

# Working Capital Management and Its Impact on Profitability Evidence from Food Complex Manufacturing Firms in Addis Ababa

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**Abstract-** Working capital refers to the funds required to undertake the day-to-day operations of a firm. To achieve business objectives, an investment of the firm's capital in current assets and the use of current liabilities to fund part of the investment are required. Therefore, sound working capital management is required in order for the firm to remain competitive in this information age. This study explores the impact of working capital management on the profitability of food complex manufacturing firms operating in and around Addis Ababa. The efficiency of working capital management has been measured by Inventory Turnover Period, Account Receivable Collection Period, Days Payables Outstanding, Cash Conversion Cycle, Current Ratio and Quick assets ratio; and Return on Assets was considered as proxy for profitability. Relevant data for this study has been collected from 10 food complex manufacturing firms' annual financial statements for the period 2009-2013 and analyzed through descriptive statistics, Pearson correlation and multiple regression analysis. Accordingly, the findings revealed that Return on Assets was found to be significantly and negatively related to average days in inventory, average days payable and cash conversion cycle, which would suggest that by shortening of cash conversion cycle food complex manufacturing firms can increase their profitability. The findings of the regression analysis show that average days in inventory, average day's receivable, and average days payable have a significant impact on Return on Assets. However, current ratio and quick asset ratio have insignificant and positive relation with Return on Assets. Therefore, managers of food complex business can increase the profitability of their firms by shortening the cash conversion cycle, inventory conversion period, and receivables collection period. However, they cannot increase profitability by lengthening the payables deferral period.

and the appropriate level of working capital so as to minimize risk, effectively prepare for uncertainty and improve the overall performance of their businesses (Lamberson, 1995). Sound working capital management involves diligent planning and controlling. A balance should be struck between current assets and current liabilities in order to avoid the risk of failure to meet maturing obligations on one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). The presence of sound working capital management practices can make significant difference between the success and failure of a firm. In today's business, the skill to exploit every opportunity and to look for practical business tools and techniques to improve the financial performance are of paramount importance for success.

Working capital management is essential for the survival of business organization because of its effect on a firm's profitability, risk and value. Cognizant of this fact, various studies have analyzed the relationship of working capital management (WCM) and firm profitability in developed markets and economic situation. However, the results are quite mixed, contradicting and confusing. The various studies reviewed have used various variables to analyze the relationship, with different methodology such as linear regression, panel data regression, correlation and others. The investigator of the current study noted that there are inconclusive and inconsistent results with regard to the impact of working capital management on firms' financial performance. Further examination of these studies reveals that evidence-based result that investigated the relationship between working capital management and profitability of Food Complex Manufacturing Companies operated in Ethiopia, Addis Ababa are not found. Therefore, this study attempted to fill the research gap by examining and analyzing the relationship between the most important working capital management variables.

## I. INTRODUCTION

### 1.1 Justification of the Study

The very purpose of working capital management is to preserve an ideal balance between each of the working capital components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses (Deloof, 2003). In practice, it has become one of the most important issues in organizations with many financial executives struggling to identify the basic working capital drivers

### 1.2 Statement of the Problem

"Have working capital management a visible impact on profitability of Food Complex Manufacturing Companies operated in Addis Ababa?" The financial managers of firms spend most of their time and effort on day-to-day working capital management. Due to the inability of financial managers to properly plan and control the current assets and current liabilities of their companies, the failure of a large number of businesses can be attributed to the inefficient working capital management (Smith, 1973). For instance, Egbide (2009) found that large number of business failures in the past has been attributable to the inability of the financial managers to plan and control the

working capital of their respective firms. These reported inadequacies among financial managers are still practiced today in many firms in the form of high bad debts; high inventory costs etc., which poorly affect their operating performance (Egbide, 2009, p. 45). Moreover, some managers do neglect the firm's operating cycle thereby having longer debtors' collection period and shorter creditors' payment period.

Inadequate working capital leads the firm to bankruptcy. Inversely, unnecessary investment in working capital results in wasting cash and ultimately leads to lower profitability or even loss (Chakraborty, 2008). Management strategy aimed at maintaining a balance between liquidity and profitability has far-reaching consequences on the growth and survival of the firm. Thus, the manager of a business entity is in a dilemma of achieving desired tradeoff between liquidity and profitability in order to maximize the value of a firm. Therefore, the issues raised above vindicates the need to thoroughly investigate the problem; and hence, the need to study the relationship between measures of working capital management and firm performance in selected food complex manufacturing industries in Addis Ababa.

### 1.3 Objectives of the Study

The objective of the study is to examine and analyze the impact of working capital management on the profitability of Food Complex Manufacturing Companies operating around Addis Ababa. Specifically, the study assumes the following specific objectives:

- To evaluate the impact of account receivable collection days on the profitability of Food Complex Manufacturing firms.
- To examine the effect of inventory turnover days on Food Complex Manufacturing Companies profitability position.
- To examine the impact of account payable turnover days on Food Complex Manufacturing Companies profitability position
- To investigate the impact of cash conversion cycle on Food Complex Manufacturing Companies profitability position.
- To measure the effect of current ratio on Food Complex Manufacturing Companies profitability position.
- To examine the effect of quick asset ratio on Food Complex Manufacturing Companies profitability position.

### 1.4 Hypotheses

One of the purposes of cash and liquidity management is to sustain a minimum amount of idle cash holding in the firm, so as management of accounts receivable (AR) and inventories, too, assist keeping level of the invested funds in these assets as low as possible. Conversely, management of accounts payable (AP) tries to elongate the time of payment and to make the most of the short-term funds which actually belong to others. The period from the time of payment for the purchased materials or goods until collection of sales cash proceeds is called Cycle of Operation (Bozorgasl, 2005). Operating cycle has two parts: the first part is the *Inventory Sale Period*, the period extending from Asset Acquisition Period until Inventory Sale Period; and the

second part is from Inventory Sale Period to the period of receiving the sale proceeds known as "*Accounts Receivable Collection Period*". The Cycle of Operation in fact represents a process which shows how a products moves through different accounts of current assets; it is initiated in the inventory account, then when it is sold, it turns into accounts receivable, and at last when its cash proceeds are received, it is converted into cash or liquid asset. In this process, the asset step by step gets closer to cash (Ross, 2008).

The period from inventory acquisition until payment of the price thereof is called payment period. Cash Conversion Cycle refers to the process starting from cash payment for purchase of inventory and ending up to collection of sale cash proceeds. Note that cash conversion cycle (CCC) is the difference between cycle of operation and payment period (Ross et al., 2008). In other words, cash conversion cycle is the time period in which cash is spent by the company operation on production of a product item. Shortening this period means that for certain volume of production, less amount of cash is spent. CCC can be shortened by cutting down on either the average period in which cash is in the form of inventory, or the average accounts receivable collection period, or by lengthening the payment period (Jahankhani, 2008). The change in CCC leads to alteration of asset turnover and eventually affects profitability of the business unit. Consequently, the following hypotheses are drawn:-

**H1.** The Food Complex Manufacturing Companies profitability position is significantly negatively related to cash conversion cycle.

**H2.** The Food Complex Manufacturing Companies profitability position is significantly negatively related to the account receivable turnover days.

**H3.** The Food Complex Manufacturing Companies profitability position is significantly negatively related to the inventory turnover days

**H4.** The Food Complex Manufacturing Companies profitability position is significantly positively related to the account payable turnover days.

Moreover, according to the economic theory, risk and profitability are positively related (the more risky the investment, the higher the profits it should offer), thus since higher liquidity means less risk, it would also earn lower profits. According to Assaf Neto (2003, p.22), the greater the amount of funds invested in current assets, the lower the profitability, and by the same time the less risky is the working capital strategy. In this situation, the returns are lower in the case of a greater financial slack, in comparison to a less liquid working capital structure. Conversely, a smaller amount of net working capital, while sacrificing the safety margin of the company, by raising its insolvency's risk, positively contributes to the achievement of larger return rates, since it restricts the volume of funds tied up in assets of lower profitability. This risk-return ratio behaves in a way that no change in liquidity occurs without the consequence of an opposite move in profitability. This way each company should choose an amount of net working capital that better fits its risk accessibility and profit margins. Considering the above concepts **H5.** The Food Complex Manufacturing Companies profitability position is significantly negatively related to current ratio figure

**H6.** The Food Complex Manufacturing Companies profitability position is significantly negatively related to quick asset ratio figure.

