THE ROLE OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF CEMENT MANUFACTURING COMPANIES IN ETHIOPIA

Asmamaw Yigzaw Chirkos, Bahir Dar University

ABSTRACT

This study's objective is to assess how working capital management affects a company's profitability that means the main objective of the study is to examine the relationship between working capital management and profitability of cement manufacturing companies in Ethiopia. In order to achieve this goal, the study uses quantitative methods to examine a number of research hypotheses. Using a sample of four cement manufacturing enterprises, 24 observations were made during a six-year period (2017-2022). Using regression analysis and Pearson's correlation, data is quantitatively examined (Ordinary Least Square). The study's main conclusions are as follows: firstly, the firm's profitability and the cash conversion cycle have a favorable link. This indicates that when the cash conversion cycle grows, the firm's profitability will also grow. Managers can expand the cash conversion cycle to a suitable level in order to increase value for shareholders; Second, there is a negative correlation between profitability and liquidity, indicating that as profitability rises, liquidity declines; Finally, the average collection duration has a highly significant inverse association with profitability, showing that a reduction in the number of days a firm must wait before receiving payment from sales has a favorable impact on the profitability of the firm; Fourth, the average payment period and profitability have a highly significant positive association. This suggests that a company is more profitable the longer it takes to pay its creditors. Fifthly, there is a highly substantial inverse link between profitability and inventory turnover in days, suggesting that companies with low enough inventory levels save money on storage costs, which boosts profits.

Keywords: Working Capital Management, Profitability, Cement Manufacturing

INTRODUCTION

Background of the Study

According to Bhattacharya (2021), Working capital is means of survival for every business concern therefore; every business requires working capital for its survival and the Working Capital cycle refers to the time it takes to turn current assets and liabilities into cash. The longer the cycle continues the more money a firm spends on working capital without making a profit. As a result, firms aim to reduce their Working Capital cycle by collecting receivables faster and delaying account payable payments.

The process through which a business aims to make the best use of its current assets and current liabilities to achieve operational performance is known as working capital management, therefore, it is concerned with managing current assets and current obligations and has an immediate impact on the company's liquidity and profitability (Deloof, 2003; Eljelly, 2004;

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Raheman and Nasr, 2007). Working capital management affects a company's profitability and liquidity and puts forward a well-known front in that regard. The company manager should precisely manage the trade-off between profitability maximization and liquidity to achieve effective working capital management (Raheman and Nasr, 2007). The generation of business value is anticipated to benefit from optimum working capital management (Howorth and Weshead, 2003; Deloof, 2003; Afza and Nazir, 2009).

Management of working capital is crucial for a variety of reasons. One of them is the fact that the typical manufacturing company's current assets make up more than half of their overall assets. They are even more significant for distributors. A company could easily realize a poor return on investment if it has too many current assets. Yet, businesses with insufficient current assets may have shortages and have trouble maintaining efficient operations (Horne and Wachowicz, 2000). Excessive planning and controlling are required for effective working capital management. To remove the risk of not being able to fulfill short-term obligations and to prevent excessive investment in these assets, there must be a balance between current assets and current liabilities (Eljelly, 2004). Several studies have found that managers devote a significant amount of time to daily issues concerning working capital decisions. One explanation for this is the fact that current assets are transient investments that are frequently transformed into other asset classes (Rao, 1989)

As pointed out by Wamba and Jagging (2020) working capital management has a significant impact on the financial performance of the firm and so entails effective management to balance performance with the risk of failing to satisfy financial obligations when they become due. The proper management of working capital may bring about the success of a business firm, the crucial purpose of working capital management is to ensure continuity in the operations of a firm or the going concern of an entity and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses by managing inventories, accounts receivables, accounts payables and cash (Jain,& Goel 2017).

Efficient working capital management requires a proper balance between generation and utilization of the funds as well as providing the needed funds on the right time from the right source and for the right period, so that a tradeoff between liquidity and profitability may be achieved properly managed and designed components of working capital provides a general direction to achieve the firm’s profitability and liquidity (Ahmed,2016). A typical index of a good status and scale of one’s business management is the capability of operating working capital management to maintain a solid balance between growth, profitability and liquidity. Hence, there is a trade-off between these two themes and disregarding liquidity may result in insolvency and bankruptcy of the firms (Hawley, 2021).

