

The impact of working capital management on firm`s performance (A Case Study on Endowment Fund for Rehabilitation of Tigray (E.F.F.O.R.T) Manufacturing Companies)

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Abstract

Management of working capital refers to management of current assets and current liabilities. Firms may have an optimal level of working capital that maximizes their value. Prior evidence has determined the relationship between working capital and performance. Thus, this study examined the impact of working capital management on corporate performance by using audited financial statements of a sample of 9 E.F.F.O.R.T manufacturing companies for the period of 2011 to 2015. Non-probability sampling technique called purposive sampling was adopted. Data were collected from the audited financial statement of the sample companies. Analysis was conducted using descriptive statistics and the econometric model of random effect estimates to test literature-driven hypothesis. The performance was measured in terms of profitability by return on total assets, return on equity, and operating profit margin as dependent variables. The data was analyzed using STATA version 14, estimation equation by Random effect panel data regression models. Results indicate that longer accounts receivable and inventory holding periods are associated with lower profitability. The results conclude that cash conversion cycle has significant negative relationship with return on asset. In general paying suppliers lately and collecting payments from customers earlier, and keeping product in stock less time, are all associated with an increase in the firms performance. Managers, therefore, can increase firms' profitability by improving the performance of management of working capital components.

Keywords: EFFORT Manufacturing, working capital management, profitability, and Random Effect Estimate

1. Introduction

Working capital management is part of the financing considerations that a finance manager of a corporation needs to determine, besides capital structure and capital budgeting (Ross, Westerfield and Jordan, 2010) ^[1]. Working capital management (WCM) refers to all management decisions and actions that ordinarily influence the size and effectiveness of the working capital (Kaur, 2010) ^[2]. One area of accounting and finance that affects the efficient operations of business organization in general is working capital management (WCM), among other things (Shin & Soenen, (1998) ^[3]; Eljielly, (2004) ^[4]; Tauringana & Afrifa, (2013) ^[5]. WCM has been described as the management of current assets and current liabilities (Agyei & Yeboah, (2011) ^[6]; Tauringana & Afrifa, (2013) ^[5]. The concept of WCM addresses companies' management of their short-term capital, which is an important component of corporate financial management, directly affects the profitability and liquidity of both small and large firms.

Working Capital Management (WCM) is an important corporate financial decision since it directly affects the profitability of the firm. Working capital management efficiency is vital especially for manufacturing firms, where the major part of assets and liabilities are composed of current assets especially inventory and trade receivables, and current liabilities; trade payable. Arunkumar and Ramanan, (2013) ^[7]. Companies may have an optimal level of working capital that maximizes their value. On the one hand, large inventory and

liberal trade credit policy may help to increase sales. On the other hand, larger inventory reduces the risk of out of stock. Credit sales may stimulate sales may because it allows customers to assess product quality before paying (Deloof, 2003) ^[8].

According to Padachi, K. (2006) ^[9], the standard measure of working capital management is the cash conversion cycle that is the time interval between the expenditure for the purchase of raw materials and the collection of sales of finished goods. Therefore, the stretched this time delay, the bigger the investment in working capital will be.

The inadequate of working capital leads the firm to liquidation. Inversely, unnecessary investment in working capital results in wasting cash and ultimately leads to lower profitability or even loss Gill A, Biger N, Mathur N (2010) ^[10]. 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 impact of working capital management on corporate performance E.F.F.O.R.T manufacturing companies.

2. Objectives of the Study

To investigate the impact of number of days of Accounts

Receivable (ARD), number of days of Inventories (INV) number of days of Accounts Payable (AP), cash conversion cycle (CCC), working capital investment and financing policies on the profitability of *E.F.F.O.R.T manufacturing companies*.

3. Research Hypotheses

H₁: Accounts receivable period have significant negatively related to a firm's profitability.

H₁: Inventory holding period of a firm is significant negatively related to a firm's profitability.

H₁: Accounts payable period of a firm are significant negatively related to a firm's profitability.

H₁: The cash conversion cycle of a firm is significant negatively related to a firm's profitability.

H₁: The Current Assets to Total Assets and Current Liabilities to Total Assets have significant positively related to a firm's profitability.

3.1 Methodology

In this study, explanatory research type along with quantitative research design was used to obtain the required quantity of data to run quantitative analysis, and enhancing the generalization of the results. The quantitative research approaches is also important for summarizing vast sources of information that is collected from panel data and to facilitate comparisons across categories and over time Hsiao, (2003) ^[11].

The secondary data for the purpose of this study were collected from different documents such as income statement and balance sheet from the selected Enterprises. Data were mainly collected from audited financial statements of *E.F.F.O.R.T manufacturing companies* for 5 years (2011-2015). Most of the required data was obtained from the financial statements submitted to the Ethiopian Revenues and Customs Authority (ERCA) Mekelle Large Taxpayers Office (LTO), for income tax purpose. However, due to incompleteness of data obtained from ERCA some of the data used was obtained directly from the respective companies. According to Zikmund (1996) ^[12] a target population is the complete group of specific population elements relevant to the research project. In this study the target population is nine companies which are currently operating and wholly owned by Endowment Fund for Rehabilitation of Tigray

(E.F.F.O.R.T). The full portfolio of *E.F.F.O.R.T manufacturing companies* has now been rationalized into the fourteen companies which they were engaged in different economic sectors. However, the researcher was selected nine manufacturing companies for this study. These companies includes: *Mesfin Industrial Engineering Plc, Sheba Leather Industry Plc, Saba Dimensional Stone Plc, Bruh - Tesfa Plastic Products Plc, Messebo Cement Factory Plc, Michew Particle Board Factory Plc, Almeda Textile Factory Plc, Addis Pharmaceuticals Factory Plc and Azmie Steel Structure Engineerin Plc*. For the selection of the sample companies from the target population, Non-probability sampling technique called purposive sampling was adopted.