The study has significance importance for corporate managers, researchers and students. First, managers of companies, especially food complex manufacturing companies will have insight on how best to optimize balance between liquidity and profitability in their companies. The study will equip managers with desirable working capital strategy that maximizes shareholders interest and directs them in challenges that the entity faces. Secondly, other researchers who are interested in the working capital management of firms and its impact on performance will find this work as beneficial.

## II. LITERATURE REVIEW

### 2.1 Theoretical Literature

#### 2.1.1 Components of Working Capital

Working capital management concern companies management of their short-term capital. The short-term capital refers to the capital that companies use in their daily operations and it consists of companies' current assets and current liabilities. A well-managed working capital promotes a company's wellbeing on the market in terms of liquidity and it also acts in favor for the growth of shareholders value (Jeng-Ren, et al., 2006).

Current assets consist of capital tied up in cash, short-term financial investments, inventories, account receivables and other current assets (Brealey, Myers & Allen, 2006, p. 813). Current liabilities include short-term loans, the debts to suppliers as account payables, accrued income taxes, and interest payments on long-term debts, dividend and other current liabilities. Consistent and systematic examination of a firm's current assets and liabilities is important to maintain sound and effective working capital management strategy.

#### 2.1.2 Working Capital Management and Its Importance

Working capital management involves regulating the various types of short-term assets and short-term liabilities. Working capital management also requires decisions with regard to how short-term assets should be financed. The firm can finance its current assets through various means like short-term debt, long-term debt, or equity. All else constant, working capital of the firm increased when it finances short-term assets through noncurrent sources. Review of literature discloses four greatly interrelated objectives of working capital management, viz., liquidity, profitability, risk reduction and value maximization. The very purpose of any business organization is to increase the market value. Sound management of working capital is an integral component of the overall corporate strategy in creating the shareholders' value.

The main objective of working capital management is to maintain an optimal balance between each of the working capital components. Business success heavily depends on the financial executives' ability to effectively manage receivables, inventory, and payables (Filbeck and Krueger, 2005). Firms can minimize the cost of financing and/or increase the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Most of the financial managers' time and

efforts are allocated towards bringing on-optimal levels of current assets and liabilities back to optimal levels (Lamberson, 1995).

The major benefits of holding adequate working capital include among others, keeping of the affluence of the firm or averting of its commercial indebtedness through continuing production, maintenance of credit by early payment to supplies of raw materials and others. Favorable opportunities can also be exploited, e.g., a firm may make off seasonal purchases resulting in significant savings or it can fetch big supply orders, availability of emergency capital on soft terms is ensured, regular payment of dividend can also be assured due to the availability of sufficient liquidity, productivity is enhanced by making expenditures on research, innovation and technical development and by maintaining incessant flow of materials, etc.

Also, Working capital management is essential because of its effects on the firms' risk and return, and consequently its value. Usually, the larger the firm's investment in liquid assets, the lower will be its risk and return alike. Referring to theory of risk and return, high-risk investment will result in high return. Therefore, firms with high liquidity of working capital may have low risk then low profitability. Inversely, a firm that has low liquidity of working capital, facing high risk results to high profitability. The central point here is that when managing working capital, the firm should carefully consider all the items in both accounts and try to balance the risk and return (Moradi *et al.*, 2012).

#### 2.1.3 Working Capital Policy

Deciding on the firm's basic policy decisions regarding the target levels for each category of current assets, how current assets will be financed, and is formulated by the finance management in order to manage and handle the firm's working capital efficiently refers to working capital policy (Brigham & Houston, 2003; Paramasivan & Subramanian, 2009). Working capital policy refers to the level of investment in current assets for safeguarding the targeted sales and growth. Ideally, a firm can implement different working capital management policies as *Aggressive* or *restricted* working capital policy, *Conservative* or *relaxed* working capital policy, and/or *Moderate* working capital policy based on its investment and financing strategies. These different practices affect the profitability, liquidity, risk, and finally the value of the firm in different ways. A firm may adopt an aggressive working capital management policy with a low level of current assets as a percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as a percentage of total liabilities. Excessive investment in short-term assets may have adverse effect on the firm's profitability, whereas paucity of current assets may lead to a lower level of liquidity and stock outs, resulting in difficulties in maintaining smooth operations (Van Horne & Wachowicz, 2004). More aggressive working capital policies are related to higher risk and return while conservative working capital policies are associated with lower risk and return (Gardner et al., 1986; Weinraub & Visscher, 1998). In restricted policy, the estimation of current assets for achieving targeted revenue is done very aggressively without considering for any contingencies and provisions for any unforeseen event. On the other hand, relaxed policy is just the reverse of restricted policy

in that assessment of liquid assets for realizing the targeted revenue is prepared after careful consideration of uncertain events such as seasonal fluctuations, sudden change in level of activities or sales etc.

#### **2.1.4 Measures of Working Capital**

There are two terms called gross working capital and net working capital that are also used commonly for measuring working capital level of a company. Working capital refers to its financial health and is computed by deducting current liabilities from current assets. If it is positive, it indicates that the company is in good financial health and can pay its short term debts by selling its current assets. If it is negative, the company cannot meet its debt liabilities even if it sells its current assets such as cash, accounts receivables and inventory. When working capital is in red, it is a signal that company's operational efficiency is going down or it is not generating enough sales and in the worst case scenario, negative working capital may result in bankruptcy for a company. As such, working capital is a good indicator for investors to invest or shy away from a company.

The two commonly known measures of working capital are net working capital and the gross working capital. The gross working capital is referred as working capital and it includes the total current assets of the firms, whereas net working capital is the excess of current assets over current liabilities. On the other hand, net working capital being the difference of current assets and current liabilities reflects operational efficiency and ability to generate more sales (Zubair and Mohmed (2013)

#### **2.1.5 Profitability and Liquidity Measures**

Profitability is the net result of a number of policies and decisions (Brigham & Daves, 2007). Profitability can be measured in many ways. Often these measures permit financial analysts to appraise the firm's profits with respect to a given level of sales, a certain level of assets, or the owners' investment. A firm could not attract outside capital without realizing adequate level of profit from its operation. Creditors, shareholders, and management give due consideration in increasing the earnings of the firm because of the great importance the market places on earnings (Gitman & Zutter, 2012). Among the measures, profitability ratio helps to measure the profitability position of the firm (Paramasivan & Subramanian, 2009) and go on to show the overall effects of liquidity, asset management, and debt on operating results. They also enable the investor measure how well a firm is managing its expenses. Profit margin ratios compare components of income with sales. They give the investor an idea of which factors make up a firm's income and are usually expressed as a portion of each dollar of sales (Fabozzi & Drake, 2009). Some of the measures of profitability include Return on Assets, Profit margin before income tax, Total asset turnover, Profit margin after income tax, Return on equity after income taxes, Return on equity before income taxes, etc. While measures of liquidity include Current ratio, Quick ratio, Net sales to working capital, Receivables turnover and Inventory turnover.

#### **2.2 Empirical Evidence**

The previous section presented the theories of Working Capital Management and other related topics. This section is devoted to review the empirical studies on Working Capital Management and its effect on Profitability. Daniel and Ambrose

(2013) analyzed the effect of working capital management on firm's profitability in Kenya for the period 2003 to 2012. They used, balanced panel data of five manufacturing and construction firms each of which were listed on the Nairobi Securities Exchange (NSE). Pearson's correlation and Ordinary Least Squares regression models were used to establish the relationship between working capital management and firm's profitability. They found a negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, while a positive association between profitability and number of days of inventory and number of day's payable. Moreover, the financial leverage, sales growth, current ratio and firm size also have significant effect on the firm's profitability. Similarly, using a sample of 88 American firms listed on New York Stock Exchange for a period of 3 years from 2005 to 2007, Amarjit Gill, et al. (2010) examined the relationship between working capital management and profitability. They found statistically significant relationship between the cash conversion cycle and profitability, measured through GOP. They concluded that managers can create profits for their firms by properly managing the cash conversion cycle and by keeping accounts receivables at an optimal level.