To maximize shareholder value, effective working capital management is a critical component of overall corporate strategy. Working capital is said to be the result of the delay between spending money to buy raw materials and receiving money from sales of finished items. The way a firm manages its working capital can have a big impact on its liquidity and profitability (Shin & Soenen, 1998). Any company's primary goal is to maximize profit. But, maintaining the firm's liquidity is also a key goal. The issue is that growing earnings at the expense of liquidity can cause the company major issues. So, the firm's strategy must maintain a balance between these two goals of the firms. Working capital management has a dilemma in achieving the ideal balance between liquidity and profitability (Smith, 1980; Raheman & Nasr, 2007).

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According to the risk and return theory, investments with higher levels of risk will provide higher returns. Hence, businesses with strong working capital liquidity may also have low risk and low profitability. In contrast, a company with limited working capital liquidity runs a significant chance of high profitability. Considering the importance of working capital management the study focused on analyzing relationship between working capital management and profitability relationship cement manufacturing companies. In this context, the objective of the current study is to provide empirical evidences about the effect of working capital management on profitability of cement manufacturing companies in Ethiopia during the period 2017–2022.

Objective of the study

The main objective of the study is to examine the relationship between working capital management and profitability of cement manufacturing companies in Ethiopia. To achieve the above general objective, the following specific objectives will be used:

- To analyze the relationship between average collection period and profitability of manufacturing firms.
- To assess the relationship between inventories turnover in days and profitability of manufacturing firms.
- To establish the relationship between average payment period and profitability of manufacturing firms.
- To evaluate the relationship between cash conversion cycle and profitability of manufacturing firms.
- To evaluate the relationship between *Current Ratio* and profitability of manufacturing firms

Hypotheses Formulation

As the objective of this study is to know the relationship between working capital management and profitability of firms, in relation to cement manufacturing companies in Ethiopia, the study makes a set of testable hypotheses as follows.

Hypotheses (H1): There is a relationship between Current Ratio and Return on Asset.
Hypotheses (H2): There is relationship between cash conversion cycle and Return on Asset.
Hypotheses (H3): There is a relationship between Average Age of Inventory and Return on Asset.
Hypotheses (H4): There is a relationship between Average Payment Period and Return on Asset.
Hypotheses (H5): There is a relationship between Average collection Period and Return on Asset.

REVIEW OF LITERATURE

Objective of Working Capital Management

According to Gitman (2009) the objective of Working Capital Management (WCM) is to minimize the Cash Conversion Cycle (CCC) the amount of capital tied up in the firm's current assets. It focuses on controlling account receivables and their collection process, and managing the investment in inventory. Working capital management is vital for all business survival, sustainability and its direct impact on performance. Working capital management is an important area of financial management in every business function. WCM deals with the administration of the liquidity components of firms' short-term current assets and current liabilities (Baker and Powell, 2005; Brigham and Ehrhardt, 2005; Gitman, 2009). The most important current assets are cash, debtors or account receivables, stock or inventory and current liabilities consisting of creditors or account payables, accrued expenses, taxation liabilities, short-term debt such as

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commercial bills, and provisions for current liabilities such as dividends declared but not yet paid (Birt et al., 2011; Gitman, 2009; D. Sharma, 2009).

Review of Empirical Studies

Various studies have analyzed the relationship of working capital management (WCM) and firm profitability in various markets. The results are quite mixed, but a majority of studies conclude a negative relationship between WCM and firm profitability. The studies reviewed have used various variables to analyze the relationship, with different methodology such as linear regression and panel data regression. This section presents the chronology of major studies related to this study in order to assess and identify the research gap.

Many researchers have studied working capital from different views and in different environments. Anand and Gupta (2002) analyzed working capital management performance of Corporate India by using three financial parameters - Cash Conversion Efficiency Days Operating Cycle and Days Working Capital and by assigning them different weights in the overall score, to rank and analyse working capital management performance. This study provides the estimates by using data of 427 companies over the period 1998-99 to 2000- 01 for each company and for each industry.

Gul, Khan, Rehman, Khan, Khan and Khan (2013) investigated the influence of working capital management (WCM) on performance of small medium enterprises (SMEs) in Pakistan. The duration of the study was seven years from 2006 to 2012. The data used in this study was taken from SMEDA, Karachi Stock Exchange, tax offices, company itself and Bloom burgee business week. The dependent variable of the study was Return on Assets (ROA) which was used as a proxy for profitability. Independent variables were Number of Days Account Receivable (ACP), Number of Day's Inventory (INV), Cash Conversion Cycle (CCC) and Number of Days Account Payable (APP). In addition to these variables some other variables were used which included Firm Size (SIZE), Debit Ratio (DR) and Growth (GROWTH). Regression analysis was used to determine the relationship between WCM and performance of SMEs in Pakistan. Results suggested that APP, GROWTH and SIZE have positive association with Profitability whereas ACP, INV, CCC and DR have inverse relation with profitability.