The data collected from secondary sources is classified, summarized and presented using text, tables, and analyzed using the descriptive statistical tools like percentages, ratios, mean and standard deviation. Besides to the econometric analysis of random effect estimates were used to test the relationships between and among variables and to draw conclusions. STATA version 14 and SPSS version 20 were used for both descriptive and econometric analysis purpose. Due to the absence of secondary market in Ethiopia it is impossible to use market indicators such as share price. Only accounting measures of profitability were used in this study. According to Ross *et al.* (2002) return on Assets (ROA), Return on Equity (ROE) and Operating profit margin (OPM) are best known and most frequently used measures of profitability.

To measure the working capital management's efficiency on company, the study used Accounts collection period (ACP), Inventory conversion period (ICP), Accounts payable period (APP), cash conversion cycle (CCC) Current Assets to Total Assets Ratio (CATAR) and Current Liabilities to Total Assets Ratio (CLTAR) as independent variables. These variables are seen as the most suitable proxies measuring the working capital management's efficiency. Since working capital management is not the only factor that affect company profitability, the researcher includes some control variables. These include size of companies, debt ratio, firm growth rate, GDP of the country and current ratio to see the impact on the profitability of companies.

The following table summarizes the dependant variables, the independent variables and the control variables of the study with their respective formulas.

Table 1: Definition of variables, abbreviations, their type and Measurements

No	Variables	Abbreviations	Type	Measurements
1	Return On Assets	ROA	Dependent	Net Income/Total Assets
2	Return On Equity	ROE	Dependent	Net Income/Total Equity
3	Operating Profit Margin	OPM	Dependent	EBIT/Sales
4	Average Collection Period	ACP	Independent	(Ending Accounts Receivable/Sales)x365
5	Inventory Conversion Period	ICP	Independent	(Ending Inventory/Cost of Sales) x365
6	Accounts Payable Period	APP	Independent	(Accounts Payable/Cost of Sales) x365
7	Cash Conversion Cycle	CCC	Independent	[ACP + ICP] – APP
8	Current Assets To Total Assets Ratio	CATAR	Independent	Total Current Assets /Total Assets Ratio
9	Current Liabilities To Total Assets Ratio	CLTAR	Independent	Total Current Liabilities/ Total Assets Ratio
10	Current Assets To Current Liabilities	CR	Control	Current Assets /Current Liabilities
11	Total Liabilities To Total Assets Ratio	DR	Control	Total Current Liabilities/Total Assets

12	Firm Size	LnSales	Control	Natural logarithm of Sales
13	Firm Growth Rate	FGR	Control	This Year's Sales – Previous Year's Sales/ Previous Year's Sales or [Sales _t - Sales _{t-1}]/ Sales _{t-1}
14	Gross Domestic Product	GDP	Control	Annual Gross domestic product growth

3.2 Model Specification

To analyze this correlation and regression models were used. The correlation analysis specifically helps for the description of the relationship between working capital management and the profitability of a firm (Deloof, (2003) [8]; Padachi, (2006) [9]; Mathuva, (2009) [13]; Gill *et al.* (2010) [10]; Enqvist *et al.*

(2012) [14].

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); these models were employed by most of the previous researchers.

$$ROA_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 ICP_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 CLTAR_{it} + \beta_7 DR_{it} + \beta_8 CR_{it} + \beta_9 LnSit + \beta_{10} FGR_{it} + \beta_{11} GDP_{it} + \mu_{it} \dots \dots \dots 1$$

$$ROE_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 ICP_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 CLTAR_{it} + \beta_7 DR_{it} + \beta_8 CR_{it} + \beta_9 LnSit + \beta_{10} FGR_{it} + \beta_{11} GDP_{it} + \mu_{it} \dots \dots \dots 2$$

$$OPM_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 ICP_{it} + \beta_3 APP_{it} + \beta_4 CCC_{it} + \beta_5 CATAR_{it} + \beta_6 CLTAR_{it} + \beta_7 DR_{it} + \beta_8 CR_{it} + \beta_9 LnSit + \beta_{10} FGR_{it} + \beta_{11} GDP_{it} + \mu_{it} \dots \dots \dots 3$$

Where: Y_i = the i^{th} observation of dependent variables (ROA, ROE and OPM); β_0 = the intercept of the equation; β_i = coefficients of X_i variables; X_i = the different independent variables (ACP, ICP, APP, CCC, CATAR, CLTAR, CR, DR, LOS, FGR, GDP) and μ_{it} = the error term.

problem.

The data was tested to detect omitted variable bias. VIF test, Multicollinearity, Heteroscedasticity, and neglected non-linearity problem through *hettest*, & *OV test* respectively. Finally, the robust regression was used for the analysis purpose which was made the data free from autocorrelation

4. Results and Discussions

4.1 Descriptive statistics

In this part of the paper, the results from descriptive statistics are discussed. Table no. 2 presents the descriptive statistics of the sample enterprises including the mean distribution, standard deviations, minimum and maximum values of study variables for the study period i.e. 2011 to 2015.