Using panel data methodology, Richard Kofi Akoto, et al. (2013) studied the relationship between working capital management practices and profitability of listed manufacturing firms in Ghana. They used secondary data collected from 13 listed manufacturing firms in Ghana covering the period from 2005-2009. They revealed a significantly negative relationship between profitability and accounts receivable days. However, the firms' cash conversion cycle, current asset ratio, size, and current asset turnover significantly and positively influence profitability. Hence, the authors suggested that managers can create value for their shareholders by creating incentives to reduce their accounts receivable to 30 days. It is further recommended that, enactments of local laws that protect indigenous firms and restrict the activities of importers are eminent to promote increase demand for locally manufactured goods both in the short and long runs in Ghana.

Abbasali P, et al. (2012) empirically tested the impact of working capital management on profitability and Market evaluation of the companies listed in Tehran Stock Exchange. They collected data from a sample of companies listed in Tehran Stock Exchange during the years 2006 to 2010. To measure firm's profitability, they used return on assets and return on invested capital ratios. To measure the market value of companies Tobin Q ratio was used; and variables of cash conversion cycle, current ratio, current assets to total assets ratio, current liabilities to total assets ratio and total debt to total assets ratio as working capital management Criteria. The results indicated that there is a significant relationship between the working capital management and profitability criteria of company but there is no significant relationship with the criterion of market value of company. The authors concluded that management can increase the profitability of firms by reducing the cash conversion cycle and total debts to total assets ratio.

On the other hand, Lyroudi and Lazaridis (2000) conducted a study on the cash conversion cycle and liquidity analysis of food industry in Greek using data from the major companies in the food and beverage industry of Greece, by

adopting regression and correlation analysis, as well as t-tests of two independent sample means, indicated that there is a significant positive relationship between the cash conversion cycle and the traditional liquidity measures of current and quick ratios. The cash conversion cycle was positively related to the return on assets and the net profit margin but had no linear relationship with the leverage ratios. On the other hand, the current and quick ratios had negative relationship with the debt to equity ratio, and a positive one with the times interest earned ratio. Finally, there was no difference between the liquidity ratios of large and small firms.

Sharma and Kumar (2011) examined the effect of working capital on profitability of Indian firms. They collected data about a sample of 263 non-financial BSE 500 firms listed at the Bombay Stock (BSE) from 2000 to 2008 and evaluated the data using OLS multiple regression. Hence, their findings were significantly departed from the various international studies conducted in different markets. The results revealed that working capital management and profitability is positively correlated in Indian companies. The study further revealed that inventory of number of days and number of days accounts payable is negatively correlated with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibited a positive relationship with corporate profitability.

Also, Adolphus J. Toby (2010) examined the association between working capital management policy and corporate profitability in Nigerian quoted companies. Based on the data of 107 quoted companies spread across 23 sectors for the 2003-2007 period, averages and product-moment correlation coefficients were computed based on measures of return on assets (ROA), net profit margin (NPM) and net current assets ratio (NCAR). The Love day Likelihood Test was adopted to establish the minimum value for the correlation to be most likely using sectoral data points. On the average all the sectors adopted an aggressive working capital management strategy by relying heavily on current liabilities for financing their working capital needs. Accordingly, the study identified that the adoption of this strategy produced negative profitability in most of the sectors. Also, the result showed strong positive correlation between NCAR and selected measures of profitability. Finally, the author suggested that companies would maximize profitability and add value by adopting the conservative working capital management strategy (i.e. investing more in current assets) as long as the operating environment and money markets are vigorous.

Kesseven Padachi (2006) examined the trends in working capital management and its impact on firms performance for a sample of 58 Mauritian Small Manufacturing Firms operating in five major industry groups (food and beverages, leather garments, paper products, prefabricated metal products and wood furniture) which were both registered and organized as proprietary/private companies. Using panel data analysis for the period 1998 – 2003, the association between working capital management and corporate profitability was examined. The trend in working capital needs and profitability of firms are examined to identify the causes for any significant differences between the industries. The return on total assets defined as profit before interest and tax divided by total assets was used as a measure of profitability. The efficiency ratios, namely inventory period, accounts payable period and accounts receivable period, were

used as measures of working capital. The Cash Conversion Cycle (CCC) was used as a comprehensive measure of working capital. To measure the extent of aggressive financing policy, the regressions were also included the ratio of current liabilities to total assets with a high ratio being relatively more aggressive. Sales a proxy for size (the natural logarithm of sales), the gearing ratio (financial debt/total assets), the gross working capital turnover ratio (sales/current assets) and the ratio of current assets to total assets were included as control variables in the regressions. Accordingly, the regressions result indicated that high investment in inventories and receivables is associated with lower profitability. An analysis of the liquidity, profitability and operational efficiency of the five industries showed significant changes and how best practices in the paper industry have contributed to performance. Also, the results discovered an increasing trend in the short-term component of working capital financing.

On the other hand, using a sample of Japanese and Taiwanese firms Wang (2002) found that a shorter cash conversion cycle would lead to a better firm's operating performance. Similarly, Teruel and Solano (2007) using samples of small to medium sized Spanish firms for the 1996-2002 periods revealed that firms can create value by reducing the days in inventory period and the debtors' collection period, thus leading to the reduction in the cash conversion cycle. Deloof (2003), Samiloglu & Demirgunes (2008) and Uyar (2009), in their respective Belgium, Japan and Turkey found that there exist inverse relationship between working capital management measured by the CCC and firms financial performance. The implication is that by adopting a working capital policy which results in low investment in inventories and account receivables and the highest value of account payables, management could maximize the firms' earnings. This has been reported earlier by Blinder and Maccini, 1991, that investing more in cash conversion cycle (conservative policy) could lead to improved profitability since retaining high inventory levels is expected to increase sales, reduce supply costs, reduce cost of possible interruption in production and protect against price fluctuations caused by macro and micro economic factors. A longer receivable collection period could reinforce the relationship with customers and hence may lead to an increase in sales revenue (Ng et al., 1999). Likewise, Gill et al. (2010), in their study of US firms identified a positive relation between CCC and firm profitability; however, they did find a highly significant negative relation between account receivables and firm profitability. They suggested that management can improve the earnings of the firm by maintaining the investment in working capital to a minimum level.

As can be observed from the foregoing empirical evidence, a lot of studies have been made on the subject of working capital management and its effect on firm profitability. However, majority of the studies were case study driven which results in contradicting and inconclusive outcomes regarding the effect of working capital management on firms' financial performance. Hence, the investigator s of the current study is highly motivated to extend the studies in Ethiopia, Addis Ababa market with reference to food complex manufacturing companies as there are no adequate studies on the subject.

### III. RESEARCH METHODOLOGY

#### 3.1 Research Design

The aim of this research is to investigate and analyze the relationship between working capital management & profitability of food complex manufacturing firms currently operating in around Addis Ababa, Ethiopia. The impact of working capital components, which are the days sales outstanding (DSO), Days inventory outstanding (DIO), Days payment outstanding (DPO) and cash conversion cycle (CCC), current ratio (CR) and quick asset ratio (QAR) on profitability of Food Complex Manufacturing Companies in Ethiopia, Addis Ababa, was analyzed. The research design, used is a pooled panel data analysis of cross-sectional and time series data. Moreover, explanatory research designs with quantitative approach through which cause and effect relationship of one dependent and one or more independent variables were employed.

#### 3.2 Sample Design and Sample Size Determination

The target population for this study was all Food Complex Manufacturing Companies currently operating in Addis Ababa. Thus, the sample comprises of Food Complex Manufacturing Companies operating in around Addis Ababa only. Specifically, the authors selected those firms meeting the following basic criteria (a) in the line of business for more than five years; (b) maintain book of records using Accepted Accounting Standards, and developed the habit of preparing financial statements annually and whose book of accounts are examined by independent Auditors. These criteria make the data more reliable and dependable. To obtain the required data, purposive sampling was applied to make the sample best fitted for the designed model. The study consist of ten (10) purposively selected food complex manufacturing firms from a population of fifty (50) companies operating at around Addis Ababa. List of manufacturing companies included in the sample were Kojj food complex manufacturing Co., Sarem food complex manufacturing Co., Helina enrich food Complex manufacturing Co., Astco food complex manufacturing Co., Simachew food complex manufacturing Co., Ahfa food complex manufacturing Co., Health care food Plc., Universal food complex manufacturing Co., Meshobia food complex manufacturing Co., and NAS Foods Plc.

