial management decision. The optimal of working capital management could be achieved by company that manages the tradeoff between profitability and working capital management (Bhunia & Das 2012).

Working capital management also known as short term financial management determines the optimal level of current assets and current liabilities should be hold by a firm. It addresses two core issues of finance liquidity and profitability. Current assets are liquid so holding more current assets refer to high liquidity but on the other hand current assets include such items which diminish firm's profitability. Such items include cash, receivables and inventory. Having excessive cash means wasting investment opportunities, even though credit sales increases sales but more receivables means delay

in cash inflows with a risk of bad debts same with inventory; excessive inventory can create a cost of storage, insurance etc. which diminishes firm's profitability.

Determining the appropriate levels of working capital involves fundamental decisions with regard to the firm's liquidity and tradeoffs between risk and profitability (Shah 2009). Before deciding on an appropriate level of working capital investment a firm's management has to evaluate tradeoff between expected profitability and the risk that it may be unable to meet its financial obligations. The greater the amount of working capital maintained, the lesser the risk of running out cash, although profitability will be less. In case of the lower level of working capital, the profitability will be greater but the risk of running out of capital to meet day to day requirement will be more. Hence, every firm needs to maintain optimum level of working capital by bringing tradeoff between risk and profitability (Shah 2009). The optimum level of working capital investment is the level expected to maximize shareholder wealth. It is a function of several factors, including the variability of sales and cash flows and the degree of operating and financial leverage employed on the firm. Therefore no single Working capital investment policy is necessarily optimal for all firms (Moyer et al. 1995)

## **2.5 Importance of Working Capital**

Working capital management is very crucial in this period of global financial turmoil. This is because illiquidity is prevalent worldwide necessitating that effective and efficient management of any available cash will be needed to ensure that company breaks even and survives this distressed time since credit is not easily come by (Uremauu, Egbiide and Enyi 2012).

To carry on a business enterprise not only fixed capital is needed, but adequate working capital is also a must for the purchase of raw materials, meeting day to day expenses on salaries, wages, advertizing etc. and maintaining the fixed assets. If a firm is unable to manage sufficient funds for these purposes it cannot succeed. Working capital is an essential for smooth and efficient running of a business as circulation of blood is essential in the human body for maintaining life (Shah 2009).

Working capital is of major importance for ensuring activities of an enterprise that are aimed at decision making in the short term. The importance of working capital management (WCM) is determined by the specific weight of current assets in a balance sheet of an enterprise (Arbidane and Ignatjev 2013). According to Bhunia & Das (2012) for a typical manufacturing firm, the current assets account for over 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's realizing a substandard return on investment.

Adequate working capital provides many advantage to business enterprise, some of these advantage are: (1) Immediate payment to suppliers. (2) Benefit of cash discount. (3) Adequate dividend distribution. (4) Increase in goodwill and debt capacity. (5) Easy loans from the banks. (6) Exploitation of favorable opportunities. (7) Meeting unforeseen contingencies. (8) Increased efficiency. (9) Increase in fixed asset productivity.

## **2.6 Empirical Literature**

Many researches were done on working capital management and Profitability. These studies were made at different times and on firms that operate in different environment. Some empirical evidences which are related to this research are presented here.

The effect of working capital management on the profitability of Jordanian Industrial firms was studied by Kaddumi & Ramadan (2012) using profitability as a proxy of the performance. Unbalanced panel data of 49 Jordanian industrial firms listed at Amman Stock Exchange, which represents about 67% of the Jordanian industrial sector, from the period of 2005 to 2009 was utilized. Two alternative measures of the profitability were used as a proxy of the firm performance; return on total assets and net operating profitability, as for the working capital management measure, the study utilized the average collection period, average age of inventory, average payment period, cash conversion cycle and the net trade cycle. The models of the study were estimated using the regression fixed-effect model and ordinary least square method. The result shows that for the Jordanian industrial firms, working capital has a significant effect on the firm's performance, and has a basic role in maximizing the wealth of the shareholders by making the firm more profitable through shorting the cash conversion cycle and net

trading cycle. Based on the research the researchers conclude that the negative relationship of average collection period, average age of inventory and the positive relationship of average payment period with the profitability imply that keeping lesser inventory and shortening the collection period along with extending the payment period will increase profitability for the Jordanian industrial firms. Furthermore the significant positive effect of the current assets to total assets ratio on profitability implies that the Jordanian industrial firms have in general a conservative investment policy in working capital, such as, the significant negative impact of the current liabilities to total assets ratio on profitability indicates less aggressive financing policy in the working capital for the Jordanian industrial firms according to the researchers.

Azam & Haider (2011) examine the impact of working Capital Management on firms' performance for non-financial institutions listed in Karachi Stock Exchange. A panel data has been used in their study for 21 Kse-30 Index listed firms over a period for year 2001 to 2010. To measure the impact of working capital management on firms, performance they used average collection period, inventory turnover in days, average payment period in days, cash conversion cycle, net trading cycle, gross working capital turnover ratio, current assets to total assets ratio, current liabilities to total asset ratio, current ratio as explanatory variables and return on assets and return on equity as dependent variables. They followed quantitative research method in order to find better results and outcomes that can be implemented in the future. The canonical stastical technique used in the research. This technique is preferable because the research was focused on the effect of two metric dependent variables on number of metric independent variables. Canonical regression is an extension of multiple regression analysis the only difference is that number of metric dependent variables is more than one in canonical regression according to the researchers. The study result indicate that inventory turnover in days has negative relationship with both indicators of firm performance i.e. Return on Assets and Return on Equity which means that companies performance can be increased by reducing inventory in days. Account payable was found to be significant positive association with both Return on Assets and Return on Equities, indicating that if time period of supplier's



payment is increased then overall firm's performance also improves. Cash conversion cycle and net trading cycle shows significant negative relation with Return on Assets and Return on Equities showing that firms' performance can be increased with short size of both of them. Lastly liquidity (Current ratio) is positively associated with both performance dimensions. On the basis of the results they suggest there should have proper inventory management system to avoid over stock of inventory resulting efficient outcome of investment. It has to make sure certain standards and levels which will stop piling up inventory according to the researchers. They also suggest that companies should engage in relationship with those suppliers who allow long credit time period and those customers who allow short payment period.

Another research by Napompech (2012) examined the effects of working capital management on the profitability of Thai listed firms. Panel date was used in this research which was obtained from the stock exchange of Thailand. The data set include yearly data on sales, cost of goods sold, total assets, financial assets, inventory conversion period, average collection period, payables deferral period, cash conversion period, and debt ratio. The sample consisted of 255 firms that had all the needed data for the three-year period from 2007 through 2009. These sampled 255 firms come from 7 industries: industrials, consumer products, technology, agriculture and food, resources, construction and building materials, and service. To analyze the impact of working capital management on firms' profitability, the gross operating profit was used as the dependent variable. This variable was derived by subtracting the cost of goods sold from total sales and dividing the result by total assets minus financial assets. This calculation was selected because gross operating profit relates more closely to the cash conversion cycle and its components, various measurements of working capital management according to the researcher. With regard to the independent variables, working capital management was measured using the cash conversion cycle. This measure was calculated as inventory conversion period plus receivables collection period minus accounts payables deferral period. Other independent variables included in the analysis were the logarithm of sales as a proxy for firm size. The fixed financial asset ratio was used to assess the impact of

non-operating financial assets investments where fixed financial assets mean shares and participation of other firms. The debt ratio which is calculated by dividing total debt by total capital was used to evaluate the influence of long-term capital structure decisions. Industry dummy variables were also included. However, to achieve the minimum degree of freedom necessary, this research used industry categories instead of sectors which resulted in the seven aforementioned industries. To test the impact of the cash conversion cycle and its components on profitability, the cash conversion cycle, the receivables collection period, the inventory conversion period, and the payables deferral period were regressed against gross operating profit. A non-parametric Spearman correlation was also employed to examine the relationships between the variables used in this research. The result of the regression equation demonstrates that a negative relationship exists between the cash conversion cycle and profitability, which confirms the notion that a decrease in the cash conversion cycle will produce more profits for a firm. The coefficient of the cash conversion cycle variable is negative and highly significant; this implies that an increase in the cash conversion cycle of one day is associated with a decline in gross operating profit of .006. Moreover, the regression shows that the larger the firm (measured through the natural logarithm of sales), the larger the gross operating profits, with a very high level of significance. Gross operating profits statistically decrease as the debt ratio increases. Fixed financial assets have a positive relationship with gross operating profits, but it is not significant. The results also show industry-type effects on profitability. With regard to components of working capital management the study is reporting a negative relationship between gross operating profits and inventory conversion period. This does make economic sense; the longer the inventory is held, the more working capital is tied up, and firms thus have less opportunity to invest this capital in profitable projects. Therefore, the firm's profitability can be enhanced by speeding up the inventory conversion period. The other regression analysis shows negative relationship between gross operating profit and receivables collection period. This indicates that managers can improve profitability by giving their customers a shorter credit period. A negative relationship also exists between gross operating profit and the accounts payables deferral period according to the researcher,

which contradicts the notion that the longer a firm delays its payments, the higher level of working capital it stores and uses with the intent of increasing profitability. This difference may exist because less profitable firms take longer to pay their obligations. This negative relationship also confirms the negative correlation between gross operating profits and the accounts payable deferral period presented in the correlation section of the research.

Bhunja & Das (2012) studied the affiliation between working capital management and profitability of Indian private sector small-medium steel companies. The data used in their study was acquired from CMIE database. Purposive sample design method was applied. The sample was based on financial statements of the 50 small-medium Indian private sector steel companies, those who have often been neglected for enquiry and research according to the research. Because the steel sector is considered by the researcher as backbone of economic growth in any country, only steel companies are included in the sample. As stated above preferred samples of private sector steel companies from the year of 2003 to 2010 were utilized in the analysis. The definitions of “private” for the purpose of the study were: (i) part of the economy that is not state controlled, (ii) run by individuals and companies for profit, (ii) encompasses all for-profit businesses that are not owned or operated by the government. The dependent variable in this study defined as the profitability of the sample firms measured by return on capital employed. Whereas the independent variable interpreted as the commonly used financial ratios i.e. current ratio, liquid ratio, cash position ratio, debt-equity ratio, interest coverage ratio, inventory turnover ratio, debtors turnover ratio, creditors turnover ratio, and working capital cycle. Spearman's Correlation analysis was used to see the relationship between working capital management and profitability. Sophisticated multiple regression techniques have been applied to study the joint influence of all the selected ratios indicating company's working capital management and performance on the profitability and the regression coefficients have been tested with the help of the most popular „t“ test. In addition descriptive statistics was also used in the study. The research descriptive statistics divulges that liquidity and solvency position in terms of debt is very satisfactory and reasonably efficient working capital management is found but liquidity

position has no impact on profitability. The study furthermore illustrates there is no association between debt financing and profitability. The study also shows a little relationship between working capital management including working capital cycle and profitability but working capital management and working capital cycle has no impact on profitability. Multiple regression tests confirm a lower degree of association between the working capital management and profitability. Consequently, company manager should apprehension on working capital management, particularly unexplained variables in rationale of creation shareholder wealth according to the study.