Table 2: Summary of descriptive statistics

<i>Descriptive statistics</i>					
<i>Variables</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Maximum</i>	<i>Minimum</i>
<i>Return on Total Assets</i>	45	0.0739	0.1161	0.2997	-3910
<i>Return on Total Equities</i>	45	0.0716	0.11106	0.28116	-3649
<i>Operating Profit Margin</i>	45	0.0879	0.1224	0.2909	-3475
<i>Accounts Collection Period</i>	45	77.022	60.7697	430.273	54.5478
<i>Inventory Conversion Period</i>	45	200.82	50.8776	244.2724	74.1217
<i>Accounts Payable Period</i>	45	358.326	147.3571	604.964	91.1826
<i>Cash Conversion Period</i>	45	13.2765	49.9052	81.6	-115.026
<i>Current Assets to Total Assets Ratio</i>	45	0.5993	0.19198	0.8260	0.13328
<i>Current Liabilities to Current Assets Ratio</i>	45	0.4513	0.19678	0.8810	0.04367
<i>Current Ratio</i>	45	2.1583	0.958	4.12626	0.9913
<i>Debt Ratio</i>	45	0.8093	0.5217	2.3316	0.1765
<i>Firm Size</i>	45	15.7715	1.7977	20.5498	9.6087
<i>Firm Growth</i>	45	0.33	0.90	3.88	-0.58
<i>Gross Domestic Products</i>	45	10.1600	0.9005	11.4000	10.3000

Source: SPSS Output from the financial reports for the period 2011-2015

To make the analysis and interpretation more precise, the values of maximum, minimum, mean and standard deviations was computed from the ratio. A total of 45 companies year observation (9 companies x 5 years data = 45 companies' years observation were used.

12.24% respectively. The mean value of ROE and the standard deviation of ROA which is 11.61% greater than the standard deviation of return on equity but less than the standard deviation of operating profit margin which is 12.24% respectively. This implies that on average the value of profitability that can be generated from the total assets of companies is 7.39 % and that deviated from mean to both sides by about 11.61%, this shows that the variability in return

The descriptive statistics result from the above table 2 shows the mean value and standard deviation of ROA, ROE and OPM as 7.39 %, 7.16% and 8.79% and 11.61%, 11.12% and

on assets of the companies is less as compared to the variability in operating profit margin of the companies; However, it is greater than the deviation from mean of return on equity. Moreover, the minimum and the maximum values of return on assets of the companies are 0.3910 and 0.2997 respectively whereas the minimum and the maximum values of operating profit margin of the companies are -0.3475 and 0.2909 respectively. This result shows that the variation in the operating profit margin of the companies is higher than the variation in the return on assets and return on equity of companies which imply that more risks are associated with operating profit margin as compared to the return on assets and return on equity. This is may be due to the change in managing changes on operating expenses of the companies.

There are three specific variables which measures the of efficiency of working capital management, namely, Accounts receivable period, a proxy for collection policy, is 77 days on average. It means that companies in the sample wait for 77 days on average to collect cash from credit sales. Account receivable period ranged from 54.55 to 430.27 days among the manufacturing companies. Inventory conversion period, a proxy for inventory policy, is 113.94 days on average. That standard deviation of inventory conversion period is 50.88 days with 74.12 and 244.72 days as minimum and maximum values respectively. Accounts payable period, a proxy for payment policy, is 358.33 days on average with standard deviation of 147.36 days. The minimum and maximum days of accounts payable period shows 91.18 and 605 days respectively.

Similarly, the mean value of the cash conversion cycle is about 13.28 days with a standard deviation of 49.91 days. The minimum and the maximum cash conversion cycles are -115.03 days and 81.60 days respectively. The negative cash conversion cycle is the result of relatively low accounts collection period and low inventory conversion period while long accounts payable period.

The other comprehensive measures of working capital investment policy used is the proportion of *current assets in*

the total assets of companies. It measures the companies' degree of aggressiveness/ conservativeness in working capital investment. The lower the amount of the investment in current assets, the more aggressive is the firm in working capital investment. Thus, current assets to total assets ratio is 59.93 percent on average which means that in the sampled companies, the amount of current assets represents, on average, 59.93 percent of the total assets invested. This amount is deviated by 19.9 percent from the mean. The minimum value is 13 percent and this value related with highly aggressive condition while the maximum value of current assets to total assets ratio is 82.6 percent which represent the higher conservative condition in the sampled firms during the study period.

Current liabilities to total assets ratio measures the companies' degree of aggressiveness/ conservativeness in financing it its working capital requirements. The higher the value of current liabilities to total assets ratio, the more aggressive is the firm in financing its working capital requirements (Afza & Nazir, 2007) [21]. The average current liabilities proportion in financing the total assets of the sampled companies is 45 percent and the standard deviation is 19.7 percent.

4.2 Correlation Analysis using Pearson’s correlation coefficient

Despite the descriptive statistics, it is advisable to check whether there is a perfect correlation among the independent variables and between the dependent and the independent variables. Hence, the following Pearson correlation matrix shows the correlation among the three measurements of profitability which are ROA, ROE and OPM and independent variables which measures working capital management of E.F.F.O.R.T Manufacturing Companies by accounts collection period, inventory conversion period, accounts payable period, current assets to total assets ratio, current liabilities to total assets ratio, current ratio, debt ratio, size of companies firm growth and GDP.