#### 3.3 Data Source and Collection Methods

Data refers to known facts or things used as a basic for inferring. Data can be described either qualitative or

quantitative. In this study the authors used quantitative data to perform quantitative research so as to examine the phenomena by analyzing the numerical data, using mathematical based methods, particularly statistics. The quantitative data was secondary data collected from Annual Financial Statements of the sample firms for consecutive five years period from 2009 to 2013. The researchers considered five years as a study period, because of limited number of firms having an operating life of more than five years that can placate the basic criteria established above.

#### 3.4 Data Analysis Techniques

The authors applied three main data analysis techniques. Firstly, descriptive statistics was used to describe the sample data collected. This statistical technique helps to overview the sample characteristics. Secondly, Pearson correlation analysis was used to define whether working capital management is associated with firm profitability. Thirdly, regression analysis was employed to test the research hypotheses. Finally, the analysis is presented by using figures and tables.

#### 3.5 Variables Identification

##### 3.5.1 Independent Variables

To measure the working capital management efficiency of a company, the study used Account Receivable Collection period (ARCP/DSO), Inventory turnover day (ITD/DIO), and Account payable day (APD/DPO), Cash Conversion Cycle (CCC), current ratio (CR), quick asset ratio (QAR) as independent variables. These variables are considered as ratios that measures working capital management efficiency of firms.

##### 3.5.2 Dependent Variable

To measure the selected firms financial performance position ROA was selected as dependent variable. Return on Assets measures how efficiently the company uses its assets to realize profits. Return on assets = Net income before taxes ÷ Total assets

##### 3.5.3 Control Variables

Firm size, firm sales growth and the leverage ratio considered in this study as control variables because they all are inherent firms' characteristics which may also affect company operational profitability in addition to the effect of independent variables. Hence, firm Size is measured by natural logarithm of sales; Firm Sales Growth rate is measured by change in sales while debt ratio is computed by dividing total debt by total Assets.

**Table 1: Variables, Their Types, Abbreviations and Measurements**

| Variable  | Abbreviation | Type        | Measurement                              |
|---|--------------|-------------|--|
| Return on Assets  | RoA          | Dependent   | Net income before taxes ÷ Total assets   |
| Inventory Conversion Period<br>(Days Inventory Outstanding) | DIO          | Independent | Average Inventory X 365 / COGS           |
| Receivables Collection Period<br>(Days Sales Outstanding)   | DSO          | Independent | Accounts Receivables X 365/ Sales        |
| Payables Deferral Period<br>(Days Payment outstanding)      | DPO          | Independent | Total Purchases/Average Accounts Payable |
| Current Ratio   | CR           | Independent | Current Assets/Current Liabilities       |
| Quick Asset Ratio   | QAR          | Independent | Current Assets – Inventories/Current     |

|                       |         |             |   |
|-----------------------|---------|-------------|---|
|                       |         |             | Liabilities   |
| Cash Conversion Cycle | CCC     | Independent | DIO + DSO - DPO   |
| Firm Size             | LnSales | Control     | Natural Logarithm of Sales  |
| Debt Ratio            | DtR     | Control     | Total Debt / Total Assets   |
| Growth in Sales       | GiS     | Control     | This Year's Sales – Previous Year's Sales / Previous Year's Sales |

**3.5.4 Model Planning**

In the foregoing section, the authors described that ROA depend upon days sales outstanding (DSO), Days inventory outstanding (DIO), Days payables outstanding (DPO), cash conversion cycle (CCC), current ratio (CR) and quick asset ratio (QAR). After reviewing theoretical literature, the following best fitted multiple regression models were developed to measure the effect of working capital management on financial performance (profitability); this model was employed by most of the previous researchers.

$$ROA = f(DSO, DIO, DPO, CCC, CR, QAR) \dots \dots \dots \text{Equation}$$

When the least square model has been converted into specified variables as follows;

$$ROA = \beta_0 + \beta_1(ITD) + \beta_2(ARCP) + \beta_3(DPO) + \beta_4(CCC) + \beta_5(CR) + \beta_5(QAR) + \beta_5(FS) + \beta_5(FGR) + \beta_5(DR) + \varepsilon$$

**Where;**

- |          |   |               |                     |
|----------|---|---------------|---------------------|
| ROA      | = Return on Assets  | CR            | = Current ratio     |
| ARCP/DSO | = Account receivable collection period (Days sales outstanding) | QAR           | = Quick Asset ratio |
| ITD/DIO  | = Inventory turnover day (Days inventory outstanding)           | FS            | = Firm Size         |
| DPO      | = Days payables outstanding                                     | FGR           | = Firm growth rate  |
| CCC      | = Cash conversion cycle   | DR            | = Debt ratio        |
|          |   | $\varepsilon$ | = the error term    |
|          |   | $\beta$       | = Coefficients      |

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

- Inventory turnover day and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1 ITDi + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(DRi) + \varepsilon \dots \dots \dots (1)$
- Accounts Receivable Collection period and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1(ARPi) + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(DRi) + \varepsilon \dots \dots \dots (2)$
- Days payable Outstanding and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1(DPOi) + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(DRi) + \varepsilon \dots \dots \dots (3)$
- Cash Conversion Cycle and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1(CCCi) + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(DR) + \varepsilon \dots \dots \dots (4)$
- Current ratio and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1(CRi) + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(DRi) + \varepsilon \dots \dots \dots (5)$
- Quick Asset ratio and Profitability Measure (ROA):  
 $ROA_i = \beta_0 + \beta_1(ARPi) + \beta_2(FSi) + \beta_3(FGRi) + \beta_4(FLi) + \varepsilon \dots \dots \dots (6)$

**IV. DATA ANALYSIS AND FINDINGS**

In this part of the study, the panel data, which is prepared from the financial statements of sample firms, are analyzed using descriptive statistics, correlation analysis and linear regression analysis.

4.1 Descriptive Statistics

Table 2: Descriptive Statistics

|      | N  | Minimum | Maximum | Mean  | Std. Deviation |
|------|----|---------|---------|-------|----------------|
| ITD  | 50 | 12.84   | 664.29  | 129.8 | 114.15         |
| ARCP | 50 | 8.91    | 330.65  | 74.57 | 74.32          |
| APD  | 50 | 25.16   | 892.05  | 172   | 177.24         |
| CCC  | 50 | -224.11 | 271.45  | 32.34 | 94.94          |
| CR   | 50 | 0.54    | 7.34    | 1.89  | 1.37           |
| QAR  | 50 | 0.06    | 5.64    | 0.86  | 0.88           |
| DR   | 50 | 0.10    | 0.92    | 0.54  | 0.20           |
| FGR  | 50 | -0.68   | 3.98    | 0.34  | 0.92           |
| FS   | 50 | 3.32    | 5.39    | 4.71  | 0.43           |
| ROA  | 50 | -0.13   | 0.40    | 0.17  | 0.12           |

Source: SPSS Output from Financial Statements of Sample Firms, 2009-2013

Table 2 above shows some of selected descriptive statistics of the sample firms including the mean, standard deviations, minimum and maximum values of study variables for the study period. The research has used a total of 10 variables for the analysis purpose and the total 10 variables were broadly classified in to three categories, that is, 6 independent variables, 1 dependent variable and 3 control variables. Out of the 6 independent variables, 4 are proxies for working capital management measures of the sample firms, while the rest two independent variables are used to measure liquidity. Three variables are considered as control variables, which are firm size as measured by the natural logarithm of sales, firm growth rate measured by the relative change in sales as compared to previous year and leverage of the firms.

The mean value of return on asset is 0.17 percent and it deviates 0.13 percent to the left and right side of the mean value. This indicates that the data points are very close to the mean. Its minimum value is -0.13 percent while its maximum value is 0.4 percent. This suggests that the profitability position of the food complex manufacturing business in Addis Ababa is not found satisfactory.