The relationship between working capital management and profitability in Brazilian listed companies studied by Ching, Novazzi & Gerab (2011). The objective of the study were (a) to investigate if there is any difference between corporate profitability and working capital management in two separate groups of companies: working capital intensive and fixed capital intensive; (b) to identify the variables that most affect profitability. The data for the measures of the variables are collected from the annual financial statements of the sample companies chosen over the 2005-2009 periods. The financial statements have been sourced from CVM, Brazilian Securities Exchange Commission. The companies of the sample are divided in two distinct groups: working capital intensive and fixed capital intensive. Each group consists of 16 Brazilian listed companies, a total of 32 companies and 160 observations. Working capital intensive group of companies are those with current assets greater than 50% of their total assets. The sectors included in this group are textile, clothing, footwear, retail, chemical and distribution. Fixed capital intensive group of companies are those with current assets lower than 50% of their total assets, with noncurrent assets concentrated in fixed assets. The sectors included in this group are steel, petrochemical and refining operation. All the variables have been used to test the hypotheses of this study. Independent variables have been identified to assess their impact on profitability. Cash conversion efficiency is defined as  $(\text{receivable} + \text{inventory} - \text{payables}) / \text{sales}$ . Debt ratio is calculated by the sum of short and long term financing divided by total assets days of receivables used as proxy for the collection policy is calculated by dividing account receivable by sales and multiplying the result by 360. Days of inventory used as proxy for the

inventory policy is calculated by dividing inventory by sales and multiplying the result by 360. Days of working capital used as a measure of working capital management is measured by adding days of receivable with days of inventory and deducting days of payable. The dependent variables are measured in three distinct terms of profitability. Return on sales is defined as net profit plus depreciation and equity method result divided by net sales. Return on asset is calculated by dividing profit by total assets. Return on equity is calculated by dividing profit by total equity. Impact of independent variables on profitability variables in the two groups of companies is assessed through multiple regression analysis. In other words, this method is used to estimate the relationships between the three profitability variables and other chosen variables. The analysis of variance is employed to identify the significant variables in the multiple regression that influence return on sales, return on asset and return on equity, in both groups of companies. The multiple linear regression applied identified that, as far as return on sales and return on asset are concerned, to manage working capital properly is equally relevant for the two groups of companies. However the impact of debt ratio and days of working capital are relevant in the company profitability in the fixed capital group as opposed to the working capital group. From analysis of variance it is evident that days inventory has negative relationship with return on sales and return on asset but has no statistical evidence in return on equity improvement in working capital intensive group. It has also identified days of working capital as the variable that influences return on sale in the second group (positive relationship) while debt ratio is the only variable that affects return on asset (negative relationship). These results show that regardless the type of company, whether working capital or fixed capital intensive, managing working capital properly is equally important. Moreover, managing inventory as well as cash conversion efficiency to an optimum level will yield more profit in the working capital intensive type of company, while two other different variables create more profit in the fixed capital intensive type of company. This study differs from previous related studies in the following items: it investigates two separate groups of companies (working capital intensive and fixed capital intensive) and measures profitability in three different ways (return on sales, return on asset and return on equity). The study also investigates whether

there is any difference between corporate profitability and working capital management in these two groups. The previous papers investigate only one sample of companies. And measure profitability in terms of return on asset return on asset or return on equity or both but not return on sale.

Lazaridis & Tryfonidis (2005) investigate the relationship between working capital management and firms' profitability for 131 listed companies in the Athens Stock Exchange for the period 2001-2004. The purpose of their study was to establish a relationship that is statistical significant between profitability, the cash conversion cycle and its components for listed firms in the Athens stock exchange. In this study the components of cash conversion cycle were number of day's accounts receivable, number of day's inventory and number of day's accounts payable. Gross operating profit was used to measure firm's profitability. Other control variables such as company size measured through the natural logarithm of sales, fixed financial assets measured by Shares and participation to other firm and financial debt measured through short term loans plus long term loans divided by total assets are considered also in the model specification. The study result shows there is a negative relationship between cash conversion cycle and profitability which is consistent with the view that a decrease in the cash conversion cycle will generate more profits for a company according to the researchers. The result is highly significant. Moreover the regression shows that the larger firms (measured through the natural logarithm of sales) the larger its gross operating profit with a very high level of significance. Meanwhile the rest of the model variables are statistically significant where gross operating profit decreases as financial debt increase while fixed financial assets have a positive coefficient.

Barine (2012) examine working capital management efficiency and corporate profitability in Nigeria. Data from annual reports of 22 quoted firms from eight sector categorization of the Nigerian stock exchange (banking-9, petroleum-1, healthcare-2, breweries- 2, industrial products-1, food and beverages-5, building materials-1, and conglomerates-1) for the year 2010 after they recorded improvements in working capital positions caused by improved access to bank finance for acquisition of gross working

capital (for quoted manufacturing firms), and improved liquidity position for banks used. Percentage of income to gross working capital and working capital costs were computed from data obtained from annual reports of the sampled firms. To determine whether the returns on gross working capital is greater than the costs of gross working capital of sampled quoted firms, the researcher used the one-tailed test for difference between two means (when the variances of the populations are unknown and the sample sizes are small). By assuming the same variance for the populations, He computes a pooled variance using a model. Then the standard deviation for the difference between means of the populations computed. To test the significance of difference between population means, he uses the t-test. Research results show that returns on improved working capital position of quoted firms in Nigeria are less than the cost of working capital of these firms indicating inefficiency in the use of working capital by these firms; affecting negatively their profitability. This negative result from the working capital returns and costs equation indicate low levels of returns to shareholders. With the improved gross working capital position of quoted firms in Nigeria, they still rely much on short term liabilities for financing short term capital, incurring more costs and reducing profitability.

Another study in Nigeria by Uremau et al (2012) presents empirical evidence of the effect of working capital management and liquidity on corporate profits using a cross-sectional time series data for the period 2005-2006. Return on asset was used to measure the profitability of the firms. To measure working capital management: inventory conversion period, debtor's collection period, creditor's payment period and cash conversion period were used. The natural logarithms of sales used as control variable. The data were analyzed using descriptive statistics and an ordinary least square methodology. The authors find a positive effect of inventory conversion period, debtors' collection period; and a negative effect of cash conversion period, creditors payment period, on return on assets (a mirror of corporate profitability). They discover that cash conversion period with a wrong sign is the most significant precision variable in influencing profits and leads corporate profitability in Nigeria. It is closely followed by inventory conversion period and then cash conversion period is third in importance in affecting profitability and liquidity in Nigeria. Based on the findings the study

recommends (1) that firms should promptly collect cash from credit sales, (2) that excess cash should be reinvested in short-term securities (assets) to generate profits and (3) that since there exists high sales turnover in the Nigerian emerging markets, government policy should target multinational companies (MNCs) for invitation to participate in investing in Nigeria by creating the right legal and regulatory framework to enable them enter the market for possible foreign direct investment , and other injections into the Nigerian domestic economy

Alipour (2011) empirically investigated working capital management and corporate profitability in Iran. He uses number of account receivable, inventory turnover in days, number of days account payable, and cash conversion cycle as a measure of working capital management and gross operation profit as measure of profitability. The time realm of the research was from 2001-2006 and the studied companies have been the ones accepted in Tehran stock exchange. In general, out of 2628 companies; the company has been selected as a top company for 1063. Then multiple regression and Pearson's correlation was used to test the hypothesis formulated based on research objective. The findings indicate that there is a negative significant relation between number of day's accounts receivable and profitability, a negative significant relation between Inventory turnover in days and profitability, a direct significant relation between number of day's accounts payables and profitability and there is a negative significant relation between cash conversion cycle and profitability. Based on the result he suggests that managers can create value for shareholders by a means of decreasing receivable accounts and inventory.

Deloof (2003) studied the relationship between working capital management and corporate profitability for a sample of 1,009 large Belgian nonfinancial firms for the 1992-1996 periods. Number of day's accounts receivable, inventories and accounts payable are used as measures of trade credit and inventory policies. The cash conversion cycle is 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 ratio (financial debt/total assets) and ratio of



fixed financial assets to total assets were introduced as control variables. Using correlation and regression tests he found that negative relation between gross operating incomes on the one hand and the measures of working capital management (number of day's accounts receivable, inventories and accounts payable and cash conversion cycle) on the other hand. According to the researcher this is consistent with the view that the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods can be too long, and that decreasing this time lag increases profitability.

Haq, Sohail, Zaman and Alam (2011) studied the relationship between working capital management and profitability in the case of cement industry in Pakistan. The study is based on secondary data collected from financial reports which is listed in Karachi Stock Exchange for the period of six years from 2004-2009. The data was analyzed using the techniques of correlation coefficient and multiple regression analysis. Current ratio, liquid ratio, current assets to total assets ratio, current asset to sales ratio, cash turnover, inventory turnover ratio, debtor turnover ratio, creditor turnover ratio and creditor turnover ratio were used as measure of working capital management. The dependent variable profitability measured by return on investment. The current ratio, liquid ratio, current assets to total assets ratio, debtor turnover ratio and creditor turnover ratio had a significant positive relation with return on investment. This positive relationship shows that working capital management except inventory turnover ratio has significant positive impact on profitability of the cement industry in Pakistan. It suggests that larger firms achieve a higher return on investment. On the other hand, Current Assets to sales ratio and creditor turnover ratio both have a negative impact on return on investment. However, Current Assets to sales ratio relationship is insignificant with return on investment, the relationship is not conclusive. The result shows that there is a moderate relationship between working capital management and firm's profitability. All the findings were tested at 0.01 and 0.05 level of significance.

Impact of working capital management on profitability and market evaluation on firms from Tehran stock exchange were studied by Pouraghajan and Emamgholipourarchi,

(2012). The study employed data from 400 companies listed in Tehran Stock Exchange during the years 2006 to 2010. The data analyses were performed using linear multiple regression analysis and two-sided Pearson correlation. A Tobin Q ratio was used as a measure of market value. It is calculated as market value of equity plus book value of liability divided by total asset. Return on assets ratio and return on invested capital were used as a measure of profitability of company. Working capital management the independent variable was measured by cash conversion cycle, the current ratio, current assets to total assets ratio, current liabilities to total assets ratio and total debts to total assets ratio. The study results reveal that the cash conversion cycle has negative and significant relationship with the return of assets and return on invested capital at 1% level but because the Tobin Q (P-Value) is greater than 5%, indicates that it has no significant relationship. The findings of this research indicate that an increase in return on assets and return on invested capital cannot be explained by a reduction in the cash conversion cycle and this fact implies that more profitable companies have shorter cash conversion cycle. Companies with shorter cash conversion cycle correlated less to borrowing for financing, in result these companies will have less financial costs and more profitability. So management of the components of cash conversion cycle (accounts receivable, accounts payable and inventory) will lead to more profitability for the company. The results also show that there is positive and significant relationship between current assets to current liabilities ratio and return on invested capital at 5% level but for Tobin Q and return on assets, because (P-Value) is greater than 5%, indicates that it has no significant relationship. This result can indicate that an increasing change in return on invested capital can be explained by increasing in current assets to current liabilities ratio, therefore they conclude that the increase in this ratio indicates that companies maintain more liquidity for the current commitment of company and also indicates that companies invested amount of hold liquidity in current assets. Regression results for current assets to total assets ratio and current liabilities to total assets ratio shows that these ratios has not significant relationship with the Tobin Q. The regression results also indicate that total debt to total assets ratio has negative and significant relationship with the return on assets and return on invested capital at 1% but because the Tobin Q (P-Value) is greater than

5% indicates that it has not a significant relationship with total debt to total assets ratio. This result implies that reduction in liabilities ratio will impact on company performance and it means that reduction in liabilities ratio would increase return on assets and return on invested capital assets.

Another research by Ahmadi et al (2012) studied the relationship between working capital management and profitability at Tehran stock exchange in the case of food industry. Thirty three companies were selected for the study and a five year data from 2006-2011 were used. To analyze data, two methods were applied. Pearson correlation coefficient is applied to measure variables' correlation. Then, simple regression technique is used to analyze relations between the dependent variable and each independent variable. Afterwards, control variables are added to the regression functions to study the relation between each dependent variable and each independent variable and control variables. To analyze the relationship between profitability and working capital management, a multiple regression model is applied as well. In this study, four measures:- average accounts collection period, average inventory turnover period, average payment period and cash conversion cycle were used as measures of working capital management the independent variable in this research. In addition to these variables company size calculated as natural logarithm of sales, leverage calculated as total debt divided by total asset and liquidity calculated as current asset divided by current debt were used as control variables Operational profit was used to measure profitability the dependent variable. The study results indicates a significant negative relation between average accounts collection period and net operational profit, negative relation between average inventory turnover period in days and net operational profit, negative relation between cash conversion cycle and net operational profit and negative relation between average accounts collection period and net operational profit. Based on the result the researchers suggest managers can make positive value and profitability for stockholders through shortening of accounts collection period, inventory turnover period, cash conversion cycle and increasing average payment period.

Nazir and Afza (2009) studied the impact of aggressive working capital management policy (investment and financing policies) on firm's profitability using the panel data set for the period 1998-2005 from non-financial firms listed on the Karachi stock exchange (KSE). If the level of current assets increases in proportion to the total assets of the firm, the management is said to be more conservative in managing the current assets of the firm. By assuming this, in order to measure the degree of aggressiveness of working capital investment policy, the study used total current asset to total asset ratio, where a lower ratio means a relatively aggressive policy. On the other hand, an Aggressive Financing Policy utilizes higher levels of current liabilities and less long-term debt. In contrast, a conservative financing policy uses more long-term debt and capital and less current liabilities. The firms are more aggressive in terms of current liabilities management if they are concentrating on the use of more current liabilities which put their liquidity on risk. By putting these in to consideration the degree of aggressiveness of a financing policy adopted by a firm is measured by total current liabilities to total asset ratio, where a higher ratio means a relatively aggressive policy. Profitability The dependent variable measured by return on assets and Tobin's q. Tobin's q compares the value of a company given by financial markets with the value of a company's assets. A low q (between 0 and 1) means that the cost to replace a firm's assets is greater than the value of its stock. This implies that the stock is undervalued. Conversely, a high q (greater than 1) implies that a firm's stock is more expensive than the replacement cost of its assets, which implies that the stock is overvalued according to the study. It is calculated as market value of firm divided by book value of assets, where market value of firm is the sum of book value of long plus short term and market value of equity. Market value of equity is calculated by multiplying the number of shares outstanding with the current market price of the stock in a particular year. Along with working capital variables, the study has taken into consideration some control variables relating to firms such as the size of the firm, the growth in its sales, and its financial leverage. The size of the firm has been measured by logarithm of its total assets, as the original large value of total assets may disturb the analysis. The growth of firm is measured by variation in its annual sales value with reference to previous year's sales. Moreover, the financial

leverage was taken as the debt to equity ratio of each firm for the whole sample period. Finally, annual GDP growth in Pakistan for each of the study year from 1998 to 2005 was used as control variable. Panel data regression analysis was used to estimate the impact of aggressive working capital policies on the profitability measures. The study finds a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. The firms report negative returns if they follow an aggressive working capital policy. These results were further validated by examining the impact of aggressive working capital policies on market measures of profitability, which was not tested before. The results of Tobin's q were in line of the accounting measures of profitability and produced almost similar results for working capital investment policy. However, investors were found giving more value to those firms that are more aggressive in managing their current liabilities.