Table 3: Pearson’s Correlation Matrix

<i>Variab les</i>		<i>Roa</i>	<i>Roe</i>	<i>Opm</i>	<i>Acp</i>	<i>Icp</i>	<i>App</i>	<i>Ccc</i>	<i>Catar</i>	<i>Cltar</i>	<i>Cr</i>	<i>Dr</i>	<i>Lns</i>	G d p
<i>ROA</i>	Pearson Correlation	1												
	Sig. (2-Tailed)													
<i>ROE</i>	Pearson Correlation	0.8276*	1											
	Sig. (2-Tailed)	0.0001												
<i>OPM</i>	Pearson Correlation	0.8096*	0.8252*	1										
	Sig. (2-Tailed)	0.0002	0.00012											
<i>ACP</i>	Pearson Correlation	-0.5519*	-0.5809*	-0.5378*	1									
	Sig. (2-Tailed)	0.00014	0.00013	0.00021										
<i>ICP</i>	Pearson Correlation	-0.4561*	-0.4456*	-0.4010*	0.40109*	1								

	Sig. (2-Tailed)	0.00016	0.000231	0.00003	0.000212									
APP	Pearson Correlation	0.3723*	0.4046*	0.4638*	0.0455	0.3748*	1							
	Sig. (2-Tailed)	0.000335	0.000187	0.00014	0.572940	0.00047								
CCC	Pearson Correlation	-0.3589*	-0.4425*	-0.3530*	0.3317*	0.1675	0.03848	1						
	Sig. (2-Tailed)	0.00020	0.000021	0.00001	0.002212	0.14123	0.63535							
CATAR	Pearson Correlation	0.4557*	0.3614*	0.4275*	-.2845*	0.4575*	0.3443*	0.1785	1					
	Sig. (2-Tailed)	0.004341	0.002035	0.0009	0.02825	0.00023	0.00765	0.1777						
CLTAR	Pearson Correlation	-0.2568	-0.2176	-0.2323*	0.1845	0.2621	0.2473	0.2573	-0.0041	1				
	Sig. (2-Tailed)	0.057271	0.131204	0.06124	0.16487	0.0512	0.5736	0.6057	0.8920					
CR	Pearson Correlation	-0.3550*	-0.3405*	-0.32299	0.1412	0.2803*	0.3936*	0.1704	-0.1414	0.02387	1			
	Sig. (2-Tailed)	0.00214	0.002713	0.17329	0.19531	0.01312	0.00027	0.1961	0.2753	0.76262				
DR	Pearson Correlation	-0.18253	-0.1593	-0.18219	0.1499	0.03664	0.12665	0.0430	-0.1171	-0.111	0.1747	1		
	Sig. (2-Tailed)	0.210825	0.081321	0.18337	0.178833	0.6492	0.2665	0.7072	0.4020	0.400	0.3049			
Lns	Pearson Correlation	0.11096	0.0928	0.0882	0.11171	0.11944	0.07156	0.0341	0.2515	0.37083	0.2992	0.5265*	1	
	Sig. (2-Tailed)	0.341237	0.212713	0.23878	0.330878	0.30526	0.52713	0.7654	0.2040	0.0259	0.0250	0.0007		
FGR	Pearson Correlation	0.27491**	0.46127*	0.51274	0.7213	0.0982*	0.4213	0.3719	0.3298	0.7879	0.0458	0.5473*	0.2647*	
	Sig. (2-Tailed)	0.041210	0.00012	0.05671	0.0578	0.02154	0.0783	0.0617	0.03491	0.2195	0.3167	0.0021	0.0412	
GDP	Pearson Correlation	0.25152**	0.4791	0.5712	0.9327	0.05137	0.1932	0.6421	0.5749	0.3321	0.2157	0.3456	0.05787	1
	Sig. (2-Tailed)	0.03152	0.12170	0.24150	0.6713	0.2157	0.0612	0.0713	0.1946	0.6444	0.0674	0.2367	0.9124	

Source: SPSS result from the financial reports of E.F.F.O.R.T Manufacturing Companies, (2011-2015)

*Significant at 1 percent level of significance (2 tailed),

**Significant at 5 level of significance (2 tailed)

The above table shows that the correlation coefficient among the three profitability measures and *accounts collection period* is not perfect. As different finance literature indicates and as it is observed in the real world, efficient working capital management is expected to improve company's profitability; one should expect negative correlation between accounts receivable period and the profitability measures i.e. ROA, ROE and OPM. Initially, it was hypostasized in the methodology part of this study that there is a negative correlation between accounts collection period and the three measurement of profitability (ROA, ROE and OPM).

The analysis of correlation results between the numbers of

day's account collection periods with ROA, ROE and OPM shows -55.19 percent, -58.10 percent and -53.79 percent respectively. And they also indicate there is a moderate association between accounts collection period and profitability of companies at p-value of 000 for each variable. This significant and negative relationship between number of day's account collection period and profitability is consistent with previous researches conducted by Deloof (2006) who uses gross operating income as measurement of profitability, Karaduman *et al.* (2004) ^[15] who used return on assets as measurement of profitability, Garcia and Martinez (2007) ^[16] who used return on assets as measurement of profitability

Mathuva (2009) ^[3] also used net operating profit as measurement of profitability and Nobanee *et al.* (2009) ^[17] used return on investment as measure of profitability all found negative relationship between profitability and the accounts collection period. The negative relationship implies that if the length of the accounts collection period increase, profitability will decrease.