The average current ratio for the sampled food Manufacturing Private Limited Companies is 1.89, which is almost approached to the preferred current ratio (as a rule of thumb it is good for the firm to have current ratio of 2). The standard deviation is 1.37. The standard deviation shows little variability in current ratio among the sampled companies. The minimum and the maximum values of current ratio is 0.54 and 7.34 respectively. The table further depicts, the mean value of Quick asset ratio is 0.87, which is slightly less than the standard quick ratio of 1 (as a rule of thumb the preferred quick ratio is 1). The value of quick asset ratio can vary to both sides of the mean value by 0.89. The minimum and the maximum value of quick ratio is 0.06 and 5.64 respectively.

Similarly, descriptive statistics for the three measures of efficiency of working capital management, namely, accounts receivable collection period, inventory turnover period and accounts payable period was computed. Accounts receivable collection period, a measurement for collection policy of the

firm, is averaged to 75 days for the sampled firms. This indicates that, firms in the sample wait 75 days on average to collect cash from credit sales. The Account receivable period shows the sampled firms wait a minimum of 8 days and a maximum of 330 days to collect credit sales and deviates by 73.81 days to both sides of the mean value. The variance shows the existence of large difference in accounts receivable period among the sampled firms.

The average value of Inventory turnover period as a proxy for inventory policy is 130 days. This means, firms in the sample needs on average 130 days to sell inventory. As it is shown in the above table, the standard deviation of inventory holding period is 114 days. To the sampled firms the inventory holding period ranges between 12 and 664 days as minimum and maximum values respectively. The maximum value of 664 days to convert inventory into sales is a very long period. The average value of Accounts payable period as a proxy for payment policy is 172 days. The standard deviation of account payable period for the sample firms is 177 days. The period ranges between 25 days and 892 days. The minimum value of account payable period, 25 days, indicates that the firm needs 25 days to effect payment of credit purchases.

Average cash conversion cycle, one of the comprehensive measures of working capital, days for the sampled firm is 30 days and the standard deviation is 96 days. The minimum value of -224 days shows that a firm records a large inventory turn-over and/or cash collections from credit sales before making a single payment for credit purchases. It means that the accounts receivable period and/or the inventory holding period are very short and/or the accounts payable period of the firm is very long. On the other hand, the maximum time for cash conversion period of 271 days is considered a very long period.

In addition, the above table includes the descriptive statistics of control variables that was used in the study. The first control variable, firm size, as measured by the natural logarithm of annual sales, is averaged to 4.72 for the sampled firms and it can deviate to both sides of the mean value by 0.43. The minimum and maximum values of the firm size measured by the natural logarithm of the firm's annual seals are 3.32 and 5.79

respectively. The second control variable, firm growth rate average value is 34 percent, as measured by changes in annual sales. This indicates that there was moderate sales growth rate among the sampled firms. However, there is a deviation of 92 percent, from mean value of sales growth to both directions. The minimum and maximum sales growth among the sampled firms is -68 percent and 398 percent respectively. The third control variable, financial leverage is 54 percent on average and vary by 20 percent to both sides of the mean value. The minimum and maximum values of financial leverage are 10 percent and 92 percent respectively.

**4.2 Correlation Analysis on Working Capital Management and Profitability**

Pearson correlation coefficient is the most common tool to measure the relationship between two variables. It measures the linear dependence between two variables. The coefficient is a value between +1 and -1 inclusive. A value of 1 implies that a linear equation describes the relationship between the two variables perfectly, i.e. the first variable increases in the same

proportion as the second one. A value of -1 implies that all data points lies on a line for which if the first variables increases the second have a perfectly proportional decrease. A value of 0 implies that there is no linear correlation between the variables. The other values are a mean term between these results. E.g. a coefficient of 0.4 means that there is a positive but not perfect relationship between the variables, a coefficient of 0.8 means the same thing however a 0.8 means a stronger relationship than a 0.4 coefficient. The interpretation of the correlation result is subjective. An important aspect to be considered is that the Pearson correlation coefficient presupposes that the variables are normally distributed. So in order to verify if this is valid for the studied sample test for normality was made for each of the variables.

**4.2.1 Correlation Analysis of ARCP/DSO and ROA**

Correlation Analysis has been performed to examine the relationship between Account receivable collection period and profitability and the result is shown in the following table.

**Table 3: Correlation Analysis of ARCP/DSO and ROA**

|      |                     | ROA     | ARCP   | APD    | CCC     |
|------|---------------------|---------|--------|--------|---------|
| ROA  | Pearson Correlation | 1       | -.311* | -.274  | -.566** |
|      | Sig. (2-tailed)     |         | .028   | .054   | .000    |
|      | N                   | 50      | 50     | 50     | 50      |
| ARCP | Pearson Correlation | -.311*  | 1      | .664** | .669**  |
|      | Sig. (2-tailed)     | .028    |        | .000   | .000    |
|      | N                   | 50      | 50     | 50     | 50      |
| APD  | Pearson Correlation | -.274   | .664** | 1      | .691**  |
|      | Sig. (2-tailed)     | .054    | .000   |        | .000    |
|      | N                   | 50      | 50     | 50     | 50      |
| CCC  | Pearson Correlation | -.566** | .669** | .691** | 1       |
|      | Sig. (2-tailed)     | .000    | .000   | .000   |         |
|      | N                   | 50      | 50     | 50     | 50      |

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

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

**Source:** SPSS Output from Financial Statements of Sample Firms, 2009 - 2013

Results from the Pearson correlation analysis reveal that ROA has a significant negative relationship with receivable collection day. This would suggest that better returns may be associated with fast collection of receivables and undue length of receivable days negatively affect ROA. However, such an assumption further investigated in this study by using linear regression analysis to confirm any economic impact of Account Receivables collection days on return on assets.

In the previous chapter of this study, it was hypostasized that, there is strong negative correlation between accounts receivable period and profitability as measured by return on asset. In line with the research hypothesis, the above correlation Table showed strong negative correlation coefficient between accounts receivable period and profitability measured by return on asset. From the table, the correlation coefficient of accounts receivable period with return on assets is -0.311 and significant

at the 0.05 level. It indicates that the shorter account receivable period is strongly linked with high profitability and/or longer accounts receivable period is associated with lower profitability.

**4.2.2. Correlation Analysis of APD/DPO and ROA**

Table 3 also shows the correlation between Account payable days and profitability measured by return on asset. The result showed that ROA has a negative correlation with Account payable days. In the first chapter of this study, it was hypothesized that there is a strong positive relationship between accounts payable period and profitability as measured by return on assets. In contrary with the research hypothesis, the above correlation matrix indicates negative relationship between account payable period and profitability measure. Account payable period has correlation coefficients of -0.27 with return on assets and the relationship is not found significant. However, the prevailed negative relationship between accounts payable period and profitability goes with the view that less profitable firms wait longer to pay their bills.

**4.2.3. Correlation Analysis of CCC and ROA**

Pearson correlation analysis between CCC and ROA is also processed in the above table. The result suggested that ROA

has a significant negative correlation with CCC. This means that better returns may be associated with shortest CCC and lengthy CCC negatively affects ROA. However, such a conclusion further investigated in this study by using linear regression analysis to confirm any economic impact of CCC on return on assets.

In the previous chapter of this study, it was hypostasized that, there is strong negative correlation between CCC and profitability as measured by return on asset. In line with the research hypothesis, the above correlation Table showed strong negative correlation coefficient between CCC and profitability measured by return on asset. From the table, the correlation coefficient of CCC with return on assets is -0.566 and significant at the 0.01 level. It indicates that the shorter the CCC is highly associated with higher profitability and/or longer the CCC is highly associated with lower profitability.