The relationship between working capital management practices and its effects on profitability of 94 Pakistani firms listed on Karachi stock Exchange also studied by Raheman and Nasr (2007) for a period of six years from 1999 – 2004 . Net Operating Profitability which is a measure of profitability of the firm is used as dependent variable. It was defined as operating income plus depreciation, and divided by total assets minus financial assets. Average collection period used as proxy for the collection policy was an independent variable. It was calculated by dividing account receivable by sales and multiplying the result by 365 (number of days in a year). Inventory turnover in days used as proxy for the inventory policy was also an independent variable. It was calculated by dividing inventory by cost of goods sold and multiplying with 365 days. Average payment period used as proxy for the payment policy is also an independent variable. It is calculated by dividing accounts payable by purchases and multiplying the result by 365. The cash conversion cycle used as a comprehensive measure of working capital management, was another independent variable, and was measured by adding average collection period with Inventory turnover in days and deducting average payment period. Current ratio which is a traditional measure of liquidity was calculated by dividing current assets by current liabilities. In addition, size (Natural logarithm of sales), debt ratio used as proxy for leverage and was calculated by dividing total debt by total assets,

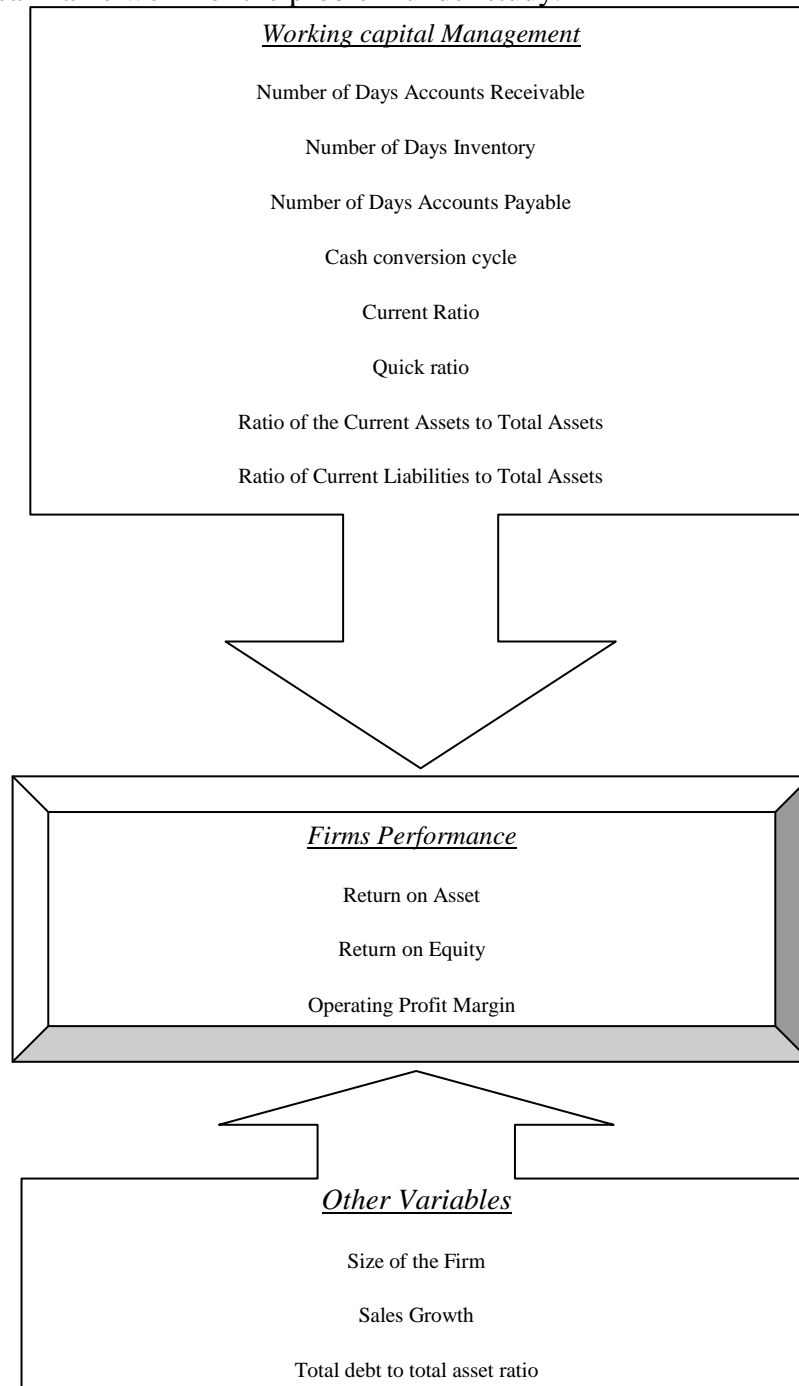
and ratio of financial assets to total assets were included as control variables. Fixed financial assets are the shares in other firms, intended to contribute to the activities of the firm holding them by establishing a lasting and specific relationship and loans that were granted for the same purpose. For some firms such assets are a significant part of their total assets. All the above variables have relationships that ultimately affect working capital management according to the study. Pooled regression type of panel data analysis was employed in the study. The pooled regression, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects according to the researchers. In addition descriptive analysis and Pearson correlation were also used to analysis the panel data. The researchers found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle. Based on the results they suggest that managers can create value for their shareholders by reducing the number of days accounts receivable and inventories to a reasonable minimum. They also conclude that the negative relationship between accounts payable and profitability was consistent with the view that less profitable firms wait longer to pay their bills.

Vahide Hajihassani (2013) studied the relationship between working capital management and profitability in the case of Iran cement companies using panel data. The panel data set covers a 6 year period from 2004 to 2009, with a sample of 28 cement firms of Iran. The data were taken from the financial statements of the respective cement companies. Relating to working capital management the ratios selected and computed were current ratio, liquid ratio, cash turnover and inventory turnover ratio. Return on investment used as measure of profitability. Pooled ordinary least square was used to estimate the model. Pearson correlation analysis was also used. The result reveals both liquid ratio and credit turnover ratio had a negative impact on return on investment. However, current ratio relationship was insignificant with return on investment, the relationship is not conclusive. The result concludes that there is a weak relationship between working capital management and company profitability.

All these reviewed empirical research studies the relationship between working capital management and firm performance on different sector, using different variables and research methodology. Based on their findings, almost all the researchers conclude that working capital management has a considerable effect on the performance of firms. But most of these studies were done specifically on the private sector and in the developed countries that have different socio-economic environment from Ethiopia. Therefore, this study was done on the public sector of Ethiopia and is expected to fill gap in this regard.

## 2.7 Conceptual Framework for the study

Based on the literature review, especially on section 2.6, the researcher constructs the following theoretical frame work for the problem under study.



*Figure: 2.1 Conceptual frameworks for the study*

*Source: Researcher's own design based on the literature reviewed.*



# **CHAPTER THREE**

## **RESEARCH METHODOLOGY**

### **3.1 Research Design**

As this research intends to find out the cause and effect relationship between working capital management and performance, explanatory research type with quantitative approach is employed. Quantitative method uses numbers and closed ended questions. It is a means of testing theories by examining the relationship among variables. The panel data that was collected was analyzed using Pooled panel data analysis. Pooled panel data analysis is one that both intercepts and slopes are constant. In this panel data analysis 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 (disregarding the space and time dimension of the pooled data) (Gujarati, 2003).

### **3.2 Sources of Data**

In this study Secondary data was used and collected from privatization and public enterprises supervising agency.

### **3.3 Sample and Sampling Technique**

The study population incorporates all non-financial public enterprises that operate under the supervision of Privatization and Public Enterprises Supervising agency (PPESA) and are located in Addis Ababa. Ten public enterprises were selected for this study using random sampling.

The population is based on Privatization and Public Enterprises Supervising agency database. There were 40 Enterprises under Supervision of PPESA when the data was collected. The sample was constructed based on the following different criteria. First firms that prepared financial statements for the periods from 2008 to 2012 were selected. Then because of the specific nature of their activities firms that are operating in the

financial sector were excluded. Finally firms with unusual (abnormal balance in their account) and missing data in their financial statements were excluded too. Furthermore observations that exhibit balances in the financial statement that are different to reasonable expectations are removed.

### **3.4 Data Analysis**

First descriptive statistics was used to study facts about the variables under study. Accordingly mean, standard deviation, median, minimum and maximum of the variables in model was calculated. After wards pair wise correlation coefficient was calculated for the variables that are used to investigate the impact of working capital management on performance measured by profitability (operating profit margin, return on asset and return on equity). Finally pooled regression analysis was run to estimate the models that measure the impact of working capital management on profitability.

### **3.5 Variables**

After reviewing the related literature the researcher identified key independent, dependent and control variables that are expected to provide empirical evidence about the effect of working capital management on firms' performance. The variable selection influenced by the reviewed literature.

#### **3.5.1 Independent Variables**

The independent variable in this study is working capital management which was measured by the number of days accounts receivable (NDAR), number of days inventory (NDI) and number of days accounts payable (NDAP), Current ratio (CR) and quick ratio (QR) were used to measure the firm's ability to meet its current liabilities by committing only its current assets. The ratio of the current assets to total assets & the ratio of the current liabilities to total assets were used as measure of the efficiency of working capital investing policy (IP) and financing policy (FP) respectively. Azam & Haider (2011) also used the two later variables.

**Number of Days Accounts Receivable= Account Receivable x 365**

**Sales**

**Number of Days Inventory= Inventories x 365**

**Cost of Sales**

**Number of Days Accounts Payable = Accounts Payable x 365**

**Purchases**

**Current Ratio = Current Assets**

**Current Liabilities**

**Quick Ratio= Current Assets-Ending Inventory**

**Current Liabilities**

**Ratio of the Current Assets to Total Assets=Current Assets**

**Total Assets**

**Ratio of Current Liabilities to Total Assets=Current Liabilities**

**Total Assets**

In addition to the above seven measures of working capital management cash conversion cycle (CCC) was used also, which is calculated as number of days accounts receivable plus number of days inventory minus number of days accounts payable. Cash conversion cycle (CCC) is comprehensive measure of working capital management (Deloof, 2003).

### **3.5.2 Dependent Variables**

The dependent variable in this study was firm performance. Profitability is proxy for firm performance. It was measured by three measures i.e. operating profit margin (OPM), return on asset (ROA) and return on equity (ROE). When a firm has mainly financial assets on its balance sheet, its operating activities will contribute little to the overall return on assets (Deloof, 2003). These three measures are selected because the firms to be

considered for this study are expected not to have financial asset in their balance sheet as such as they are operating in under developed and unorganized economies that have no money market and capital market. Earnings before interest and tax (EBIT) and earnings before tax (EBT) are used as base for operating profit margin, return on asset and return on equity determination respectively.

**Return on Asset=  $\frac{\text{Earnings Before Interest and Tax(EBIT)}}{\text{Total Asset (TA)}}$**

**Total Asset (TA)**

**Return on Equity=  $\frac{\text{Earnings Before Tax(EBT)}}{\text{Total Equity (TE)}}$**

**Total Equity (TE)**

**Operating Profit Margin=  $\frac{\text{Earnings Before Interest and Tax(EBIT)}}{\text{Sales}}$**

**Sales**

### **3.5.3 Control Variables**

Other independent variables that are expected to affect firm performance are included in this study as control variables. These are: Size of the firm (SOF), sales growth (SG) and Total debt to total assets ratio (TDTAR).

