INNOVATIONS

Determination of the Impact of Working Capital Management on Profitability: An Empirical Study from Manufacturing Firms of Sebeta Town, Oromia, Ethiopia

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Abstract
This study aims to find out the impact of working capital management on profitability of firms in Sebeta town, Oromia regional state, Ethiopia. Return on asset used as proxy of profitability while average collection period (ACP), inventory holding period (IHP), average payment period (APP), cash conversion cycle (CCC) and current ratio (CR) were used as proxy for working capital management. Secondary data was taken for a period of thirteen years i.e. 2004-2016. Random Effect model was applied to the data. The results presented significant impacts. It is concluded that working capital management has negative significant impact on profitability of firms. Finally, the study argued that well- functioning working capital management plays a critical role in profitability and growth of manufacturing firms.

Keywords: 1.ROA 2. ACP 3.IHP 4. APP 5.CCC 6.CR 7.Firms**.**

Introduction

Working capital is refers to difference between current assets and current liabilities. Anh et al.,(2020) stated, management of working capital is measured as managing current assets and current liabilities. According to Zawaira & Mutenheri (2014), to maintain adequate liquidity, working capital management is an essential. Mahato & Jagannathan(2016) proofed that effective working capital management is vigorous to improve firms' profitability and maintain optimum liquidity position.

The working capital management is an energetic issue in managing current assets and liabilities for all industries (Famil &Ali, 2016). It directly affects the profitability of the firms. Anh et al., (2020) explored working capital management is the main function of financial managers in all firms and may have both negative and positive impact on the firm‘s profitability. Anton &Nucu(2020) summarized as decent working capital management is energetic to a firm‘s profitability and ability to pay dividends to shareholders. Thiago et al., (2020) also settledeffective working capital management makes company to become fruitful and also increase shareholder(s) wealth.

There are numerous studies that have been undertaken on the impact of working capital management on profitability of firms in worldwide: for instance Mobeen &Naveed(2013) observed the association between working capital management and profitability of Pakistani cement companies listed at KSE from 2003-2008. The result disclosed that there is contrary and positive correlation between working

capital management and profitability. In the same year, Zubair & muhammed(2013) surveyed 21 listed Cement companies in Karahci Stock exchange during the period of 2004-2010. The result of the study clarified that working capital management is significantly and negatively related to firm's profitability.

Hina & Mba(2014)investigated on theimpact of working capital management on profitability. They found debtor's turnover, inventory turnover creditor's turn over have positive impact on profitability (ROA). In 2015, Garg(2015) used panel data (2004-2013) from JSE listed retail sector companies and found significant relationship between working capital management (debt ratio and firm size) and profitability.

Famil & Ali(2016) presented a significant and negative relationship between working capital management (account receivable period, operating profit margin and net profit margin) in the manufacturing industry.After two year, Khalid et al.,(2018) found working capital management has significant positive impact on profitability of firms.

Thiago et al.,(2020) highlighted a positive and statistically important link among all working capital components and profitability. Also, Anh et al.,(2020 showed accounts receivable turnover, inventory turnover and accounts payable turnover negatively influenced on profitability of firms.

Ahmed and Ahmed (2016), Ephrem (2018) ,Beemnet(2018), Anh et al.,(2020), Anton & Nucu(2020), Thiago et al.,(2020) and Fekadu (2021) explored on the impact of working capital management on profitability of firms.The ability of firms to maintain their operations depends on the level of investment in working capital. Therefore, excessive investment in working capital may reduce profitability same as its shortage may result in a risk(Mbella & Ngongang, 2018).The main aimof this paper is to find out "Does working capital management have significant impact on profitability of manufacturing firms in Sebeta town, Oromia, Ethiopia?"

Statement of Problem

Working capital management is crucial area of investment. Deprived of management of working capital, it is difficult for firms to run their business suitably. Different authors were carried out on working capital management and profitabilityin the world. In Ethiopia, few studies have been made to assess the impact of working capital management on profitability. These are:Wobshet(2014),Lakech(2015), Dinku(2015), Ahmed & Ahmed (2016),Birhane(2016), Beemnet(2018),Abraham (2020) and Fekadu (2021)and found varying results. Therefore, by trust in view the study is conducted to find out the impact working capital management on profitability of manufacturing firms in Sebeta town, Oromia, Ethiopia and also try to meet the gap between existing literatures.

Objectives of the study

1. To examine the impact of average collection period, inventory holding period, average payment period, cash conversion cycle and current ratio onprofitability of manufacturing firms in Sebeta town.
2. To assess working capital management practices of manufacturing firms in Sebeta town.