**1.2.4. Correlation Analysis of ITD/DIO and ROA**

Pearson correlation analysis between inventory conversion period and profitability as measured by ROA has been computed and the result is summarized in the following table:-

**Table 4: Correlation Analysis of ITD/DIO and ROA**

|   |                     | ROA     | ITD     | DR    | FGR   | FS      |
|---|---------------------|---------|---------|-------|-------|---------|
| ROA   | Pearson Correlation | 1       | -.530** | .322* | .127  | .274    |
|   | Sig. (2-tailed)     |         | .000    | .023  | .380  | .054    |
|   | N                   | 50      | 50      | 50    | 50    | 50      |
| ITD   | Pearson Correlation | -.530** | 1       | .098  | -.122 | -.490** |
|   | Sig. (2-tailed)     | .000    |         | .497  | .397  | .000    |
|   | N                   | 50      | 50      | 50    | 50    | 50      |
| DR  | Pearson Correlation | .322*   | .098    | 1     | -.136 | .142    |
|   | Sig. (2-tailed)     | .023    | .497    |       | .347  | .324    |
|   | N                   | 50      | 50      | 50    | 50    | 50      |
| FGR   | Pearson Correlation | .127    | -.122   | -.136 | 1     | -.135   |
|   | Sig. (2-tailed)     | .380    | .397    | .347  |       | .349    |
|   | N                   | 50      | 50      | 50    | 50    | 50      |
| FS  | Pearson Correlation | .274    | -.490** | .142  | -.135 | 1       |
|   | Sig. (2-tailed)     | .054    | .000    | .324  | .349  |         |
|   | N                   | 50      | 50      | 50    | 50    | 50      |
| <b>**.</b> Correlation is significant at the 0.01 level (2-tailed). |                     |         |         |       |       |         |
| <b>*.</b> Correlation is significant at the 0.05 level (2-tailed).  |                     |         |         |       |       |         |

Source: SPSS Output from Financial Statements of Sample Firms, 2009-2013

Results from the correlation analysis revealed that ROA has a significant negative correlation with inventory turnover day. This would suggest that better returns may be associated with fast production and selling activities. However, the result further investigated in this study by using linear regression analysis to confirm any economic impact of inventory turnover days on return on assets.

In the first chapter of this study, it was hypothesized that there is strong negative correlation between inventory turnover days and profitability as measured by return on asset. In line with the research hypothesis, the above correlation Table shows strong negative correlation coefficient between inventory turnover day and return on asset. From the table, the correlation coefficient of inventory turnover days with return on assets is -

0.53 percent and significant at the 0.01 level. It indicates that the shorter the inventory turnover day is strongly associated with high profitability and/or longer inventory turnover days is associated with lower profitability.

**4.2.5. Correlation of Control Variables with ROA**

In addition, as it can be clearly reflected in Table 4 there is a positive correlation coefficient between firm size and profitability as measured by return on assets. The Pearson coefficient of 0.27 means firm size has weak positive relationship with return on assets. Moreover, the above correlation table

showed that firm growth rate is also weakly and positively related with Return on asset with a correlation coefficient of 0.12. On the other hand, financial leverage has strongly and positively correlations with return on assets with a correlation coefficient of 0.322.

**4.2.6. Correlation Analysis of CA, QAR and ROA**

Pearson between liquidity measures (Current assets ratio and quick asset ratio) and profitability as measured by ROA has been performed and the result is summarized in the following table

**Table 5: Correlation analysis of CA, QAR and ROA**

|     |                     | <b>ROA</b> | <b>CR</b> | <b>QAR</b> |
|-----|---------------------|------------|-----------|------------|
| ROA | Pearson Correlation | 1          | -.237     | -.071      |
|     | Sig. (2-tailed)     |            | .097      | .624       |
|     | N                   | 50         | 50        | 50         |
| CR  | Pearson Correlation | -.237      | 1         | .820**     |
|     | Sig. (2-tailed)     | .097       |           | .000       |
|     | N                   | 50         | 50        | 50         |
| QAR | Pearson Correlation | -.071      | .820**    | 1          |
|     | Sig. (2-tailed)     | .624       | .000      |            |
|     | N                   | 50         | 50        | 50         |

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

**Source:** SPSS Output from Financial Statements of Sample Firms, 2009-2013

In finance theories there is a trade-off between profitability and liquidity. In line with this theoretical framework, it was hypothesized that there is a strong negative relationship between profitability measures and the traditional measures of liquidity. However, the above table showed that, there is negative relationship between liquidity, as measured by both current ratio and quick assets ratio, and the profitability measures but the correlation is not found significant. As indicated in the above table the correlation coefficients for current ratio and quick asset ratio with return on assets are -0.237 and -0.071 respectively.

Although, the pair wise correlations give evidence for relationship between two variables; it says nothing about cause and effect relationships between the variables. So that, from the results of correlation analysis, it is difficult to say that shorter accounts receivable period leads to higher profitability or shorter inventory turnover period is a result of the higher profitability. Likewise, it is difficult to interpret the CCC and profitability variables by stating that a higher profit is the result of shorter CCC or lower profit is the result of longer CCC.

The limitation of correlation analysis is it shows the coefficient and the direction of relationship (weather it is positive or negative) between two variables. Another additional shortcoming of correlation analysis is that, it does not provide reliable indicators or coefficients of association in a manner which control for additional explanatory variables. This means care must be exercised when interpreting the pair wise correlation coefficients. In examining effect of some variables on the other variables, additional analysis will be carried out using

linear regression analysis so as to overcome the problems of correlation analysis.

**4.3. Regression Analysis of WCM and ROA**

To further investigate the relationship between working capital management and firm’s profitability and also to analyze the impact of independent variables on firms profitability measured by return on assets multiple regression model were carried out. Moreover, two additional regressions analysis were done to examine the relationship between firm’s profitability measure (return on asset) and the traditional measures of liquidity (current asset and quick asset).

Before running each of the following regression models, the basic eight assumptions of multiple Regression Models (MRM) has been tested. The first assumption says dependent variable should be measured on a continuous scale. The second assumption says there must be two or more independent variables which can be either continuous and/or categorized. The third assumption is about the independence of observation and independence of residuals. The forth assumption says there need to be a linear relationship between the dependent variable and each of the independent variables and the dependent variable and the independent variable collectively. The fifth assumption says the data need to show homoscedestically. The sixth assumption says the data must not be multi co-linearity. The seventh assumption says there should be no significant outlier. Finally, the last assumption said that the residual error appropriately normally distributed.

**4.3.1. Regression Analysis of ITD and ROA**

Regression analysis has been performed to analyze the effect of inventory turnover day on return on assets and the result

is shown in the following table. The data were tested for all the MRM assumptions and the result is shown in the appendix.

**Table 6: Regression analysis of ITD and ROA**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .661 <sup>a</sup> | .437     | .387              | .10008                     |

a. Predictors: (Constant), FS, FGR, DR, ITD

**ANOVA**

| Model        | Sum of Squares | Df | Mean Square | F     | Sig.              |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | .350           | 4  | .088        | 8.738 | .000 <sup>a</sup> |
| Residual     | .451           | 45 | .010        |       |                   |
| Total        | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, FGR, DR, ITD

b. Dependent Variable: ROA

**Coefficients**

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|--------------|-----------------------------|------------|---------------------------|--------|------|
|              | B                           | Std. Error | Beta                      |        |      |
| 1 (Constant) | .535                        | .322       |                           | 1.663  | .103 |
| ITD          | -.123                       | .028       | -.585                     | -4.380 | .000 |
| DR           | .251                        | .072       | .402                      | 3.474  | .001 |
| FGR          | .014                        | .016       | .102                      | .882   | .382 |
| FS           | -.167                       | .401       | -.056                     | -.417  | .678 |

a. dependent variable ROA

From the model summary table, we have seen that the coefficient of determination value is 0.437, which indicates 43.7% of the variability in the return on assets is well explained by the changes in the independent variables used in the model. However, the remaining 56.3 percent change in the return on asset is caused by other factors that are not included in the models. Moreover, the overall significance of the model, when measured by F statistics of 8.738 with P-values of 0.000 on the ANOVA table, indicate that the model is well fitted at 1 percent significance level. The result of the regression analysis in the above table indicates that inventory turnover day has a significant negative impact on profitability. The t-significant value of -4 and 0.000 indicates that the impact of inventory turnover days on ROA is very strong and significant. This finding is in line with the hypothesis that there is strong negative relationship between inventory turnover day and profitability of firms. This means that inventory turnover period significantly and negatively affect return on asset. That is, as the inventory

turnover period increases, profitability will decrease in the food complex manufacturing firms operated in around Addis Ababa and vice versa. 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. This result is similar with the previous study of Tiringo Dinku (2013), Sharma and Kumar (2011), Ponsian N.et.al. (2014) Shin and Soenen (1998), Lazaridis & Tryfonidis (2006), Raheman and Nasr (2007), Teruel and Solano (2007) while, it is contrary to the prior study findings of Daniel M. and Ambrose J. (2013), Shahid Ali (2011) and Mathuva (2010).