**Size of the Firm= The Natural logarithm of sales**

**Sales Growth=  $\frac{\text{This Year's Sales}-\text{Previous Year's Sales}}{\text{Previous Years Sales}}$**

**Previous Years Sales**

**Total debt to total assets ratio =  $\frac{\text{Total Debt}}{\text{Total Assets}}$**

**Total Assets**

### **3.6 Model Specification**

To investigate the impact of working capital management on firm performance the following general model was used. The model choice and formulation is based on the empirical researches of Uremauu et al (2012) and Alipour (2011).

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

Where

$Y_i$  represents the  $i^{\text{th}}$  observation of dependent variables (OPM,ROA and ROE )

$\beta_0$  represents the intercept of the equation

$\beta_i$  represents coefficients of  $X_i$  (explanatory and control) variables

$X_i$  represents the different independent and control variables

$\varepsilon_i$  represents the error term

Based on the general model the following regression models are formulated for each specific explanatory variable and were run to estimate the effect of working Capital Management on profitability measure of performance of selected public Enterprises.

**Number of Days Accounts Receivable and Profitability**

$$ROA_i = \beta_0 + \beta_1(NDAR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (1)$$

$$ROE_i = \beta_0 + \beta_1(NDAR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (2)$$

$$OPM_i = \beta_0 + \beta_1(NDAR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (3)$$

**Number of Days Inventory and Profitability**

$$ROA_i = \beta_0 + \beta_1(NDI)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (4)$$

$$ROE_i = \beta_0 + \beta_1(NDI)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (5)$$

$$OPM_i = \beta_0 + \beta_1(NDI)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (6)$$

**Number of Days Account Payable and Profitability**

$$ROA_i = \beta_0 + \beta_1(NDAP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (7)$$

$$ROE_i = \beta_0 + \beta_1(NDAP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (8)$$

$$OPM_i = \beta_0 + \beta_1(NDAP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (9)$$

**Cash Conversion Cycle and Profitability**

$$ROA_i = \beta_0 + \beta_1(CCC)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (10)$$

$$ROE_i = \beta_0 + \beta_1(CCC)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots \dots \dots (11)$$

$$OPM_i = \beta_0 + \beta_1(CCC)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (12)$$

**Current Ratio and Profitability**

$$ROA_i = \beta_0 + \beta_1(CR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (13)$$

$$ROE_i = \beta_0 + \beta_1(CR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (14)$$

$$OPM_i = \beta_0 + \beta_1(CR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (15)$$

**Quick/Liquid Ratio and Profitability**

$$ROA_i = \beta_0 + \beta_1(QR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (16)$$

$$ROE_i = \beta_0 + \beta_1(QR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (17)$$

$$OPM_i = \beta_0 + \beta_1(QR)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (18)$$

**Ratio of the Current Assets to Total Assets and Profitability**

$$ROA_i = \beta_0 + \beta_1(IP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (19)$$

$$ROE_i = \beta_0 + \beta_1(IP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (20)$$

$$OPM_i = \beta_0 + \beta_1(IP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (21)$$

**Ratio of Current Liabilities to Total Assets and Profitability**

$$ROA_i = \beta_0 + \beta_1(FP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (22)$$

$$ROE_i = \beta_0 + \beta_1(FP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (23)$$

$$OPM_i = \beta_0 + \beta_1(FP)_i + \beta_2(SOF)_i + \beta_3(SG)_i + \beta_4(TDTAR)_i + \varepsilon \dots (24)$$

Where:

**ROA<sub>i</sub>** represents return on assets of observation i

**ROE<sub>i</sub>** represents return on equity of observation i

**OPM<sub>i</sub>** represents operating profit margin of observation i

**NDAR<sub>i</sub>** represents number of days accounts receivable of observation i

**NDI<sub>i</sub>** represents number of days inventory of observation i

**NDAP<sub>i</sub>** represents number of days accounts payable of observation i

**CCC<sub>i</sub>** represents cash conversion cycle of observation i

**SOF<sub>i</sub>** represents size of the firm of observation i

**SG<sub>i</sub>** represents sales growth of observation i

**IP<sub>i</sub>** represents the ratio of the current assets to total assets as a proxy of the investing policy of observation i

**FP<sub>i</sub>** represents the ratio of the current liabilities to total assets as a proxy of the financing policy of observation i

**TD<sub>TAR</sub><sub>i</sub>** represents the total debt to total asset ratio as proxy of financial leverage of observation i

**CR<sub>i</sub>** represents the current ratio as proxy of liquidity of observation i

**QR<sub>i</sub>** represents the quick ratio as proxy of liquidity of observation i

**β<sub>0</sub>** represents intercept of the equation

**ε** represents error term of the model

## **CHAPTER FOUR**

# **RESULTS AND DISCUSSIONS**

In this chapter of the study, the results of the research are presented and discussed. The balanced panel data from 2008-2012, which is prepared from the financial statements of the sampled ten enterprises, were analyzed using excel. The results from descriptive statistics, pair wise correlation and pooled regression analysis are presented in three sections in the form of tables. Ultimately the results in the table are discussed.

### **4.1 Descriptive Statistics of the variables used in the Research**

First descriptive statistics was computed to study facts and trends about the variables under study. Accordingly mean, standard deviation, median, minimum and maximum of the variables in the model was calculated and presented.

Table 4.1 presents all descriptive statistics of the variables including the descriptive statistics of control variables that are used in the study. The first control variable is total debt to total assets ratio, the average value is 52.7 percent (median is 58.3 percent). The mean can vary by 30.3 percent to both sides of the mean value. The minimum and maximum values of the total debt to total assets ratio are 0.99 percent and 118.4 percent respectively. These shows some of the enterprises are using debt financing more than they can absorb. The second control variable, firm growth average value is 512.6 percent (median is 13.8 percent), as measured by sales growth. This indicates that there is higher sales growth rate among the sampled enterprises. However, there is high deviation, 3506 percent, from mean value of sales growth to both directions. The minimum and maximum sales growth among the sampled enterprises is -69.6 percent and 24805.5 percent respectively. The third control variable, firm size, as measured by the natural logarithm of sales, is averaged to 514.2 (median is 498.5 percent) for the sampled enterprises and it can deviate to both sides of the mean value by 86.7. The minimum and



maximum values of the firm size measured by the natural logarithm of the enterprises sales are 392.1 and 758.1 respectively.

Table 4.1: Descriptive statistics of the variables under study for the period from 2008-2012

| <b>Descriptive Statistics of the variables under study</b> |                    |                |                |             |               |                           |
|--|--------------------|----------------|----------------|-------------|---------------|---------------------------|
| <b>Variables</b>   | <b>Observation</b> | <b>Minimum</b> | <b>Maximum</b> | <b>Mean</b> | <b>Median</b> | <b>Standard Deviation</b> |
| <b>Total debt to total assets ratio</b>                    | 50                 | 0.0099589      | 1.1839499      | 0.527278    | 0.583317      | 0.303473524               |
| <b>Sales Growth</b>  | 50                 | -0.6963008     | 248.0548       | 5.125725    | 0.138077      | 35.06005038               |
| <b>Size of the Firm</b>                                    | 50                 | 3.9212181      | 7.5818031      | 5.141703    | 4.984956      | 0.866982745               |
| <b>Operating Profit Margin</b>                             | 50                 | -0.8052991     | 0.5141185      | 0.121962    | 0.128671      | 0.214108089               |
| <b>Return on Equity</b>                                    | 50                 | -4.9954556     | 2.6467334      | 0.377101    | 0.1395        | 1.00947714                |
| <b>Return on Asset</b>                                     | 50                 | -0.1931595     | 0.4263226      | 0.117255    | 0.089791      | 0.151777359               |
| <b>Ratio of Current Liabilities to Total Assets</b>        | 50                 | 0.0099589      | 0.9876852      | 0.40872     | 0.308746      | 0.303213406               |
| <b>Ratio of the Current Assets to Total Assets</b>         | 50                 | 0.2386753      | 0.9997741      | 0.724659    | 0.763329      | 0.206431862               |
| <b>Quick Ratio</b>   | 50                 | 0.0888387      | 20.691814      | 2.380564    | 1.139647      | 3.889431274               |
| <b>Current Ratio</b>                                       | 50                 | 0.4898282      | 65.565008      | 5.374482    | 2.330044      | 10.3279587                |
| <b>Cash conversion cycle</b>                               | 50                 | -2151.7579     | 1815.1574      | 350.5936    | 324.6378      | 568.5817027               |
| <b>Number of Days Accounts Payable</b>                     | 50                 | 12.899595      | 2404.7675      | 151.1954    | 65.52711      | 353.1477307               |
| <b>Number of Days Inventory</b>                            | 50                 | 14.980691      | 1679.9313      | 375.0744    | 286.2341      | 376.3455966               |
| <b>Number of Days Accounts Receivable</b>                  | 50                 | 15.769335      | 1103.0051      | 126.7147    | 60.96221      | 185.0235607               |

The average value of operating profit margin is 12.1 percent (median is 12.8 percent), and standard deviation is 21.4 percent. It means that, on average, out of 1 birr of sales 12 cent is a profit and this figure may be varied to both (right and left of the mean value) sides by 21.4 percent. The maximum value for the operating profit margin is 51.4 percent for some enterprises in a year while the minimum is -80.5 percent.

The return on equity of the sample enterprises is averaged to 37.77 percent (median is 13.9 percent). It deviates from the mean value to both sides by 100.9 percent. The minimum and maximum values are -499.5 percent and 264.6 percent respectively.

The mean value of return on asset is 11.72 percent (median is 8.9 percent) and it deviates 15.17 percent to the left and right side of the mean value. Its minimum value is -19.31 percent, while the maximum is 42.63 percent.

To measure working capital financing policy, current liabilities to total assets ratio is used. It measures the firm's degree of aggressiveness or conservativeness in financing its total asset requirements using current liabilities. The higher the value of current liabilities to total assets ratio, the more aggressive is the firm in financing its total asset requirements using current liabilities. The lower the value of current liabilities to total asset ratio, the more conservative is the firm in financing its working capital through current liability. On average the ratio of current liabilities to the total assets of the sampled enterprises is 40.8 percent (median is 30.8 percent) and it can deviate to both sides from the mean by 30.3 percent. The minimum value is .99 percent which represents the more conservative condition in working capital financing while the maximum is 98.7 percent which indicates highly aggressiveness in working capital financing.

The ratio of current assets to total assets is used to measure working capital investment policy of the enterprises, the average value is 72.4 percent (median is 76.33 percent). It means that in the sampled enterprises, the amount of current assets represent, on average, 72.4 percent of the total assets invested. According to table 4.1 the mean value can vary by 20.6 percent to both sides of the mean value. The minimum value of 23.86 percent, current asset to total asset ratio of the sampled enterprises related with highly aggressive

condition. Whereas, the maximum value of current assets to total assets ratio of 99.97 percent, represent the higher conservative condition in the sampled firms during the study period. The ratio of current assets to total assets measures the firm degree of aggressiveness in working capital investment. The lower the amount of the investment in current assets, the more aggressive is the firm in working capital investment. The mean value which is 72.4 percent indicates that, on average public enterprises are highly conservative in managing their current assets

To measure the liquidity of the enterprises, Current Ratio and Quick Ratio are used. The average current ratio for the public enterprises is 5.3 (median is 2.33), with a standard deviation of 10.3. The standard deviation shows a wide variability in current ratio among the sampled enterprises. The minimum and the maximum values of current ratio are 0.48 and 65.56 respectively. On the other hand, the mean value of Quick ratio is 2.38 (median is 1.13). The minimum and the maximum value of quick ratio is 0.08 and 20.69 respectively. The standard deviation of the quick ratio is 3.88. This means the value of quick ratio can vary to both sides of the mean value by 3.88. As indicated above both the mean of Current Ratio and Quick Ratio are greater than the standard which is one (as a rule of thumb the preferred ratios for both ratios is 1).

The cash conversion cycle which is used as a comprehensive measures of working capital management efficiency report on average 350 days (median is 324 days), and standard deviation of 568 days. The maximum time for cash conversion cycle is 1815 days which is a very long period. Despite the maximum cash conversion cycle in days minimum days of cash conversion cycle is -2151 days, which indicates that an enterprise records a large inventory turn-over in days and/or cash collections from credit sales before making a single payment for credit purchases. This means the Number of Days Inventory are very short and/or the Number of Days Accounts Payable of the enterprises is very long.

The results from table 4.1 indicate that all the enterprises make credit purchases and some of them wait up to 2404 days to pay their bills, which is very long. The average Number of Days Accounts Payable as a proxy for payment policy is 151 days (median is 65 days).

The standard deviation of Number of Days Accounts Payable for the enterprises under study is 353 days. The minimum days the enterprises wait to settle their bill is 12 days.