Research Hypothesis

Hypothesis 1: Average collection period has negative and significant impact on firm's profitability.
Hypothesis 2: Inventory holding period has negative and significant impact on firm's profitability.
Hypothesis3: Average payable period has negative and significant impact on firm's profitability.
Hypothesis 4: Cash conversion cycle has negative and significant impact on firm's profitability.
Hypothesis 5: Current ratio has positive and significant impact on firm's profitability.

Empirical literature in Global View

Ngwenya (2008) studied the correlation among working capital management and firm's profitability. The study found cash conversion cycle and average collection period are significantly and negatively related to profitability whereas average payable period and inventory holding period had positive impact. Next **Elina (2010)** settled that there is a weak negative linier correlation between working capital management indicators and profitability.

Afza & Nasir(2010) found significant and positive relationship between working capital management and profitability.

Wanguu & Kipkirui (2011) observed inventory conversion period positively and significantly influences profitability while average receivables period had a positive insignificant relationship with profitability.

Vural (2012) used dynamic panel data analysis and found out average collection period and cash conversion cycle had positive effect on profitability.

Napompech(2012) & Akoto et al. (2013) revealed inventory conversion period, cash conversion cycle current asset ratio, size and receivables collection period are positively related profitability of firms. Contradictory results by **Akoto & Angmor (2013)** exposedthat cash conversion cycle, current asset ratio, size and inventory turnover ratio has negative impact on profitability of firms.

Mobeen &Naveed (2013) outlined the inverse and positive association between working capital and profitability of Pakistan cement sectors. In similar sector and country, **Arshad & Yasir(2013)** found out the significant negative relationship between working capital management and profitability of the firms.

Hampus & Micael(2013) determinedpositive relationship between the cash Conversion Cycle and profitability.

Agha et al.,(2014)disclosed positive relationship between debtor's turnover, inventory turnover, creditor's turnover and profitability(ROA), but current ratio is insignificantly correlated with return on asset.

Hoang (2015) & Garg(2015) offered the significant negative relationships between cash conversion cycle, average collection period, average inventory period, average payment period and return on assets.

Carla et al.,(2015)revealed insignificant relationship between cash conversion cycle and profitability of firms.

Famil & Ali (2016) found significant and negative relationship between accounts receivable period and profitability in the manufacturing industry.

Musyoka (2018) in Kenya and Mbella &**Ngongang (2018)** in Cameroon studied the effect of working capital management firm's profitability. They found that inventory collection period, average account payable, debt equity ratio have negative impact and day's payables outstanding and current ratio have a significant positive impact on profitability of firms.

Khalid et al. (2018) & Leonard (2018) reviewed the impact of working capital management on profitability of firms. They gathered secondary data for analysis. The result displayed working capital management has positive significant impact on profitability of firms.

Korent & Orsag(2018) found working capital management significantly affects the profitability of Croation software firms.

Thiago et al.,(2020) elucidated positive and statistically significant association between all proxies of working capital and profitability.

Anh et al.,(2020) justified the negative and significant impacts of the working capital management which proxied by cash conversion cycle, accounts receivable turnover, inventory turnover, and accounts payable turnover on the firm's profitability.

Empirical Literature in the Ethiopian Context

Vallalnathan &Joriye (2012) disputed the impact working capital management on profitability of cooperative unions in East Showa, Ethiopia. The results showed that average collection period has a negative, inventory turnover period (ITP) has a positive and cash conversion cycle (CCC) had positive effect on the profitability.

Napompech (2012) revealed a negative relationship between the profitability and inventory conversion period and the receivables collection period.

Wobshet(2014) measured the impact of working capital management on selected metal manufacturing Firms' in Addis Ababa. The study discovered that account receivable period; inventory conversion period, cash conversion cycle and account payable period was highly significant negatively correlated with firm's profitability.

Lakech(2015) studied on the effects of working capital management on profitability of Ethiopian Sugar manufacturing industry. The study found that account payable period has a significant negative effect and account receivable period has a significant positive effect on profitability but cash conversion period and inventory conversion period have insignificant positive impact on profitability.

Dinku(2015)assessed impact level of working capital management on profitability of micro and small enterprises in Bahir Dar city administration, Ethiopia. The result presented thatthere is a strong positive relationship between number of day's accounts payable andprofitability. However, number

of days accounts receivable, number of days inventory and cash conversion cycle have a significant negative impact on profitability.