**4.3.2. Regression Analysis of ARCP and ROA**

Regression analysis has been done to analyze the effect of receivable collection day on return on assets and the result is shown in the following table. The data is tested for all assumption of multiple regression models.

**Table 7: Regression analysis of ARCP and ROA**

**Model Summary**

| Model R           | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------------------|----------|-------------------|----------------------------|
| .469 <sup>a</sup> | .220     | .151              | .11781                     |

a. Predictors: (Constant), FS, FGR, DR, ARCP

**ANOVA**

| Model        | Sum of Squares | Df | Mean Square | F     | Sig.              |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | .176           | 4  | .044        | 3.174 | .022 <sup>a</sup> |
| Residual     | .625           | 45 | .014        |       |                   |
| Total        | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, FGR, DR, ARCP

b. Dependent Variable: ROA

**Coefficients**

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|--------------|-----------------------------|------------|---------------------------|--------|------|
|              | B                           | Std. Error | Beta                      |        |      |
| 1 (Constant) | -.082                       | .425       |                           | -.193  | .848 |
| ARCP         | -.126                       | .110       | -.182                     | -1.148 | .257 |
| DR           | .192                        | .084       | .307                      | 2.288  | .027 |
| FGR          | .018                        | .020       | .133                      | .901   | .373 |
| FS           | .520                        | .453       | .174                      | 1.147  | .257 |

a. Dependent Variable: ROA

The coefficient of determination in the model summary is 0.22. This suggests that 22 percent of variability in the return on assets is explained by the changes in the independent variable used in the model. Moreover, the overall significance of the model in the ANOVA table, when measured by their respective F statistics of 3.08 with P-values of 0.022, indicate that the model is well fitted at 5 percent significance level. The result of the regression analysis in the above table indicates that receivable collection day negatively related to profitability but it is not significant as the t-significant value is less than 2. This result is not 100% in line with the hypothesis that there is strong negative relationship between receivable collection day and profitability of firms. However, receivable collection day negatively affects return on asset but not significantly. This implies that managers to some extent can increase return on assets by reducing receivable collection day. As Mathuva (2010) explained that the sooner customers make payment, the more cash the companies get to reinvest in inventory, consequently they get higher sales

which leads to higher profit. This result is consistent with the prior study findings of Gamze V. et.al (2012), Daniel M. and Ambrose J. PhD (2013), Tirngo Dinku (2013), Shahid Ali (2011), Sharma and Kumar (2011), Ponsian N.et.al. (2014), Shin & Soenen (1998), Lazaridis & Tryfonidis (2006), Raheman & Nasr (2007). However, positive relationship between account receivable collection period and earnings before interest tax did found by Ramachandran, A & Janakiraman, M (2009) as explained in the literature review of the study of N.Venkata Ramanan (2013). In addition, contradicting evidence found by Sharma and Kumar (2011), who found positive relation between ROA and accounts receivables.

**4.3.3. Regression Analysis of DPO and ROA**

In the same fashion, regression analysis has been computed to investigate the effect of account payable period on returns on assets. The data is tested for all the assumption of multiple regression models.

**Table 8: Regression Analysis of DPO and ROA**

**Model Summary**

| Model | R                 | R Squared | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|-----------|-------------------|----------------------------|
| 1     | .570 <sup>a</sup> | .324      | .264              | .10964                     |

a. Predictors: (Constant), FS, FGR, DR, APD

**ANOVA<sup>b</sup>**

| Model        | Sum of Squares | df | Mean Square | F     | Sig.              |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | .260           | 4  | .065        | 5.403 | .001 <sup>a</sup> |
| Residual     | .541           | 45 | .012        |       |                   |
| Total        | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, FGR, DR, APD

b. Dependent Variable: ROA

**Coefficients**

| Model |            | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
|       |            | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant) | .488                        | .410       |                           | 1.190  | .240 |
|       | APD        | -.311                       | .107       | .473                      | -2.911 | .006 |
|       | DR         | .336                        | .092       | .537                      | 3.666  | .001 |
|       | FGR        | .014                        | .018       | .103                      | .800   | .428 |
|       | FS         | .095                        | .438       | .032                      | .216   | .830 |

a. Dependent Variable: ROA

The value of R squared, which is the coefficient of determination, in the model summary table is 0.324. This indicates that 32.4 percent of the changes in return on asset are explained by the variables used in the model. On the other hand, the remaining 67.6 percent change in return on assets is caused by other factors that are not included in the model. The overall significance of the model in the ANOVA table when measured by F statistics of 5.403 with P-values of 0.0000 suggests that the model is well fitted at the 1 percent significance level. The above table further manifest that Accounts payable period has a significant negative impact on firm's profitability as measured by return on assets at the 1 percent significance level. A negative relationship of ROA and the accounts payables deferral period, contradicts the notion that the longer a firm delays its payments, the higher the 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. To the contrary of the hypothesis, the regression analysis showed that there is strong negative relationship between accounts payable and profitability of firms. A negative significant

relationship between accounts payable period and profitability can be explained by the benefits of early payment discounts. Such findings were also supported by Tenda i Zawaira; Shahid Ali (2011), Shin and Soenen (1998), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007). Nevertheless, some studies have found that firm profitability is significantly and positively related to days payable outstanding. Such studies include Daniel M. and Ambrose J. PhD (2013) Tirngo Dinku (2013) Sharma and Kumar (2011) Ponsian N .et al. (2014), Mathuva (2010).

**4.3.4. Regression Analysis of CCC and ROA**

Regression analysis has been run to analyze the effect of CCC, the comprehensive measures of working capital management, on the return on assets. Tests for the assumptions of MRM have been done. Table 7 below; present the result of the regressions analysis of cash conversion cycle and firms profitability. As it is clearly shown in the table cash conversion cycle has significant negative relationship with return on assets at the 1 percent significance level.

**Table 9: Regression Analysis of CCC and ROA**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .642 <sup>a</sup> | .412     | .360              | .10225                     |

a. Predictors: (Constant), FS, FGR, DR, CCC

**ANOVA**

| Model        | Sum of Squares | Df | Mean Square | F     | Sig.              |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | .330           | 4  | .083        | 7.898 | .000 <sup>a</sup> |
| Residual     | .471           | 45 | .010        |       |                   |
| Total        | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, FGR, DR, CCC

b. Dependent Variable: ROA

**Coefficients**

| Model |            | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
|       |            | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant) | .543                        | .339       |                           | 1.601  | .116 |
|       | CCC        | -.125                       | .031       | -.564                     | -4.060 | .000 |
|       | DR         | .192                        | .073       | .307                      | 2.639  | .011 |
|       | FGR        | .010                        | .017       | .071                      | .587   | .560 |
|       | FS         | -.155                       | .414       | -.052                     | -.375  | .710 |

a. Dependent Variable: ROA

The value of R squared in the model summary table is 0.412. This indicates that 41.2 percent of the changes in return on asset are explained by the variables used in the model. On the other hand, the remaining 58.8 percent change in return on assets is caused by other factors that are not included in the model. The overall significance of the model when measured by F statistics of 7.898 with P-values of 0.0000 in the ANOVA table, suggests that the model is well fitted at the 1 percent significance level. The value of standardized and un-standardized coefficient in the table indicates that CCC has significant negative impact on the profitability of the firm as measured by ROA. This means as the CCC increase, profitability will decrease and vice versa. This result is in agreement with the hypothesis which was explained in the previous chapter, that there is a significant negative relationship between cash conversion cycle and profitability of firms. This confirms the notion that a decrease in the cash conversion cycle will produce more profits for a firm. This relationship has been confirmed in a number of studies, including Daniel M. and Ambrose J. (2013); Gamze V. et al. (2012) Tirngo Dinku (2013) Raheman and Nasr (2007) Shin and Soenen (1998), Lazaridis and Tryfonidis (2006); Raheman and Nasr (2007), Deloof (2003), Uyar (2009), Samiloglu and Demirgunes (2008). Contrary to this finding Richard K. et al. (2013); Lyroudi and Lazaridis (2000); Shahid Ali, Sharma and Kumar (2011) Ponsian N. et al. (2014); Ng et al. (1999); Gill et al. (2010) found positive relationship between CCC and profitable.