The average Number of Days Inventory as a proxy for inventory management/policy is 375 days (median is 286 days). This means, the sampled enterprises needs on average 375 days to sell their inventory. As it is shown in table 4.1, the standard deviation of Number of Days Inventory is 376 days. The Number of Days Inventory ranges between 14 and 1679 days.

The results from table 4.1 indicate that all the enterprises sell on credit and some of them wait up to 1103 days to collect their credit sales. The average days of Number of Days Accounts Receivable is 126 days (median is 60 days), and standard deviation is 185 days. It means that the collection period of account receivable can deviate from mean to both sides by 185 days. The minimum Accounts Receivable collection period is 15 days.

## **4.2 Correlation Analysis of Working Capital Management and Firm profitability**

Correlation measures the extent to which two variables go together. When high/low values of one variable are associated with high/low values of another variable, it said a positive correlation exists. When high values of one variable are associated with low values of another variable and vice versa, it is said a negative correlation exists. To determine the relationship between the explanatory and control variables with dependent variables pair wise correlation was computed.

### **4.2.1. Correlation Analysis of Number of Days Accounts Receivable, Number of Days Inventory, Number of Days Accounts Payable and Cash Conversion Cycle with profitability measures.**

Table 4.2 presents the result of the pair wise correlation analysis of Profitability Measures (return on asset, return on equity and operating profit margin) with Number of Days Accounts Receivable, Number of Days Inventory, Number of Days Accounts Payable and cash conversion cycle with profitability measures. Different finance literatures by

different researchers imply that efficient working capital management improves firm's profitability. From this one can expect improvement in collection of accounts receivable can result in improvement in firm's profitability. Due to this fact negative correlation between Number of Days Accounts Receivable and the profitability measures is expected. Accordingly it was hypothesized in this research that, there is negative correlation between Number of Days Accounts Receivable and the profitability measures i.e. return on asset, return on equity, and operating profit margin. In consistent with the research hypothesis, the correlation table 4.2 shows negative correlation coefficient between return on assets, return on equity and operating profit margin with Number of Days Accounts Receivable. The correlation coefficients of the Number of Days Accounts Receivable with return on assets, return on equity and operating profit margin are -33.3 percent, -19.33 percent and -24.98 percent respectively. This indicates that shorter Number of Days Accounts Receivable is associated with high profitability and vice versa.

In the hypothesis section of the research it was hypothesized that there is a negative relationship between profitability measures (Return on asset, return on equity and operating profit margin) and Number of Days Inventory. In agreement with this hypothesis except for return on equity, the correlation table indicates that Number of Days Inventory is negatively correlated with return on assets and operating profit margin. The correlation coefficients are -13.8 percent with return on assets, -27.6 percent with operating profit margin and 3.78 percent with return on equity. Even if the relationship between return on assets and operating profit margin with Number of Days Inventory shows strong negative relationship return on equity shows positive relationship.

The other relationship result presented in table 4.2 is the correlation of Number of Days Accounts Payable and profitability as measured by return on assets, return on equity and operating profit margin. In consistent with the hypothesis of this research which is presented in chapter one of the hypothesis sections, the correlation table shows positive relationship between Number of Days Accounts Payable with return on assets, return on equity and operating profit margin. As it is shown in the table the correlation coefficients of Number of Days Accounts Payable are 46.81 percent with return on assets, 16.52

percent with return on equity and 40.67 percent with operating profit margin. It shows strong positive relationship between the Number of Days Accounts Payable and firm's profitability. It means that the more profitable firms wait longer time to pay their bills.

Table 4.2: Relationship of Profitability Measures with Working Capital Management Measures.

| <b>Pair wise Correlation Coefficients of NDAR,NDI,NDAP, CCC, ROA,ROE and OPM</b> |                                    |                          |                                 |                       |                 |                  |                         |
|--|------------------------------------|--------------------------|---------------------------------|-----------------------|-----------------|------------------|-------------------------|
|  | Number of Days Accounts Receivable | Number of Days Inventory | Number of Days Accounts Payable | Cash Conversion Cycle | Return on Asset | Return on Equity | Operating Profit Margin |
| Number of Days Accounts Receivable   | 1                                  | -0.1722                  | -0.0644                         | 0.2515                | 0.3330          | 0.1933           | -0.2498                 |
| Number of Days Inventory   | -0.1722                            | 1                        | -0.1439                         | 0.6953                | 0.1308          | 0.0378           | -0.2760                 |
| Number of Days Accounts Payable  | -0.0644                            | -0.1439                  | 1                               | 0.2515                | 0.4681          | 0.1652           | 0.4067                  |
| Cash Conversion Cycle  | 0.2515                             | 0.6953                   | 0.2515                          | 1                     | 0.4856          | 0.1404           | -0.5166                 |
| Return on Asset  | -0.3330                            | -0.1308                  | 0.4681                          | -0.4856               | 1               | 0.5695           | 0.8368                  |
| Return on Equity   | -0.1933                            | 0.0378                   | 0.1652                          | -0.1404               | 0.5695          | 1                | 0.3873                  |
| Operating Profit Margin  | -0.2498                            | -0.2760                  | 0.4067                          | -0.5166               | 0.8368          | 0.3873           | 1                       |

Cash conversion cycle is considered as one of comprehensive measures of working capital management. The hypothesis about the cash conversion cycle was that, there is negative relationship between cash conversion cycle and profitability of firms measured

by return on asset, return on equity and operating profit margin. The above table indicates that the cash conversion cycle is strongly and negatively correlated with return on assets, return on equity and operating profit margin. The correlation coefficients are -48.57 percent with return on asset, -14.04 percent with return on equity and -51.66 percent with operating profit margin.

#### **4.2.2. Correlation Analysis of Ratio of the Current Assets to Total Assets, Ratio of Current Liabilities to Total Assets, Current Ratio and Quick Ratio with profitability measures.**

The ratio of current asset to total asset is believed to be measure of working capital investing policy. The correlation coefficient of current asset to total asset are -20.04 percent, -5.96 percent and -20.99 percent with return on asset, return on equity and operating profit margin respectively. This result implies that, there is negative relationship between aggressiveness in working capital investment policy and firms profitability. Working capital investment policy is considered to be aggressive when investment in current asset is low, accordingly as current assets to total assets ratio increases, degree of aggressiveness in working capital investment policy decreases and profitability of firm's decreases. The correlation coefficients are consistent with the hypothesis of the research which was hypnotized as; there is negative relationship between the current assets to total assets ratio and the profitability measures of variables.

This correlation coefficient between current liability to total asset ratio and profitability measures shows that, current liability to total asset ratio is positively associated with Return on asset, return on equity and operating profit margin with correlation coefficients of 52.74 percent, 23.71 percent and 42.22 percent with return on asset, return on equity and operating profit margin respectively. The hypothesis of the research in the first chapter was that, current liability to total asset ratio has positive relationship with profitability. The results as stated above agree with the research hypothesis and imply that, there is positive relationship between degree of aggressiveness in working capital financing policy and firm's profitability. The higher the current liabilities to total assets ratio, the higher will be the degree of aggressiveness in working capital financing policy,

and ultimately the higher will be the profitability. Therefore a firm is said to be aggressive in working capital financing policy when it used large amounts of current liabilities to finance its working capital requirements.

Table 4.3: Relationship of Profitability Measures with current ratio, quick ratio, ratio of the current assets to total assets and ratio of current liabilities to total assets

| <b>Pair wise Correlation Coefficients of IP, FP, CR,QR,ROA,ROE and OPM</b> |                      |                    |  |   |                        |                         |                                |
|--|----------------------|--------------------|--|---|------------------------|-------------------------|--------------------------------|
|  | <b>Current Ratio</b> | <b>Quick Ratio</b> | <b>Ratio of the Current Assets to Total Assets</b> | <b>Ratio of Current Liabilities to Total Assets</b> | <b>Return on Asset</b> | <b>Return on Equity</b> | <b>Operating Profit Margin</b> |
| Current Ratio  | 1                    | 0.9016             | -0.0093  | -0.4796   | 0.3864                 | 0.1531                  | -0.6877                        |
| Quick Ratio  | 0.9016               | 1                  | 0.0222   | -0.5234   | 0.4517                 | 0.1907                  | -0.6626                        |
| Ratio of the Current Assets to Total Assets                                | -0.0093              | 0.0222             | 1  | 0.3697  | 0.2004                 | 0.0596                  | -0.2099                        |
| Ratio of Current Liabilities to Total Assets                               | -0.4796              | 0.5234             | 0.3697   | 1   | 0.5274                 | 0.2371                  | 0.4222                         |
| Return on Asset  | -0.3864              | 0.4517             | -0.2004  | 0.5274  | 1                      | 0.5695                  | 0.8368                         |
| Return on Equity   | -0.1531              | 0.1907             | -0.0596  | 0.2371  | 0.5695                 | 1                       | 0.3873                         |
| Operating Profit Margin  | -0.6877              | 0.6626             | -0.2099  | 0.4222  | 0.8368                 | 0.3873                  | 1                              |



The above table shows that, there is strong negative relationship between liquidity, as measured by current ratio and quick ratio, and the profitability measures. As indicated in the table the correlation coefficients of quick ratio with return on assets, return on equity and operating profit margin are -52.34 percent, -45.17 percent and -19.07 percent respectively. Whereas the correlation coefficients of current ratio with return on assets, return on equity and operating profit margin are -47.96 percent, -38.64 percent and -15.31 percent respectively.

#### **4.2.3. Correlation Analysis of Control Variables Total debt to total assets ratio, Sales Growth and Size of the Firm with profitability measures.**

It is logically acceptable if one expect positive association between size of firm and profitability. Consistent with this view the results of this research as implied in table 4.4 shows positive relationship between size of the firm measured by logarithm of sales and profitability measured by return on asset, return on equity and operating profit margin. It shows that as size of the firm increases, profitability increases. The correlation coefficients are 41.57 percent for return on asset, 16.18 percent for return on equity and 22.52 percent for operating profit margin. This result also agrees with the research hypothesis, which was putted as there is positive relationship between size of the firm and profitability.

Firms with relatively high debt ratios are expected to report higher returns usually when the economy is normal. In agreement with this view the relationship between Total debt to total assets ratio with the return on asset, return on equity and operating profit margin shows positive relation. The correlation coefficients are 14.75 percent for return on asset, 16.54 percent for return on equity and 11.23 percent for operating profit margin. It means that firms' profitability will increase when they use debt financing but they are exposed to risk of loss when the economy goes into a recession.

Table 4.4: Relationship of Profitability Measures with size of the firm, Sales growth, and total debt to total assets ratio.

| <b>Pair wise Correlation Coefficients of SOF,SG,TDAR,ROA,ROE and OPM</b> |                 |                  |                         |                  |              |                                  |
|--|-----------------|------------------|-------------------------|------------------|--------------|----------------------------------|
|  | Return on Asset | Return on Equity | Operating Profit Margin | Size of the Firm | Sales Growth | Total debt to total assets ratio |
| Return on Asset  | 1               | 0.5695           | 0.8368                  | -0.1618          | -0.1074      | 0.1475                           |
| Return on Equity   | 0.5695          | 1                | 0.3873                  | -0.2252          | 0.0439       | 0.1654                           |
| Operating Profit Margin  | 0.8368          | 0.3873           | 1                       | -0.0472          | -0.0765      | 0.1123                           |
| Size of the Firm   | -0.1618         | -0.2252          | -0.0472                 | 1                | 0.4061       | 0.3642                           |
| Sales Growth   | -0.1074         | 0.0439           | -0.0765                 | 0.4061           | 1            | -0.1224                          |
| Total debt to total assets ratio   | 0.1475          | 0.1654           | 0.1123                  | 0.3642           | -0.1224      | 1                                |

The above correlation table also shows that firm growth rate which is measured by sales growth is weakly related with profitability measures. The result is mixed result i.e. sales growth negatively related with Return on asset and Operating profit margin, sales growth positively related with Return on equity. The sales growth correlation coefficients are -10.74 percent for return on asset, -7.65 percent for operating profit margin and 4.39 percent for return on equity respectively.

#### **4.3 Regression Analysis of working capital management and firms' profitability.**

A shortcoming of pair wise correlation is that they do not allow identifying causes from consequences. Therefore it was necessary to use another econometrics tools to find out the cause and effect relationship of working capital management and firm performance in the case of selected public enterprises of Addis Ababa, Ethiopia. Accordingly pooled

panel data regression analysis was used to identify the causes from consequences. Twenty four pooled panel data regression models run, out of these eighteen pooled panel data regression models run to measure the relationship between working capital management and firm performance measured by profitability. The rest six pooled panel data regression models run to measure the relationship between profitability and firm liquidity.