Birhane(2016) used explanatory research design and observed the impact of working capital management on Profitability of Wheat Flour Factories in Adama City, Oromia. The study showed that from specific factors like average payment period and debt ratio have negative significant impact and macroeconomics such as food inflation rate and real GDP growth rate have positive significant impact on profitability.

Ahmed & Ahmed (2016) displayed average collection period, cash conversion cycle and inventory holding period have negative impact on profitability of firms and account payable period has positive impact.

Beemnet(2018)evaluatedthe impact of working capital management on profitability of construction firms in Ethiopia. The study concluded that there is significant negative relationship between WCM (average collectionperiod and inventory holding period) and profitability (ROA). Nonetheless, accounts payableperiod was found to be insignificant in affecting profitability of the firms.
Abraham (2020) sawthe relationship between working capital management and profitability of Manufacturing Firms in Adama City.The study showed that average payment period has significant positive and sales growth and firm size have opposite influence on profitability of firms.
Fekadu (2021) revealed that account receivables period, cash conversion cycle, and accounts payable period has a statistically significant and positive connection with the performance of exporting firms in Ethiopia. The inventory conversion period has a statistically significant and positive impact

Materials and Methods

The study was conducted to examine the impact of working capital management on profitability of selected manufacturing firms in Sebeta Town from the period 2004-2016.

Research Design: An explanatory research design

Study Location: Sebeta town, Oromia, Ethiopia.

Study Duration: 2004 - 2016 year

Sampling technique: purposive sampling technique

Sample size: 14manufacturing firms

Observations:14 manufacturing firms with the total observations of 140

Data: annual reports of selected 14firms

Econometrics model: Random effectmodel (REM)

Description and Measurement of Variables

The dependent variable (DV) in this study is return on asset (ROA). The independent variables are: average collection period, inventory holding period, cash conversion cycle, accounts payable period and current ratio.

Table1: Measurements of variables

Variables	Proxies	Expected sign
Return on asset(ROA)	Net income After tax/Total Asset	
Average collection period(ACP)	(Accounts receivables/Sales)*365 days	-
Inventory holding period (IHP)	(Inventory/CGS)*365 days	-
Accounts Payable Period(APP)	(Accounts payable/CGS)*365 days)	-
Cash conversion cycle (CCC)	(ACP +IHP-APP)	-
Current ratio(CR)	Current assets/current liabilities	+

Source: Literature Review

Empirical Model

The study is modeled according to the study of **Anh et al.,(2020),** which investigated on the impact of working capital management on Vietnam firm's profitability. The study modified the model on the right side by adding the current ratio as exploratory variable. The model is articulated as follows:

$$ROA_{i,t} = \alpha - \beta_1 (ACP_{it}) - \beta_2(IHP_{it}) - \beta_3(APP_{it}) - \beta_4(CCC_{it}) + \beta_5(CR_{it}) + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

The models are used to examine the factors influencing the profitability/return on asset (ROA) with the main interest is firm's specific factors (β_1 – β_5). The random effect model is used to test the overall result of return on asset for the period of **2004-2016.**

Result and Discussion

The study used a panel regression technique to examine the impact of working capital management on the profitability of manufacturing firms in Sebeta town. Five independent variables on one dependent variable (ROA) were tested. Under this section, diagnostic tests are made, correlation analysis was presented, economic model was applied, Result of random effects regression analysis was presented and Result and discussion of the results were presented.

Diagnostic Tests

Before regression analysis and hypothesis testing, multicollinearity and parameter stability tests were tested to know whether the assumption of classical linear regression model (CLRM) was violated or not.

a) Multicolinearity test

Multicollinearity problem is occurred when the correlation coefficient between two explanatory variables is above 0.75(Kennedy, 2008). As presented in table 3, there is no correlation above 0.75 and no significance multicollinearity problem occurred.

Table 2: Pearson correlation

Variable	ARP	IHP	APP	CCC	CR
ACP	1				
IHP	-0.0029	1			
APP	0.0841	0.0229	1		
CCC	0.2645	0.1925	0.1969	1	
CR	-0.1323	0.0461	-0.1267	0.05997	1

Source: Generated from STATA 11

b) Panel Normality Test

The below table result showed, since p-value exceeds 0.05 in the model, there is linearity evidence in regression equation and profitability(ROA) has stable relation with working capital management(ACP, IHP, APP, CCC and CR).