This study was also hypothesized that there is negative relationship between profitability measures of ROA, ROE and OPM with the *inventory conversion period*. In agreement with this hypothesis, the correlation result on table 3 reveals that the inventory conversion period is significantly and negatively correlated with ROA, ROE and OPM respectively with coefficient of -45.61%, -44.56% and -40.10% both reaching the significant level 1 percent.

These negative results are consistent with previous studies which were conducted by Sharma and Kumar (2011) ^[18] that used return on assets as measurement of profitability, Enqvist *et al.* (2012) ^[14] who used return on assets and gross operating income as measurement of profitability found negative and significant relationship between profitability and the inventory conversion period.

The negative correlation between profitability and the inventory conversion cycle results implied that when the number of days that stock of the company holds in storeroom increases, the profitability of the company is affected negatively and it is true when vice versa.

As it was hypothesized that there is a negative relationship between *accounts payable period* and the profitability measured by ROA, ROE and OPM contrary to the research hypothesis, the correlation matrix in the above table shows positive relationship between accounts payable period and profitability. The correlation result between number of day's accounts payable with ROA, ROE and OPM shows coefficient 37.23 percent, 40.46 percent and 46.38 percent respectively and the correlation p-value of 0.0002. This positive and significant correlation result is consistent with research conducted by Mathuva (2009) ^[13] that used net operating profit as measures of profitability and Nobanee *et al.* (2009) ^[13] who used return on assets as measure of profitability and found positive relationship between accounts payable period and profitability. This positive relationship implies that the more profitable companies wait longer time to pay these bills.

In view of that the result of the correlation matrix in the above table shows that the cash conversion cycle is strongly and negatively correlated with the profitability measurement by ROA, ROE, and OPM with coefficient of -35.89 percent, -44.24 percent and -35.30 percent respectively with 1 percent significant level. This demonstrates that paying suppliers' longer time and collecting payments from customers' earlier and keeping producers in stock short time, are all associate with an increase in the firm's profitability. This result is consistent with previous researchers like Enqvist *et al.* (2009) who used return on assets and gross operating income as measurement of profit,

Current ratio is a traditional measure of checking liquidity of the company and the study shows on the above table that the current ratio has a negative relationship with profitability measured by ROA, ROE and OPM with the coefficient of -

35.50 percent, -34.05 percent and -32.30 percent respectively and p-value of 0.000. The negative relationship between the dependent and the independent variables indicates that the two objectives of liquidity and profitability have inverse relationship. The result is similar to the researchers conducted by Muluaem (2010) ^[19] using gross operating income as measurement of profitability and Tewodros (2010) ^[20] by using return on assets, return on equity and operating profit margin as measurement of profit.

Debt ratio used a proxy for leverage of a company, the Pearson correlation analysis shows that negative relationship with ROA, ROE and OPM and the coefficient is -18.25 percent, -15.93 percent and -18.23 percent respectively. However, the p-values are not significant at all. This negative relationship implies that as the debt ratio increases, the profitability of the companies increase.

The other hypothesis is that there is significant positive relationship between the *current assets to total assets ratio* and the profitability measurement variables. Similar to the hypothesis, the correlation matrix above table indicate positive and significant correlation of current assets to total assets ratio with ROA, ROE and OPM with correlation coefficient 45.57, percent for ROA, 36.14 percent for ROE and 42.75 percent for OPM at 1% level of significance. This finding is similar with the findings of Afza and Nazir (2007) ^[21] using return on assets and return on equity as measure of profitability. The positive coefficient of total current assets to total assets implies that there is negative relationship between aggressiveness in working capital investment policy and firms' profitability. Working capital investment is considered to be aggressive when investment in current asses is low and profitability of company's increases.

If efficient working capital financing policy increases profitability, one should expect negative relationship between the measures of profitability and working capital financing policy i.e. ROA, ROE and OPM on one hand and *current liabilities to total assets ratio* on the other hand. In finance literature, there is a trade-off between profitability and liquidity, so one can expect negative correlation between profitability measures and the two traditional liquidity measures.

4.3 Regression Analysis: The Impact of Working Capital Management on Firms' Profitability

This study established the framework of literature and data analysis including descriptive statistics and correlation with the aim of investigate the relationships between working capital management and profitability. A limitation of Pearson's correlation is that they do not allow identifying causes from consequences. Therefore, regression analysis is used to investigate the effect of working capital management on company's profitability.

4.3.1 Accounts Collection Period and Profitability

Three regressions were run to investigate the impact of accounts receivable period on firms' profitability that on return on assets, return on equity and operating profit margin as dependent variables. The following tables show the comprehensive result.

Table 4: Random Effect Estimates of Account Collection Period and Profitability

	ROA		ROE		OPM	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
Accounts Collection Period	-0.0019385	0.0000	-0.001975	0.0000	-0.2051	0.0000
Current Ratio	-0.032788	0.00005	-0.02942	0.00002	-0.0302	0.0005
Debt Ratio	-0.073169	0.0002	-0.0768	0.00002	-0.0785	0.0002
Firm Size	0.010896	0.0000	0.01196	0.00001	0.01340	0.0000
Firm Growth	0.12707	0.0004	0.02451	0.00213	0.13490	0.0031
Gross Domestic products	0.4512701	0.0416	0.84517	0.23794	0.43127	0.0912
CONS	0.197532261	0.00013	0.16490	0.00028	0.17389	0.0001
<i>Number of Obs.</i>	45		45		45	
<i>R-Square</i>	0.3296		0.3247		0.3066	
<i>F-Statistic</i>	18.2061		20.5435		15.96696	
<i>P-Value</i>	0.0000		0.0000		0.0000	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

Table no. 4 shows the explanatory power of three models R-square values are 52.45%, 54.97% and 49.72% to ROA, ROE and OPM respectively. This denotes that 52.45% of the change on return on assets, 54.97% change on return on equity and 49.72% variability on operating profit margin are explained by the variables used in the model. However, the remaining 47.55 % change on return on assets, 45.03% change from return on equity and 50.27% variability on operating profit margin are caused by other factors that may not included in the model. In addition, the overall significant of the models has p-values of 0.0000, indicates that the models are well fitted at 1 percent level of significant.