#### **4.3.1 Pooled Panel Data Regression Analysis of Number of Days Account Receivable and Profitability measures.**

To analyze the impact of number of days account receivable on profitability measures i.e. return on assets, return on equity and operating profit margin three regressions were run.

Size of the firm affects return on asset and return on equity negatively at 5 percent significance level and 1 percent significance level respectively. Total debt to total assets ratio also affects only return on asset and return on equity positively at 10 percent significance level and 1 percent significance level respectively. However, both size of the firm and Total debt to total assets ratio has no significant relationships with operating profit margin. Sales growth affects return on equity only positively at 5 percent significance level.

Table 4.5 also shows the result of the regressions analysis in which the coefficients of Number of Days Accounts Receivable statistically significant at the 1 percent significance level in Return on asset with p value .0055, at 5 percent significance level in return on equity with p value .0432 and 10 percent significance level in Operating Profit margin with p value .0641. As hypothesized in the hypothesis section of this research Number of Days Accounts Receivable significantly affects profitability measures (return on asset, return on equity and operating profit margin) negatively.

Table4.5: Regression analysis of Number of Days Accounts Receivable and Profitability measures.

|  | Return on Asset |           | Return on Equity |           | Operating Profit Margin |          |
|--|-----------------|-----------|------------------|-----------|-------------------------|----------|
|  | Coefficients    | t Stat    | Coefficients     | t Stat    | Coefficients            | t Stat   |
|  | Standard Error  | P-value   | Standard Error   | P-value   | Standard Error          | P-value  |
| Intercept  | 0.4081          | 2.9474    | 3.0847           | 3.4179    | 0.3018                  | 1.4314   |
|  | 0.1385          | 0.0051    | 0.9025           | 0.0013    | 0.2108                  | 0.1592   |
| Size of the Firm   | (0.0629)        | (2.1803)  | (0.6322)         | (3.3592)  | (0.0387)                | (0.8812) |
|  | 0.0289          | 0.0345**  | 0.1882           | 0.0016*** | 0.0440                  | 0.3829   |
| Sales Growth   | 0.0002          | 0.3776    | 0.0087           | 2.0281    | (0.0000)                | (0.0216) |
|  | 0.0007          | 0.7075    | 0.0043           | 0.0485**  | 0.0010                  | 0.9829   |
| Total debt to total assets ratio   | 0.1370          | 1.8370    | 1.3041           | 2.6827    | 0.1134                  | 0.9991   |
|  | 0.0746          | 0.0728*   | 0.4861           | 0.0102*** | 0.1135                  | 0.3231   |
| Number of Days Accounts Receivable   | (0.0003)        | (2.9143)  | (0.0015)         | (2.0809)  | (0.0003)                | (1.8979) |
|  | 0.0001          | 0.0055*** | 0.0007           | 0.0432**  | 0.0002                  | 0.0641*  |
| R Square   | 0.2227          |           | 0.2533           |           | 0.0944                  |          |
| Adjusted R Square  | 0.1536          |           | 0.1870           |           | 0.0139                  |          |
| Standard Error   | 0.1396          |           | 0.9102           |           | 0.2126                  |          |
| Observations   | 50              |           | 50               |           | 50                      |          |
| <i>F</i>   | 3.2235          |           | 3.8173           |           | 1.1731                  |          |
| <i>Significance F</i>  | 0.0207 **       |           | 0.0094 ***       |           | 0.3354                  |          |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |           |                  |           |                         |          |

This indicates that number of days accounts receivable significantly and negatively affects the profitability of enterprises. This means when the number of days account receivable increases the profitability of the enterprises decreases and vice versa

The explanatory powers (adjusted R square) of the three regressed models i.e. return on assets, return on equity and operating profit margin are 15.36 percent, 18.70 percent and 1.39 percent respectively. These means the weighted combination of the independent variables used explained approximately 15.36 percent, 18.70 percent and 1.39 percent of the variance of return on asset, return on equity and operating profit margin respectively. However, the remaining 84.74 percent changes (variability) in the return on assets, 81.30 percent variability in the return on equity and 98.61 percent of changes in the operating profits are caused by other factors that are not included in these models.

The overall significances of the models when measured by their respective F statistics are 3.22 for return on asset, 3.82 for return on equity and 1.17 for operating profit margin with P-values (significance F) of 0.0207, 0.0094 and 0.3354 respectively indicating that the first two models (return on asset and return on equity) are well fitted at the 1 percent and 5 percent significance level.

#### **4.3.2 Pooled Panel Data Regression Analysis of Number of Days Inventory and Profitability measures.**

To study about the effect of Number of days Inventory on profitability measures three regression models were run and the results are presented below on table 4.6.

As one can understand from the table below number of days inventory affects return on equity positively and return on asset and operating profit margin negatively, but in agreement with the hypothesis of this research number of days inventory negatively and significantly affects only operating profit margin one of the measures of profitability used in this research at significance level of 1 percent. Even if number of days inventory affects negatively and significantly only one of profitability measures (operating profit margin), this result implies that the shorter number of days inventory, the higher will be the operating profitability margin.

Table4.6: Regression analysis of Number of Days Inventory and Profitability measures

|  | Return on Asset |          | Return on Equity |            | Operating Profit Margin |           |
|--|-----------------|----------|------------------|------------|-------------------------|-----------|
|  | Coefficients    | t Stat   | Coefficients     | t Stat     | Coefficients            | t Stat    |
|  | Standard Error  | P-value  | Standard Error   | P-value    | Standard Error          | P-value   |
| Intercept  | 0.3963          | 2.3303   | 2.3676           | 2.1940     | 0.4731                  | 1.9900    |
|  | 0.1701          | 0.0243   | 1.0791           | 0.0334     | 0.2378                  | 0.0527    |
| Size of the Firm   | (0.0574)        | (1.7975) | (0.5375)         | (2.6549)   | (0.0522)                | (1.1691)  |
|  | 0.0319          | 0.0790 * | 0.2025           | 0.0109 *** | 0.0446                  | 0.2485    |
| Sales Growth   | 0.0001          | 0.1283   | 0.0082           | 1.8317     | (0.0002)                | (0.2498)  |
|  | 0.0007          | 0.8985   | 0.0045           | 0.0736*    | 0.0010                  | 0.8039    |
| Total debt to total assets ratio   | 0.0864          | 1.0003   | 1.2996           | 2.3716     | (0.0006)                | (0.0049)  |
|  | 0.0864          | 0.3225   | 0.5480           | 0.0221**   | 0.1207                  | 0.9961    |
| Number of Days Inventory   | (0.0001)        | (1.1483) | 0.0001           | 0.2763     | (0.0002)                | (2.2177)  |
|  | 0.0001          | 0.2569   | 0.0004           | 0.7836     | 0.0001                  | 0.0317 ** |
| R Square   | 0.1023          |          | 0.1829           |            | 0.1183                  |           |
| Adjusted R Square  | 0.0225          |          | 0.1103           |            | 0.0399                  |           |
| Standard Error   | 0.1501          |          | 0.9522           |            | 0.2098                  |           |
| Observations   | 50              |          | 50               |            | 50                      |           |
| F  | 1.2824          |          | 2.5180           |            | 1.5095                  |           |
| Significance F   | 0.2911          |          | 0.0543           |            | 0.2155                  |           |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |          |                  |            |                         |           |

Firm growth measured by sales growth and financial leverage measured by total debt to total asset ratio has significant positive effect on return equity at 10 percent and 5 percent significance level respectively, but they has no significant effect on return on asset and operating profit margin.

Table 4.5 also shows that size of the firm affect return on asset and return on equity negatively and significantly at 10 percent and 1 percent significance level, but it has no significant effect on operating profit margin.

The adjusted R2 of the models are 2.25 percent, 11.03 percent and 3.99 percent for return on assets, return on equity and operating profit margin respectively. It means that 2.25 percent, 11.03 percent and 3.99 percent of the variation in return on asset, return on equity and operating profit margin were explained by the independent variables of the models. According to R2 of the models 97.75 percent of the variation in return on asset, 88.97 percent of the variation in return on equity and 96.01 percent of variation in operating profit margin is not explained by the current independent variables. The F-statistic has a value of 1.28, 2.52 and 1.51 with model significance (p value) of .2911, .0543 and .2155. This implies that only return on equity was well fitted at the 10 percent significance level.

#### **4.3.3 Pooled Panel Data Regression Analysis of Number of Days Account Payable and Profitability measures.**

To measure the effect of Number of Days Accounts Payable on profitability. Three regression models were run and the results of the regressions were presented in the above table.

The table below reveals that sales growth and total debt to total asset ratio only affect return on equity positively and significantly at 10 percent and 5 percent significance level. However, sales growth and total debt to total asset ratio has no significant relationship with return on asset and operating profit margin. The table also reveals that firm size has no significant effect on return on asset, return on equity and operating profit margin.

Table4.7: Regression analysis of Number of Days Accounts Payable and Profitability measures

|  | Return on Asset |            | Return on Equity |           | Operating Profit Margin |            |
|--|-----------------|------------|------------------|-----------|-------------------------|------------|
|  | Coefficients    | t Stat     | Coefficients     | t Stat    | Coefficients            | t Stat     |
|  | Standard Error  | P-value    | Standard Error   | P-value   | Standard Error          | P-value    |
| Intercept  | 0.2450          | 1.8994     | 2.4475           | 2.7232    | 0.1284                  | 0.6641     |
|  | 0.1290          | 0.0639     | 0.8987           | 0.0092    | 0.1933                  | 0.5100     |
| Size of the Firm   | (0.0401)        | (1.4567)   | (0.5428)         | (2.8317)  | (0.0144)                | (0.3499)   |
|  | 0.0275          | 0.1521     | 0.1917           | 0.0069    | 0.0412                  | 0.7281     |
| Sales Growth   | 0.0001          | 0.2028     | 0.0081           | 1.8356    | (0.0001)                | (0.1470)   |
|  | 0.0006          | 0.8402     | 0.0044           | 0.0730 *  | 0.0010                  | 0.8838     |
| Total debt to total assets ratio   | 0.0927          | 1.2740     | 1.1837           | 2.3344    | 0.0613                  | 0.5622     |
|  | 0.0728          | 0.2092     | 0.5070           | 0.0241 ** | 0.1090                  | 0.5768     |
| Number of Days Accounts Payable  | 0.0002          | 3.4388     | 0.0004           | 0.9364    | 0.0002                  | 2.8855     |
|  | 0.0001          | 0.0013 *** | 0.0004           | 0.3541    | 0.0001                  | 0.0060 *** |
| R Square   | 0.2683          |            | 0.1971           |           | 0.1746                  |            |
| Adjusted R Square  | 0.2033          |            | 0.1258           |           | 0.1013                  |            |
| Standard Error   | 0.1355          |            | 0.9439           |           | 0.2030                  |            |
| Observations   | 50              |            | 50               |           | 50                      |            |
| F  | 4.1251          |            | 2.7625           |           | 2.3805                  |            |
| Significance F   | 0.0062 ***      |            | 0.0389 **        |           | 0.0656 *                |            |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |            |                  |           |                         |            |



Number of Days Accounts Payable has no significant effect on return on equity. But it has positive and significant effect on return on asset and operating profit margin at significance level of 1 percent and 10 percent respectively. This is partially consistent with the hypothesis of this research. This implies that delaying payments to suppliers gives the creditor to use inexpensive and flexible source of financing to finance its operation and increase its profitability. It means when number of days accounts payable increases profitability will increase and vice versa.

As shown in the above table the adjusted R<sup>2</sup> of the three models are 20.33 percent, 12.58 percent and 10.13 percent respectively. This endorses that 20.33 percent, 12.58 percent and 10.13 of the variation in the dependent variables (return on asset, return on equity and operating profit margin respectively) are explained by the independent variables of the model. The 79.77 percent, 87.42 percent and 89.87 percent variation in the dependent variable remains unexplained by the independent variables of the study. In addition to these, the significances of each models when measured by their respective F statistics are 4.13, 2.76 and 2.38 with significance F .0062, .0389 and .0656 respectively. These indicate that the models are well fitted at the 1 percent, 5 percent and 10 percent significance level.

#### **4.3.4 Pooled Panel Data Regression Analysis of Cash Conversion Cycle and Profitability measures.**

Another three regression models were run to measure the effect of the cash conversion cycle on profitability measures (return on asset, return on equity and operating profit margin). The table below reveals that cash conversion cycle affects profitability. The table also reveals that size of the firm affects return on asset and return on equity negatively and significantly at 1 percent significance level. Firm size has no significant effect on operating profit margin. Furthermore sales growth and ratio of total debt to total assets affects return on equity positively and significantly at 10 and 5 percent significance level. These two control variables have no significant effect on return on asset and operating profit margin.