Table3: Result of panel normality test

F-statistic	8.09	Probability		0.061170

Source: Generated from STATA 11

c) Hausman Specification Test

As stated in Table4, the p-value of the test for the model which is 0.582 is greater than 0.05. This showed that the fixed effects model should be rejected and thus, the analysis is based on the random effects regression model.

Table 4: Hausman test: Fixed effects model Vs Random effects model

Hausman Test:	H0: REM > FEM	Ha: FEM > REM	
ROA Model	Prob.(F-statistic)	Chi-sq statistic (χ^2)	Preferred model
	0.582	3.78	Random Effect model

Source: Generated from STATA 11

Correlation Analysis

Correlation analysis was under taken to measure the linear association between the dependent and the independent variables. The results on table indicated inventory holding period, average collection period, cash conversion cycle and average payables period are negatively correlated with profitability. In addition, the result established that liquidity (current ratio) of the firm had a positive correlation with profitability.

Table 5: Pearson Correlation matrix

Variable	ROA	ACP	IHP	APP	CCC	CR
ROA	1					
ACP	-0.1529	1				
IHP	-0.1236	-0.0029	1			
APP	-0.0797	0.0841	0.0229	1		
CCC	-0.1470	0.2645	0.1925	0.1969	1	
CR	0.3370	-0.1323	0.0461	-0.1267	0.0597	1

Source: Generated from STATA 11

Random Effects Regression Analysis

Table 6: ROA Model

ROA Model				
Variable	**Coef.**	**Std. Err.**	**T**	**P>|t|**
ACP	*-.0368364*	*.0168141*	- 2.19	0.028*
IHP	*-.0398391*	*.0185168*	- 2.15	0.031*
APP	*-.0076404*	*.0096061*	-0.80	0.426
CCC	*- .04694*	*.0169317*	-2.77	0.006*
CR	*.1040309*	*.0314488*	3.31	0.001**
Cons.	*56.0833*	*10.95949*	5.12	0.000**
R^2= 56%	F- Statistic = 26.19		Prob.(F- Statistic)= 0.0001	
Corr(ui, X) = 0(assumed)	Number of obs. = 182		Number of groups = 14	

Source: Generated from STATA 11

ROA Model= $\beta_0 - \beta_1 (ACPR_{it}) - \beta_2(IHP_{it}) - \beta_3(APPR_{it}) - \beta_4(CCC_{it})+\beta_5(CR_{it})+\varepsilon_{it}$

ROA Model = 56.08 - .0368 - .0398X2 -.0076X3 - .0469X4 + .1040X5

[10.96] [.017] [.019] [.010] [.017] [.031]

1) Average Collection Period and Profitability (ROA)

Random Effect Model (REM) find out that average collection period (ACP) has negative and significant impact on profitability of manufacturing firms. This finding conforms to Akoto et al., (2013), Hoang (2015), Mbella & Ngongang (2018). However, the findings disagreed to the findings of Wanguu& Kipkirui (2015) who established a insignificantly positive relationship between profitability and average collection period.

2) Inventory Holding period and Profitability (ROA)

The model established negative and significant relationship between inventory holding period and return on asset.This finding similar the findings of Napompech (2012), Hoang (2015), Mbella & Ngongang (2018) but the finding is contacted with the findings of Wanguu & Kipkirui (2015), Khalid et al., (2018).

3) Average payable period and Profitability (ROA)

The model recognized average payables period had an insignificant negative relationship with profitability. Akoto et al., (2013) & Musyoka (2018) found positive insignificant impact of average payables period on profitability.

4) Cash Conversion cycle and Profitability (ROA)

Cash conversion cycle has significant negative impact on profitability. This result similar to the findings of Napompech(2012),Hoang(2015), Mifta (2016) and Leonard (2018). However, the findings are contradictory to those of Vural(2012), Akoto et al., (2013)

5) Current Ratio and Profitability (ROA)

Lastly, the findings revealed that current ratio had a positive significant impact on profitability. Similar to the findings of Akoto et al., (2013), Hoang(2015),Wanguu &Kipkirui (2015),Ahmed & Ahmed (2016) & Musyoka(2018). However, the findings are contradictory to those of Ngwenya (2008) &Tamene (2017) who established a negative and significant relationship between liquidity and profitability.

Conclusions

The study aimed to examine the impact of the WCM on 14 manufacturing firms in Sebeta town, , Oromia regional state, Ethiopia for the 13 year period from **2004 to 2016**. The study found that the negative and significant impacts of working capital management (ACP, IHP, APP and CCC) on the firm's profitability (ROA).

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