Regression analyses results indicates a negative relation between accounts receivables and profitability (return on assets, return on equity and operating profit margin) all the results have 1% significance. These results are robust, since all the models showed a significant negative relation. This indicates that firms can create profit by keeping the length of their accounts receivables minimum. This negative effect of accounts receivables on a firm's profitability is found by the majority of studies on WCM. Similar studies like Deloof (2003) [8], Gill *et al.* (2010) [10], Lazaridis and Tryfonidis (2006) [22], Garcia and Martinez (2007) [16] and Nigatu (2015) [23] all found a significant negative relation between the number of days accounts receivables and the profitability of a

firm.

4.3.2 Inventory conversion period and profitability

There regressions were run in order to examine the impact of inventory conversion period on the measures of profitability i.e. return on assets, return on equity and operating profit margin. As table no. 4 shows the explanatory power of three models R-square values are 33%, 32% and 31% to ROA, ROE and OPM respectively. This imply that 33% of the change on return on assets, 32% change on return on equity and 31% variability on operating profit margin are successfully explained by the variable used in the model. However, the remaining 67% change on return on assets, 68% change from return on equity and 69% variability on operating profit margin are caused by other factors that are not included in the model. In addition, the overall significant of the models with p-values of 0.0002, indicates that the models are well fitted at 1 percent level significant.

Table no. 4 also shows the regression coefficients for inventory conversion period -0.0009, -0.0008 and -0.0010 with ROA, ROE and OPM respectively. The level of significance is at 1 percent. The negative coefficient implies that the increase in the inventory conversion period in days, significantly affects the company's profitability.

Table 5: Random effect estimates of Inventory Conversion Period and Profitability

	ROA		ROE		OPM	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Inventory Conversion period	-0.00090	0.0000	-0.0009	0.0008	-0.00098	0.0009
Current Ratio	-0.02334	0.0061	-0.0208	0.0183	-0.0207	0.0041
Debt Ratio	-0.03450	0.00117	-0.0288	0.1391	-0.0391	0.0356
Firm Size	0.00290	0.5409	0.0025	0.5478	0.0018	0.6687
Firm Growth	0.328010	0.0070	0.32553	0.0043	0.1750	0.0073
Gross Domestic products	0.00479	0.0012	0.6124	0.5431	0.3781	0.5561
Cons	0.32310	0.0104	0.2999	0.01739	0.3193	0.01397
<i>Number of obs.</i>	45		45		45	
<i>R-Square</i>	0.3296		0.3247		0.3066	
<i>F-Statistic</i>	18.2061		20.5435		15.96696	
<i>P-Value</i>	0.00002		00.00002		0.00002	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

Usually, a lower day's inventory outstanding indicates a better performance in inventory management since company can sell inventory fast and get rid of costs and risks. If a company

takes longer time to sell its inventories, firm needs to afford carrying cost and risk. It will adversely affect its profitability due to the fact that tied up of more funds and/or deterioration

and obsolescence and higher holding costs of inventory and therefore longer inventory period leads to lower profitability. This finding is consistent with the previous studies conducted by Garcia and Martinz (2007)^[16] and Raheman and Nasr (2007)^[24] who found negative relationship.

4.3.3 Account payable period and profitability

According to table no. 6, there is a positive relationship between number of accounts payable and profitability of

companies. The coefficient is 0.0003, 0.00033 and 0.00047 with ROA, ROE and OPM at significant level of 1 percent. This positive and strong significant relationship of accounts payable period with dependent variables implies that the increase in the number of day's accounts payable has a direct effect on the profitability of the companies. The positive relationship between the accounts payable period and profitability indicates that the more profitable companies wait longer to pay their bills.

Table 6: Random effect estimates of account payable period and profitability

	ROA		ROE		OPM	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Accounts Payable Period	0.0003	0.0002	0.00033	0.00173	0.000473	0.0000
Current Ratio	-0.02643	0.001	-0.0212	0.00082	-0.01442	0.02435
Debt Ratio	-0.0234	0.16784	-0.01584	0.30957	-0.020118	0.15304
Firm Size	0.0018470	0.67391	0.002120	0.6539	0.0036	0.5122
Firm Growth	0.14251	0.02450	0.39021	0.2151	0.14490	0.2031
Gross Domestic products	0.134910	0.01764	0.003497	0.77146	0.12645	0.1549
Cons.	0.1018	0.3296	0.0726	0.4035	0.0586	0.4783
<i>Number of Obs.</i>	45		45		45	
<i>R-Square</i>	0.2251		0.2357		0.2809	
<i>F-Statistics</i>	18.20609		20.5435		15.96696	
<i>P-Value</i>	0.0000		0.0000		0.0000	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

This finding is consistent with Mathuva (2009)^[13] used net operating profit as measure of profitability and Nobanee *et al.* (2009)^[17] used return on investment as measure of profitability and both of them found strong positive relationship between accounts payable period and profitability of the firms. Nobanee (2009)^[17] contemplated that the reason why firms wait longer to pay the bill to suppliers is to have a better cash flow position and a higher profitability. Mathuva (2009)^[13] explained the positive relationship in two ways: the first reason is companies wait longer to pay their bills in order to benefit from cash available for working capital needs and the second reason is economic terms, longer delays in payments result in higher levels of working capital levels that can be reserved and used to increase the profitability.