Table4.8: Regression analysis of Cash Conversion Cycle and Profitability measures

|  | Return on Asset |               | Return on Equity |               | Operating Profit Margin |               |
|--|-----------------|---------------|------------------|---------------|-------------------------|---------------|
|  | Coefficients    | t Stat        | Coefficients     | t Stat        | Coefficients            | t Stat        |
|  | Standard Error  | P-value       | Standard Error   | P-value       | Standard Error          | P-value       |
| Intercept  | 0.5279          | 4.0491        | 3.0027           | 3.0935        | 0.5306                  | 2.8051        |
|  | 0.1304          | 0.0002        | 0.9706           | 0.0034        | 0.1891                  | 0.0074        |
| Size of the Firm   | (0.0718)        | (2.7479)      | (0.6050)         | (3.1087)      | (0.0593)                | (1.5643)      |
|  | 0.0261          | 0.0086**<br>* | 0.1946           | 0.0033**<br>* | 0.0379                  | 0.1247        |
| Sales Growth   | 0.0001          | 0.1818        | 0.0081           | 1.8374        | (0.0002)                | (0.1999)      |
|  | 0.0006          | 0.8565        | 0.0044           | 0.0728*       | 0.0009                  | 0.8424        |
| Total debt to total assets ratio   | 0.0285          | 0.4054        | 1.0544           | 2.0135        | (0.0380)                | (0.3727)      |
|  | 0.0703          | 0.6871        | 0.5237           | 0.0501**      | 0.1020                  | 0.7111        |
| Cash Conversion Cycle  | (0.0002)        | (4.5527)      | (0.0003)         | (1.2077)      | (0.0002)                | (4.5577)      |
|  | 0.0000          | 0.0000**<br>* | 0.0003           | 0.2335        | 0.0001                  | 0.0000**<br>* |
| R Square   | 0.3674          |               | 0.2072           |               | 0.3308                  |               |
| Adjusted R Square  | 0.3112          |               | 0.1367           |               | 0.2714                  |               |
| Standard Error   | 0.1260          |               | 0.9379           |               | 0.1828                  |               |
| Observations   | 50              |               | 50               |               | 50                      |               |
| F  | 6.5336          |               | 2.9402           |               | 5.5621                  |               |
| Significance F   | 0.0003***       |               | 0.0305**         |               | 0.0010***               |               |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |               |                  |               |                         |               |

In partial agreement with the hypothesis which was hypothesized in the first chapter of this study in hypothesis section the research results shows that, cash conversion cycle significantly and negatively affects return on asset and operating profit margin at 1 percent significance level. The implication is that the change in cash conversion cycle will significantly and negatively affect profitability of the firms (return on asset and operating profit margin). It means that the lower firms' cash conversion cycle the higher will be the profitability and vice versa.

As it is shown in the above table, the explanatory power of the three models measured by their respective adjusted R squared values, are 31.12 percent for return on asset, 13.67 percent for return on equity and 27.14 percent for operating profit margin respectively. This means that 31.12 percent of the changes in the return on assets, 13.67 percent of change in the return on equity and 27.14 percent of changes in operating profit margin are explained by the variables used in the models. The remaining, 78.88 percent, 86.33 percent and 22.86 percent variability in the return on asset, return on equity and operating profit margin respectively are caused by other variables that are not included in the models. Finally, the significances of the models when measured by their respective F statistics is 6.53, 2.94 and 5.56 8.22, 11.40 and 12.7 with F significance of .0003, .0305 and .0010 indicating that the models are well fitted at 1 percent, .5 percent and 1 percent significance level respectively.

#### **4.3.5 Pooled Panel Data Regression Analysis of Current Ratio and Profitability measures.**

One of the traditional measures of liquidity is current ratio. To analyze the tradeoff between liquidity and profitability three regression analyses were run. The results of the regression analysis presented in Table 4.8.

Firm size affect return on asset, return on equity and operating profit margin negatively and significantly at 5 percent, 1 percent and 5 percent significance level.

The table below reveals that sales growth and total debt to total asset ratio only affect return on equity positively and significantly at 10 percent significance level. However,

sales growth and total debt to total asset ratio has no significant relationship with return on asset and operating profit margin.

Table4.9: Regression analysis of Current ratio and Profitability measures

|  | Return on Asset |               | Return on Equity |               | Operating Profit Margin |               |
|--|-----------------|---------------|------------------|---------------|-------------------------|---------------|
|  | Coefficients    | t Stat        | Coefficients     | t Stat        | Coefficients            | t Stat        |
|  | Standard Error  | P-value       | Standard Error   | P-value       | Standard Error          | P-value       |
| Intercept  | 0.4501          | 3.2127        | 2.9217           | 3.0561        | 0.5967                  | 4.0351        |
|  | 0.1401          | 0.0024        | 0.9560           | 0.0038        | 0.1479                  | 0.0002        |
| Size of the Firm   | (0.0612)        | (2.1620)      | (0.5908)         | (3.0580)      | (0.0605)                | (2.0260)      |
|  | 0.0283          | 0.0360**      | 0.1932           | 0.0037**<br>* | 0.0299                  | 0.0487**      |
| Sales Growth   | 0.0001          | 0.2132        | 0.0082           | 1.8479        | (0.0001)                | (0.1751)      |
|  | 0.0006          | 0.8321        | 0.0044           | 0.0712*       | 0.0007                  | 0.8618        |
| Total debt to total assets ratio   | 0.0343          | 0.4354        | 1.0254           | 1.9092        | (0.1293)                | (1.5565)      |
|  | 0.0787          | 0.6654        | 0.5371           | 0.0626*       | 0.0831                  | 0.1266        |
| Current Ratio  | (0.0069)        | (3.1589)      | (0.0167)         | (1.1233)      | (0.0176)                | (7.6776)      |
|  | 0.0022          | 0.0028**<br>* | 0.0148           | 0.2673        | 0.0023                  | 0.0000**<br>* |
| R Square   | 0.2437          |               | 0.2038           |               | 0.5766                  |               |
| Adjusted R Square  | 0.1765          |               | 0.1331           |               | 0.5389                  |               |
| Standard Error   | 0.1377          |               | 0.9399           |               | 0.1454                  |               |
| Observations   | 50              |               | 50               |               | 50                      |               |
| F  | 3.6255          |               | 2.8801           |               | 15.3194                 |               |
| Significance F   | 0.0121**        |               | 0.0331**         |               | 0.0000***               |               |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |               |                  |               |                         |               |

Current ratio has no significant effect on return on equity. But it has negative and significant effect on return on asset and operating profit margin at significance level of 1 percent. This is partially consistent with the hypothesis of this research. This implies that, the change in current ratio will significantly and negatively affect profitability of the firms. This means, the lower the firms' current ratio, the higher will be the profitability and vice versa

As shown in the above table the adjusted R<sup>2</sup> of the three models are 17.65 percent, 13.31 percent and 53.89 percent respectively. This endorses that 17.65 percent, 13.31 percent and 53.89 of the variation in the dependent variables (return on asset, return on equity and operating profit margin respectively) are explained by the independent variables of the model. The 82.35 percent, 86.69 percent and 46.11 percent variation in the dependent variable remains unexplained by the independent variables of the study. In addition to these, the significances of each models when measured by their respective F statistics are 3.63, 2.88 and 15.32 with significance F .0121, .0331 and .000 respectively. These indicate that the models are well fitted at the 5 percent and 1 percent significance level.

#### **4.3.6 Pooled Panel Data Regression Analysis of Quick Ratio and Profitability measures.**

Another traditional measure of liquidity is quick ratio. To analyze the tradeoff between liquidity measured by quick ratio and profitability three regression analyses were run. The results of the regression analysis presented in Table 4.9.

Size of the Firm affect return on asset and return on equity negatively and significantly at 5 percent and 1 percent significance level respectively. But it has no significant effect on operating profit.

The table below reveals that sales growth and total debt to total asset ratio only affect return on equity positively and significantly at 10 percent and 5 percent significance level respectively. However, sales growth and total debt to total asset ratio has no significant relationship with return on asset and operating profit margin.

Table4.10: Regression analysis of Quick ratio and Profitability measures

|  | Return on Asset |               | Return on Equity |              | Operating Profit Margin |               |
|--|-----------------|---------------|------------------|--------------|-------------------------|---------------|
|  | Coefficients    | t Stat        | Coefficients     | t Stat       | Coefficients            | t Stat        |
|  | Standard Error  | P-value       | Standard Error   | P-value      | Standard Error          | P-value       |
| Intercept  | 0.4474          | 3.3553        | 2.9899           | 3.2177       | 0.5122                  | 3.2037        |
|  | 0.1333          | 0.0016        | 0.9292           | 0.0024       | 0.1599                  | 0.0025        |
| Size of the Firm   | (0.0613)        | (2.2425)      | (0.5980)         | (3.1416)     | (0.0533)                | (1.6277)      |
|  | 0.0273          | 0.0299**      | 0.1903           | 0.0030***    | 0.0328                  | 0.1106        |
| Sales Growth   | 0.0003          | 0.4692        | 0.0086           | 1.9698       | 0.0002                  | 0.2680        |
|  | 0.0006          | 0.6412        | 0.0044           | 0.0550 *     | 0.0008                  | 0.7899        |
| Total debt to total assets ratio   | 0.0563          | 0.7672        | 1.0470           | 2.0481       | (0.0397)                | (0.4511)      |
|  | 0.0734          | 0.4469        | 0.5112           | 0.0464*<br>* | 0.0880                  | 0.6541        |
| Quick Ratio  | (0.0195)        | (3.7005)      | (0.0565)         | (1.5390)     | (0.0404)                | (6.4032)      |
|  | 0.0053          | 0.0006**<br>* | 0.0367           | 0.1308       | 0.0063                  | 0.0000**<br>* |
| R Square   | 0.2916          |               | 0.2224           |              | 0.4882                  |               |
| Adjusted R Square  | 0.2286          |               | 0.1533           |              | 0.4427                  |               |
| Standard Error   | 0.1333          |               | 0.9289           |              | 0.1598                  |               |
| Observations   | 50              |               | 50               |              | 50                      |               |
| F  | 4.6307          |               | 3.2181           |              | 10.7326                 |               |
| Significance F   | 0.0032***       |               | 0.0209**         |              | 0.0000***               |               |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |               |                  |              |                         |               |

Similar to Current ratio Quick ratio has no significant effect on return on equity. But it has negative and significant effect on return on asset and operating profit margin at significance level of 1 percent. This is partially consistent with the hypothesis of this research. This implies that, the change in Quick ratio will significantly and negatively affect profitability of the firms. This means, the lower the firms' quick ratio, the higher will be the profitability and vice versa.

As shown in the above table the adjusted R2 of the three models are 22.86 percent, 15.33 percent and 44.27 percent respectively. This endorses that 22.86 percent, 15.33 percent and 44.27 of the variation in the dependent variables (return on asset, return on equity and operating profit margin respectively) are explained by the independent variables of the model. The 77.14 percent, 84.77 percent and 55.73 percent variation in the dependent variable remains unexplained by the independent variables of the study. In addition to these, the significances of each models when measured by their respective F statistics are 4.63, 3.22 and 10.73 with significance F .0032, .0209 and .000 respectively. These indicate that the models are well fitted at the 1 percent, 5 percent and 1 percent significance level.

#### **4.3.7 Pooled Panel Data Regression Analysis of Current asset to total asset ratio and Profitability measures.**

In this study, current assets to total assets ratio is used as measure of working capital investment policy. According to Nazir and Afza (2009) a conservative investment policy places a greater proportion of capital in liquid assets with the opportunity cost of less profitability. If the level of current assets increases in proportion to the total assets of the firm, the management is said to be more conservative in managing the current assets of the firm. In order to measure the degree of aggressiveness of working capital investment policy, where a lower ratio means a relatively aggressive policy. To measure the effect of working capital investment policy on firms' profitability three regression models were run. The regression analysis of the regression models presented below.