**4.3.5. Regression Analysis of CR and ROA**

To analyze effect of current ratio on return on assets, regressions analysis has been performed. The model was tested for the assumptions of MRM. While testing the assumptions, multi co linearity problem were identified as the two independent variables (current ratio and quick asset ratio) are perfectly correlated with each other. However, variable inflation factor in excess of 5 is considered as an indication of harmful multi co linearity for a sample of 50 or less observation (Zikmund et al., 2010). In this particular study, all the VIF are much less than 5 and treated as the multi co linearity effect is not harmful. See Table 9.

The result of the regression analysis can therefore be interpreted with a greater degree of confidence. The Durbin Watson statistics was also used to test for the auto correlation. The Durbin Watson value of 1.4 indicates that the data has no serial correlation or auto correlation.

The value of R square in the model summary is 0.20, which means that 20% of the variation in dependent variables (ROA) is explained by variation in the independent value. Table 9 shows that current ratio has no significant impact on the profitability of the firm as measured by ROA. Current ratio coefficient is positive but very small and it means that if the current assets are growing or current liabilities are decreasing than the ratio is growing and then ROA is slightly growing, too.

This result is consistent with the previous study of Hina Agha (2014); Amit et al. (2005), as explained in the literature review of the study of Ehiedu, Victor Chukwunweike (2014); Richard K. et al (2013); Lyroudi and Lazaridis (2000) and J. Aloy Niresh (2012). Conversely, strong negative relationship between ROA

and liquidity ratio did found by Qasim Saleem and Ramiz Ur Rehman (2011). In another hand significant positive correlation between current ratio and profitability did found by Ehiedu, Victor Chukwunweike (2014).

**Table 10:Regression Analysis of CR and ROA**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------------------|----------|-------------------|----------------------------|---------------|
| 1     | .447 <sup>a</sup> | .200     | .129              | .11933                     | 1.428         |

a. Predictors: (Constant), FS, FGR, CR, DR

b. Dependent Variable: ROA

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

| Model        | Unstandardized Coefficients |            | Standardized Coefficients |        | Sig. | Collinearity Statistics |       |
|--------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|-------|
|              | B                           | Std. Error | Beta                      | T      |      | Tolerance               | VIF   |
| 1 (Constant) | -.498                       | .289       |                           | -1.727 | .091 |                         |       |
| CR           | .037                        | .097       | .081                      | .384   | .702 | .398                    | 2.510 |
| DR           | .235                        | .133       | .376                      | 1.774  | .083 | .396                    | 2.524 |
| FGR          | .029                        | .019       | .208                      | 1.529  | .133 | .963                    | 1.038 |
| FS           | .781                        | .406       | .262                      | 1.921  | .061 | .958                    | 1.044 |

a. Dependent Variable: ROA

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | Df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | .160           | 4  | .040        | 2.809 | .036 <sup>a</sup> |
|       | Residual   | .641           | 45 | .014        |       |                   |
|       | Total      | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, FGR, CR, DR

b. Dependent Variable: ROA

**4.3.6. Regression Analysis of QAR and ROA**

To analyze the effect of quick assets ratio on return on assets, regression analysis has been carried out. In the same fashion, the fulfillment of all the assumption of LRM was checked and found multi co linearity problem as the two independent variables (current ratio and quick asset ratio) are perfectly correlated with each other. However, in this particular study, all the VIF are less than 5 and it is assumed that the multi co linearity effect is not harmful. The result of the regression analysis can therefore be interpreted with a greater degree of confidence. The Durbin Watson statistics was also used to test for the auto correlation. The Durbin Watson value of 1.3

indicates that the data has no serial correlation or auto correlation.

The value of R square in this model is 0.19, which indicates that 19 percent of the variation in the value of the return on asset is explained by the model. This figure is also confirmed by the analysis of variance table. The results of the regression table suggest that quick asset ratio has no significant impact on return on asset as the t significant value is less than 2. This result is similar with the previous study of, Ehiedu, Victor Chukwunweike (2014), Ehieu, Victor Chukwunweike (2014) and Amit et al. (2005). Conversely, strong negative relationship between ROA and liquidity ratio did found by Qasim Saleem and Ramiz Ur Rehman (2011).

**Table 11: Regression Analysis of QAR and ROA**

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------------------|----------|-------------------|----------------------------|---------------|
| 1     | .506 <sup>a</sup> | .256     | .190              | .11503                     | 1.383         |

a. Predictors: (Constant), FS, QAR, FGR, DR

b. Dependent Variable: ROA

**ANOVA<sup>b</sup>**

| Model        | Sum of Squares | Df | Mean Square | F     | Sig.              |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | .205           | 4  | .051        | 3.881 | .009 <sup>a</sup> |
| Residual     | .595           | 45 | .013        |       |                   |
| Total        | .801           | 49 |             |       |                   |

a. Predictors: (Constant), FS, QAR, FGR, DR

b. Dependent Variable: ROA

**Coefficients**

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig. | Collinearity Statistics |       |
|--------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|-------|
|              | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF   |
| 1 (Constant) | -.546                       | .265       |                           | -2.058 | .045 |                         |       |
| QAR          | .112                        | .059       | .341                      | 1.894  | .065 | .509                    | 1.965 |
| DR           | .346                        | .114       | .552                      | 3.039  | .004 | .501                    | 1.997 |
| FGR          | .031                        | .018       | .225                      | 1.716  | .093 | .961                    | 1.041 |
| FS           | .810                        | .391       | .272                      | 2.073  | .044 | .963                    | 1.039 |

a. Dependent Variable: ROA

**V. CONCLUSIONS AND RECCOMENDATIONS**

**5.1. Conclusions**

This paper examined the impact of working capital management on profitability of 10 food complex manufacturing companies operating in and around Addis Ababa from 2009 to 2013. The results provided evidence that the Cash Conversion Cycle, as a measure of working capital management, negatively affects Return on Assets. A negative relationship between the Receivables Collection Period, strong negative relation of Inventory Conversion Period, Payment Deferral Period and profitability was also found. This indicates that companies can increase their profitability by shortening receivables, inventory and payables periods. This finding is in line with many previous studies, namely with those of Raheman and Nasr (2007) and Deloof (2003).

In general, the results from the analysis suggest that food complex manufacturing companies can rethink their corporate financial management in order to boost their growth and subsequently the creation of value for shareholders. Such companies can direct their efforts towards their own resources and circumvent certain financial problems. By optimizing the

time span during which working capital is tied up the company can improve profitability. Moreover, working capital management facilitates other forms of financing because those financiers who focus on balance sheet structures are interested to invest on companies with solid financial positions. Concerning the relationship between company current asset ratio and quick asset ratio on profitability as measured by return on assets, there is no significant effect of increasing or decreasing the current ratio and quick asset ratio on profitability. Therefore, the results of the research indicate that through proper working capital management, the company can increase its profitability.

**5.2 Recommendations**

- Managers of food complex manufacturing companies in Addis Ababa should continuously monitor their inventory levels with a view to reducing the number of days inventory are held in store before they are sold. This will not only enhance their profitability positions but also maximize returns to shareholders and firm value in general.
- Before struggling to secure funds from the traditional sources of finance such as banks and other lending institutions, companies should consider effective

working capital management as an inward option for source of financing

- Effective working capital management can attract financing channels because creditors, who look at and appraise the structure of balance sheet to make financing decision, will further invest in financially healthy companies.
- The policy implications of this finding is that financial managers of food complex manufacturing companies can improve the company's performance by reducing cash conversion cycle. Moreover, reducing inventory period, payable period and receivable period will enhance company's profitability and consequently bring positive effect on the firm financial position. Hence, they should develop and implement effective, interrelated and coordinated CCC management strategy, Inventory management strategy, Account receivable management strategy and Account payable management strategy.
- In addition, the inventory management strategy of the company should focus on avoidance of over stocking of inventory resulting efficient outcome of investment. It has to make sure certain standards and levels which will stop pilling up of inventory. Moreover, the companies should engage in developing dependable and strong relationship with suppliers through quick settlement of outstanding liabilities

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