4.3.4. Cash conversion cycle and profitability

The cash conversion cycle is used as a popular measure working capital management efficiency. Based on the previous literatures result, a negative relationship between companies value and cash conversion cycle is expected. Cash conversion measures the length of time a company uses between actual cash expenditure on material resources and cash revenue from products (Elijelly, 2004). As a shorter cash conversion cycle illustrates that a company has efficient working capital management, company can have sufficient cash to run their daily business and future growth investment. The risk of financial constraints can be reduced consequently, firm profitability will increase. The following table shows the random effect estimates for the cash conversion cycle.

Table 7: Random effect estimates of cash conversion cycle and profitability

	ROA		ROE		OPM	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
Cash Conversion Cycle	-0.00073	0.012171	-0.00033	0.0012	-0.00077	0.0001
Current Ratio	-0.03497	0.002	-0.030535	0.1274	-0.033053	0.04520
Debt Ratio	0.04181	0.028696	0.0372896	0.05826	-0.04662	0.01652
Firm Size	0.00405	0.424348	0.0045645	0.32695	0.005695	0.21652
Firm Growth	0.13707	0.0404	0.12451	0.00410	0.15480	0.0051
Gross Domestic products	0.02467	0.00161	0.06418	0.6431	0.2748	0.78941
Cons.	0.13751	0.19391	0.1130401	0.2452174	0.12186765	0.18957
<i>Number of Obs.</i>	45		45		45	
<i>R-Square</i>	0.277826		0.33339		0.25722	
<i>F-Statistics</i>	18.206		20.5435		15.96696	
<i>P-Value</i>	0.0000		0.0000		0.0000	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

The above table indicates that there is a negative and strong significant relationship between cash conversion cycle and profitability measured by ROA, ROE and OPM with

coefficient of -0.00073, -0.00033 and -0.00077 at 1 percent level of significant for ROA & ROE but 5 percent significant for OPM. The negative and significant result of this finding is

similar with previous studies conducted by Deloof (2003) ^[8] used gross operating income as measurement of profit, Karaduman *et al.* (2004) ^[15] used return on assets as measurement of profit, Lazaridis and Tryounidis (2006) ^[22] used gross operating income as measurement of profit, Garcia and Mrtinez (2007) ^[16] used return on assets as measurement of profit and all found cash conversion cycle negative relationship with profitability of companies.

4.3.5 Current Assets to Total Assets Ratio (CATAR) and profitability

Investment in working capital assets is comprehensive than collections, inventory and payment policies (working capital investment management policy). The working capital investment policy comprises management of cash and other short term assets in the operation.

Table 8: Random effect estimates of CATAR and profitability

	ROA		ROE		OPM	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
<i>Current Assets to Total Assets Ratio</i>	0.2380339	0.0100	0.2334313	0.01566	0.2765030	0.005
<i>Current Ratio</i>	-0.0418661	0.0023	-0.038789	0.0041	-0.03888	0.0032
<i>Debt Ratio</i>	-0.0277633	0.2080	0.021434	0.3462	-0.03084	0.1201
<i>Firm Size</i>	0.0057591	0.8100	0.000065	0.9850	-0.00037	0.8940
<i>Firm Growth</i>	0.43702	0.0204	0.52453	0.06211	0.16410	0.0201
<i>Gross Domestic products</i>	0.0524360	0.0021	0.045780	0.5791	0.04678	0.1245
<i>Cons.</i>	0.13751	0.19391	0.113040	0.2452174	0.121867	0.18957
<i>Number of Obs.</i>	45		45		45	
<i>R-Square</i>	0.2920		0.0.2813		0.2884	
<i>F-Statistics</i>	20.937		23.63		18.372	
<i>P-Value</i>	0.0000		0.0000		0.0000	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

The overall significant of the three models measured by F-statistics of 20.93, 23.63 and 18.4 with p value of 0.0001, 0.002 and 0.001 indicates that the models are well fitted at the 1 percent significance level.

As hypothesized in the study that there is significant positive relationship between current assets to total assets ratio and profitability. The result from this econometric analysis shows positive relation and significant impact on company's profitability which are measured by return on assets, return on equity, and operating profit margin. This result is consistency with studies conducted by Afza and Nazir (2007) ^[21]. The positive coefficient of current assets to total assets ratio implies a negative relation between the degrees of aggressiveness of investment policy and profitability of the companies which are measured by ROA, ROE and OPM. It means that as the ratio of current assets to total assets increases, degree of aggressiveness decreases, in turn companies profitability increases. Therefore, aggressiveness in

working capital investment policy affects the profitability of E.F.F.O.R.T Manufacturing companies. It also shows that debt and current ratio has a negative and significant influence on profitability of the companies.