Table4.11: Regression analysis of Current assets to total asset ratio and Profitability measures

|  | Return on Asset |          | Return on Equity |           | Operating Profit Margin |          |
|--|-----------------|----------|------------------|-----------|-------------------------|----------|
|  | Coefficients    | t Stat   | Coefficients     | t Stat    | Coefficients            | t Stat   |
|  | Standard Error  | P-value  | Standard Error   | P-value   | Standard Error          | P-value  |
| Intercept  | 0.3215          | 2.2055   | 2.5006           | 2.7079    | 0.2469                  | 1.1791   |
|  | 0.1458          | 0.0326   | 0.9234           | 0.0095    | 0.2094                  | 0.2446   |
| Size of the Firm   | (0.0359)        | (1.1192) | (0.5643)         | (2.7808)  | (0.0019)                | (0.0412) |
|  | 0.0320          | 0.2690   | 0.2029           | 0.0079*** | 0.0460                  | 0.9673   |
| Sales Growth   | 0.0002          | 0.2311   | 0.0081           | 1.8105    | (0.0001)                | (0.0731) |
|  | 0.0007          | 0.8183   | 0.0045           | 0.0769*   | 0.0010                  | 0.9420   |
| Total debt to total assets ratio   | 0.1244          | 1.5520   | 1.2419           | 2.4453    | 0.1016                  | 0.8822   |
|  | 0.0802          | 0.1277   | 0.5079           | 0.0185**  | 0.1152                  | 0.3824   |
| Ratio of the Current Assets to Total Assets  | (0.1191)        | (1.0538) | 0.1127           | 0.1574    | (0.2324)                | (1.4308) |
|  | 0.1131          | 0.2976   | 0.7162           | 0.8757    | 0.1625                  | 0.1594   |
| R Square   | 0.0983          |          | 0.1820           |           | 0.0645                  |          |
| Adjusted R Square  | 0.0181          |          | 0.1092           |           | (0.0187)                |          |
| Standard Error   | 0.1504          |          | 0.9527           |           | 0.2161                  |          |
| Observations   | 50              |          | 50               |           | 50                      |          |
| F  | 1.2260          |          | 2.5022           |           | 0.7756                  |          |
| Significance F   | 0.3132          |          | 0.0555*          |           | 0.5469                  |          |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |          |                  |           |                         |          |



As the above table reveals Current asset to total asset ratio has no significant effect on profitability..

The above table also reveals that Firm size, sales growth and total debt to total asset ratio only affect return on equity negatively and significantly, positively and significantly , positively and significantly at 1 percent, 10 percent and 5 percent significance level respectively. However, Firm size, sales growth and total debt to total asset ratio has no significant effect on return on asset and operating profit margin.

As shown in the above table the adjusted R2 of the three models are 1.81 percent, 10.92 percent and -1.87 percent respectively. This endorses that 1.81 percent, 10.92 percent and -1.87 of the variation in the dependent variables (return on asset, return on equity and operating profit margin respectively) are explained by the independent variables of the model. The 77.14 percent, 84.77 percent and 55.73 percent variation in the dependent variable remains unexplained by the independent variables of the study. In addition to these, the significances of each models when measured by their respective F statistics are 1.22, 2.5 and .77 with significance F .3132, .0555 and .5469 respectively. These indicate that the models are not well fitted except the model for return on equity at the 10 percent significance level.

#### **4.3.8 Pooled Panel Data Regression Analysis of Current liabilities to total asset ratio and Profitability measures.**

According to Nazir and Afza (2009) firms are more aggressive in terms of current liabilities management if they are concentrating on the use of more current liabilities which put their liquidity on risk. The degree of aggressiveness of a financing policy adopted by a firm is measured by working capital financing policy. To measure the current liabilities to total asset ratio effect on profitability measures of firms' three regression models were run. The result of the regression model presented on table 4.11.

Table 4.11 shows that the results of the regressions analysis in which current liabilities to total assets ratio affect return on assets, return on equity and operating profit margin

positively and significantly at the 1 percent, 5 percent and 1 percent significance levels respectively.

Table4.12: Regression analysis of Current liabilities to total asset ratio and Profitability measures

|  | Return on Asset |           | Return on Equity |           | Operating Profit Margin |           |
|--|-----------------|-----------|------------------|-----------|-------------------------|-----------|
|  | Coefficients    | t Stat    | Coefficients     | t Stat    | Coefficients            | t Stat    |
|  | Standard Error  | P-value   | Standard Error   | P-value   | Standard Error          | P-value   |
| Intercept  | 0.4462          | 4.2402    | 2.9625           | 3.3609    | 0.3543                  | 1.9386    |
|  | 0.1052          | 0.0001    | 0.8815           | 0.0016    | 0.1827                  | 0.0588    |
| Size of the Firm   | (0.0857)        | (3.7733)  | (0.6629)         | (3.4830)  | (0.0650)                | (1.6481)  |
|  | 0.0227          | 0.0005*** | 0.1903           | 0.0011*** | 0.0395                  | 0.1063    |
| Sales Growth   | 0.0005          | 0.9648    | 0.0091           | 2.1335    | 0.0003                  | 0.2876    |
|  | 0.0005          | 0.3398    | 0.0043           | 0.0384**  | 0.0009                  | 0.7750    |
| Total debt to total assets ratio   | (0.1730)        | (2.3706)  | 0.4274           | 0.6990    | (0.2218)                | (1.7494)  |
|  | 0.0730          | 0.0221**  | 0.6114           | 0.4881    | 0.1268                  | 0.0870*   |
| Ratio of Current Liabilities to Total Assets   | 0.4908          | 6.6372    | 1.3481           | 2.1762    | 0.5326                  | 4.1475    |
|  | 0.0740          | 0.0000*** | 0.6194           | 0.0348**  | 0.1284                  | 0.0001*** |
| R Square   | 0.5331          |           | 0.2594           |           | 0.2924                  |           |
| Adjusted R Square  | 0.4916          |           | 0.1936           |           | 0.2295                  |           |
| Standard Error   | 0.1082          |           | 0.9065           |           | 0.1879                  |           |
| Observations   | 50              |           | 50               |           | 50                      |           |
| F  | 12.8448         |           | 3.9412           |           | 4.6492                  |           |
| Significance F   | 0.0000***       |           | 0.0079***        |           | 0.0032***               |           |
| Note:*** indicate significant level at 1%,**indicate significant level at 5% and * indicate significant level at 10% |                 |           |                  |           |                         |           |

This result agrees with the hypothesis of the study, and implies that current liabilities to total assets ratio has positive effect on aggressive working capital financing policy on firm's profitability.

Size of the firm negatively and significantly affects return on assets and return on equity at 1 percent significance level. But Size of the firm has no significant effect on operating profit margin. Sales growth significantly and positively affects return on equity at 5 percent significance level. However, Sales Growth has no significant effect on return on asset and operating profit margin

Whereas, total debt to total asset ratio significantly and negatively affect return on asset and operating profit margin at 5 percent and 10 percent significance level. But it has no effect on return on equity.

As shown in the above table the adjusted R<sup>2</sup> of the three models are 49.16 percent, 19.36 percent and 22.95 percent respectively. This endorses that 49.16 percent, 19.36 percent and 22.95 of the variation in the dependent variables (return on asset, return on equity and operating profit margin respectively) are explained by the independent variables of the model. The 50.84 percent, 80.64 percent and 77.05 percent variation in the dependent variable remains unexplained by the independent variables of the study. In addition to these, the significances of each models when measured by their respective F statistics are 12.85, 3.94 and 4.65 with significance F .0000, .0079 and .0032 respectively. These indicate that the models are well fitted at the 1 percent significance level.

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

In this chapter conclusions and recommendations are presented. The conclusions and recommendations about the effect of working capital management on performance of selected public enterprises are made based on the research results presented on the previous chapter.

#### **5.1 Conclusions**

The general objective of this research has been to provide empirical evidence about the impact of working capital management on performance of selected public enterprises in Addis Ababa, Ethiopia. To attain the research objective, balanced panel data covering the period from 2008 to 2012 of ten selected public Enterprises was collected; the data analyzed using quantitative approach. Based on the descriptive and quantitative analysis results the researcher draws the following conclusions.

The findings reveal that, the profitability of the public enterprises measured by return on assets, return on equity and operating profit margin are 11.73 percent, 37.71 percent and 12.20 percent on average respectively. Their liquidity measured by current ratio and quick ratio are on average 5.37 and 2.38, which is much greater than the standard value one.

The enterprises wait on average 126 days to collect their credit sales, 375 days to sale their inventory and 151 days to pay their credit purchases. The enterprises relatively wait long time to sale their inventory and to collect their credit sales which has adverse effect on their profitability.

On average 72.47 percent of the total asset of the enterprises is current asset which implies public enterprises invest more on current assets which may have negative effect on their profitability. The sales of the Enterprises are growing 512.57 percent on average. The result also shows the enterprises uses substantial current liabilities to finance their asset, the average ratio of current liabilities to total assets is 40.87 percent.

From the Correlations Analysis, there is negative relationship between number of day's accounts receivable and profitability measures (return on asset, return equity and operating profit margin) of public enterprises. The regression analysis also reveal that number of day's accounts receivable of public enterprises negatively and significantly affects return on asset, return on equity and operating profit margin of the public enterprises. Therefore hypothesis 1 accepted, and number of day's accounts receivable negatively and significantly affects profitability of public Enterprises.

There exist negative relationship between return on asset and operating profit margin with number of days inventory according to the correlation analysis. On other hand, the regression analysis revel that number of days inventory negatively and significantly affect operating profit margin. Even if number of days inventory affect return on asset negatively and insignificantly and return on equity positively and insignificantly, it affect the main measure of profitability operating profit margin negatively and significantly which shows there exist significant negative relationship between number of days inventory and profitability measured by operating profit margin of public enterprises. As result hypothesis 2 accepted and number of days inventory affects return on asset and operating profit margin negatively and significantly.

The pair wise correlation analysis reveal that there is positive relationship between return on asset, return equity and operating profit margin with number of days accounts payable. The regression analysis shows number of accounts payable affects return on asset and operating profit margin positively and significantly. Even though the number of days accounts payable effect on return on equity is not significant, it can be concluded based on this findings that number of days accounts payable significantly and positively affect profitability measured by return on asset and operating profit margin of public enterprises. Accordingly hypothesis 3 accepted.

There is negative relationship between cash conversion cycle and profitability. Likewise the number of accounts payable regression result cash conversion cycle affects return on

asset and operating profit margin negatively and significantly. In Similar fashion to number of accounts payable conclusion, it is concluded that cash conversion cycle negatively affect profitability of public enterprises. Therefore, hypothesis 4 accepted.

Based on correlation analysis the two traditional liquidity measures (current ratio and quick ratio) have negative relationship with return on asset, return on equity and operating profit margin. They affect return on asset and operating profit margin negatively and significantly, but both do not affect return on equity significantly. It is, therefore concluded that current ratio and quick ratio affect negatively profitability of public enterprises. Therefore hypothesis 5 and 6 accepted.

According to the pair wise correlation analysis the ratio of current asset to total asset a measure of working capital investing policy has negative relationship with return on asset, return on equity and operating profit margin. The regression analysis reveals the ratio of current asset to total asset has no significant effect on profitability measures. Accordingly current asset to total asset ratio has no significant effect on public enterprises. Based on this hypothesis 7 rejected.

Finally current liabilities to total asset ratio has strong positive correlation with return on asset, return on equity and operating profit margin. The regression analysis reveals that current liabilities to total asset ratio affect positively and significantly return on asset, return on equity and operating profit margin. Therefore, it is concluded that current liability to total asset ratio a measure of financing policy affect public enterprises return on asset, return on equity and operating profit margin positively and significantly. Accordingly hypothesis 8 accepted,

## **5.2 Limitation of the Study**

The analysis of this research and ultimately the research result is constrained by the small sample size and the short period observation of the selected public enterprises which could have been well affected the results of this research. The geographical scope of this

study is limited to the boundary of Addis Ababa, Ethiopia due to budget constraint. The researcher suggests that further research should be conducted on the same sector with large sample size and also extending the years of the sample and geographical scope. Scope of further research may be extended to other public enterprises that are under different government bodies' supervision in addition to PPESA and also are located outside Addis Ababa.

### **5.3 Recommendations**

Based on the research results and the conclusions drawn above, the researcher forwards the following recommendations to different stakeholders.

As shown above both number of days accounts receivable and number of days inventory are considerably too long. Enterprises could implement different systems that can speed up their inventory turnover and credit sales collection period to increase their profitability.

Relatively the average cash conversion cycle is long, but cash conversion cycle has negative significant effect on profitability of public enterprises. Managers may work to shorten the cash conversion cycle so as to maximize profit.

When there are limited sources of funds especially in countries like Ethiopia, delaying payments to suppliers can be an inexpensive and flexible source of financing for the Enterprises. Therefore managers are highly recommended to utilize properly this opportunity whenever there is credit purchase opportunity and by considering suppliers position.

As the above results reveal there is significant relationship between liquidity and profitability. Therefore, Managers may work always to record high profitability by managing working capital in the best possible way and also by maintaining the trade-off between liquidity and profitability.

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## **DECLARATION**

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

\_\_\_\_\_

Name

\_\_\_\_\_

Signature & Date

## **ENDORSEMENT**

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

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Advisor

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Signature & Date