4.3.6 Current Liabilities to Current Total Assets (CLTAR) and profitability

In examining the impact of working capital management on firm's profitability, it is also equally important to see the impact of working capital on financing policy. Therefore, in measuring the impact of working capital financing policy the study has employed current liabilities to current assets ratio. In order to examine the impact of working capital policy as measured by current liabilities to total asset ratio on profitability measures (ROA, ROE and OPM) three regression models were run. The following table no. 9 shows the result of the impact of current liabilities to total assets ratio on company's profitability.

Table 9: Random effect estimates of CLTAR and profitability

	ROA		ROE		OPM	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
<i>Current Liabilities to Total Assets Ratio</i>	0.2380339	0.0100	0.2334313	0.01566	0.2765030	0.005
<i>Current Ratio</i>	-0.0418661	0.0023	-0.0387891	0.0041	-0.0388850	0.0032
<i>Debt Ratio</i>	-0.0277633	0.2080	0.0214335	0.3462	-0.0308455	0.1201
<i>Firm Size</i>	0.0057591	0.8100	0.0000650	0.9850	-0.0003704	0.8940
<i>Firm Growth</i>	0.32707	0.3004	0.32471	0.0513	0.21417	0.0051
<i>Gross Domestic products</i>	0.0524360	0.0021	0.045780	0.5791	0.0467800	0.1245
<i>Cons.</i>	0.13751	0.19391	0.1130401	0.2452174	0.12186765	0.18957
<i>Number of Obs.</i>	45		45		45	
<i>R-Square</i>	0.3403		0.3101		0.3037	
<i>F-Statistics</i>	20.937		23.63		18.372	
<i>P-Value</i>	0.0000		0.0000		0.0000	

Source: STATA result from financial reports of the sample Companies, (2011-2015).

In addition, the regression shows the overall significance of the model when measured by their respective F- statistics of 20.937, 23.65, and 18.362 with p- value of 0,004, 0.001 and 0.009 with ROA, ROE and OPM respectively. The important element that must be taken in to consideration in the management of short term financing policy are liquidity, cash flow, risk and return level to compensate the risk Wubshet (2014)²⁵. The coefficient of current liabilities to total assets ratio show that when it increases the profitability of the firm that is the return on assets decreases by 15.51 percent, the

return on equity decreases by 12.30 percent and the operating profit margin decreases by 15.98 percent.

4.4 Summary of Findings and Testing of Hypotheses

The following table no. 10 shows the summary of regression results and which hypotheses are accepted and which hypotheses are rejected at different levels of confidence level. The result shows that all the four null hypotheses were accepted at different level of confidence.

Table 10: Regression results on Hypothesis Accept / Reject.

<i>Hyp.</i>	<i>Independent Variables</i>	Expected impact on ROA, ROE and OPM	<i>Actual impact on ROA, ROE and OPM</i>	<i>Accepted/ Rejected H₁</i>
1	<i>Accounts collection Period</i>	Negative and significant	Negative and significant	<i>Accepted</i>
2	<i>Inventory Conversion Period</i>	Negative and significant	Negative and significant	<i>Accepted</i>
3	<i>Accounts Payable period</i>	Negative and significant	Positive and significant	<i>Rejected</i>
4	<i>Cash Conversion Cycle</i>	Positive and significant	Negative and significant	<i>Accepted</i>
5	<i>Current Assets to Total Assets Ratio</i>	Negative and significant	Negative and significant	<i>Accepted</i>
6	<i>Current Liabilities to Total Assets</i>	Positive and significant	Negative and significant	<i>Rejected</i>

Source: STATA result from financial reports of the sample Companies, (2011-2015).

5. Conclusions and Recommendations

5.1. Conclusion

The overall objective of this study was to examine the impact of working capital management on the profitability of firms. To this end, the findings obtained from the panel data of nine manufacturing company for the period of 2011-2015. Accordingly, the account collection period and the inventory conversion period have a significant negative impact on the profitability of firms which imply the firms can increase the level of profitability through decreasing the length of the account collection period and the inventory conversion period. Thus, the less the account collection and inventory conversion period the higher the profitability of firms a measured by the ROA, ROE and OPM. On the other hand the account payable period has a significant positive effect on the profitability of firm. Hence, firms with longer account payable period or companies that take longer period to pay their suppliers has higher profitability as compared to companies that pay their suppliers within short period of time, Beside this, there is a significant negative relationship between the cash conversion cycle and the profitability of companies in which this imply that the longer the cash conversion cycles the lower the profitability of the company.

5.2. Suggestions

The management of these companies have to give due concern to reduce the length of account collection and inventory conversion period to significantly improve the profitability of firms through offering discount for the early payment receivables, signing agreement with the financial institutions like bank to collect their receivable and deposit it in their account, granting signed document for every receivables and

reminding the customer the due date on time. The management of these companies must stretch the length of account payable period through avoiding early payment of cash that means payment to be effected on the due date. Besides, the managements the companies have to reduce the cash conversion cycle by reducing the length of account collection period and inventory collection period and enlarging the account payable period. In regard to the financing and investment policy of working capital, EFFORT manufacturing companies should maintain a conservative financing and adopt aggressive investment policy of working capital management through holding adequate amount of current liabilities as compared to long term debt and through adequate investment in the long term assets as compared to current assets to enhance the profitability of firm.

This research has opened many avenues for future research especially in context of Ethiopia. The future research can be extended in the area of working capital management is, the working capital practices followed in different economic sectors using the primary data collected directly from the financial managers of different firms. Such type of study will provide a fresh understanding of respective managers that how they perceive and manage the working capital of the firm.

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