Oladipupo and Okafor (2013) examined the implications of a firm's working capital management practice on its profitability and dividend payout ratio. The study focused on the extent of the effects of working capital management on the Profitability and Dividend Payout Ratio. Financial data were obtained from 12 manufacturing companies quoted on the Nigeria Stock Exchange over 5 years period (2002 to 2006). Using both the Pearson product moment correlation technique and ordinary least square (OLS) regression technique, they observed that shorter net trade cycle and debt ratio promote high corporate profitability. While the level of leverage has negative significant impact on corporate profitability, the impacts of working capital management on corporate profitability appeared to be statistically insignificant at 5% confidence level.

Gakure, Cheluget, Onyango and Keraro (2012) analyzed the relationship between working capital management and performance of 15 manufacturing firms listed at the Nairobi NSE from 2006 to 2010 and for a total 75 firms year observations. They used secondary data from a sample of 18 companies at the NSE. A regression model was used to establish the relationship between the dependent variable and the independent variables. Pearson's correlation and regression analysis were used for the analysis. The results indicated that there is a strong negative relationship between firm's performance and liquidity of the firm. The study found that

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there is a negative coefficient relationship between accounts collection period, average payment period, inventory holding period and profitability while the cash conversion cycle was found to be positively correlated with profitability. However, the effects of the independent variables except the average payment period were no statistically significant though the overall model was statistically significant.

Sharma and Kumar (2011) examined the effect of working capital on profitability of Indianfirms. 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. The results revealed that working capital management and profitability is positively correlated in Indian companies. The study further reveals that inventory of number of days and numbers of day's accounts payable are negatively correlated with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibit a positive relationship with corporate profitability.

Raheman, Afza, Qayyum and Bodla (2010) analyzed the impact of working capital management on firm's performance in Pakistan for the period 1998 to 2007. For this purpose, balanced panel data of 204 manufacturing firms was used which are listed on Karachi Stock Exchange. The results indicate that the cash conversion cycle, net trade cycle and inventory turnover in days are significantly affecting the performance of the firms. They concluded that manufacturing firms were in general facing problems with their collection and payment policies. Moreover, financial leverage, sales growth and firm size also had significant effect on the firm's profitability. They study recommended that effective policies must be formulated for the individual components of working capital.

Working capital management, this deals with the management of current assets and currentliabilities, directly affects the liquidity and profitability of the company. However, an appropriate attention usually is not given for. The ability of the firm to continuously operate for longer period is depending on how they deal with investment in working capital. There are much empirical evidences in the financial literature that present the importance of working capital management (Deloof 2003; Teruel and Solano, 2007; Shin and Soenen, 1998 and Wang, 2002; Raheman and Nasr, 2007). Results of these empirical analysis show that there is statistical evidence for a strong relationship between the firm's profitability and its WCM efficiency. The studies also give significant evidence that issues of WCM vary for different industries and firms from different industry sectors adopt different approaches to working capital management and follow an appropriate working capital management approach that is favorable to their industry.

lthough studies on working capital management have been carried out by various scholars such as Gul, Khan, Rehman, Khan, Khan and Khan (2013); Oladipupo and Okafor (2013); Ahmad (2013); Akoto, Awunyo-Vitor and Angmor (2013); Omesa, Maniagi, Musiega and Makori (2013); Maradi, Salehi and Arianpoor (2012); Gakure, Cheluget, Onyango and Keraro (2012); Sharma and Kumar (2011); Mathuva (2010); and Gill, Biger and Mathur (2010, it is instructive to note that there is still ambiguity regarding the appropriate variables that might serve as proxies for working capital management. These studies do not provide clear-cut direction of the relationship between working capital and firm's profitability. Further examination of these studies reveals that there is little of empirical evidence on the working capital management and its impact on the firm profitability in case of manufacturing sectors of Ethiopia. Therefore, the present study is an attempt to fill this gap and estimates the relationship between working capital management variables (Average Collection Period, Inventory

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Conversion Period, Average Payment Period and Cash Conversion Cycle) and firm profitability of manufacturing firms in Ethiopa.

Conceptual Framework

The conceptual framework illustrates the interaction between the independent (Average Collection Period, Inventory Conversion Period, Average Payment Period and Cash Conversion Cycle) and dependent (Profitability of manufacturing firms) variables. The framework hypothesizes that there exists a relationship between Average Collection Period, Inventory Conversion Period, Average Payment Period and Cash Conversion Cycle and profitability of manufacturing firms. From the literature review mentioned above, the researchers are developing the following schematic representation of the conceptual framework/ model for this study see figure 1.

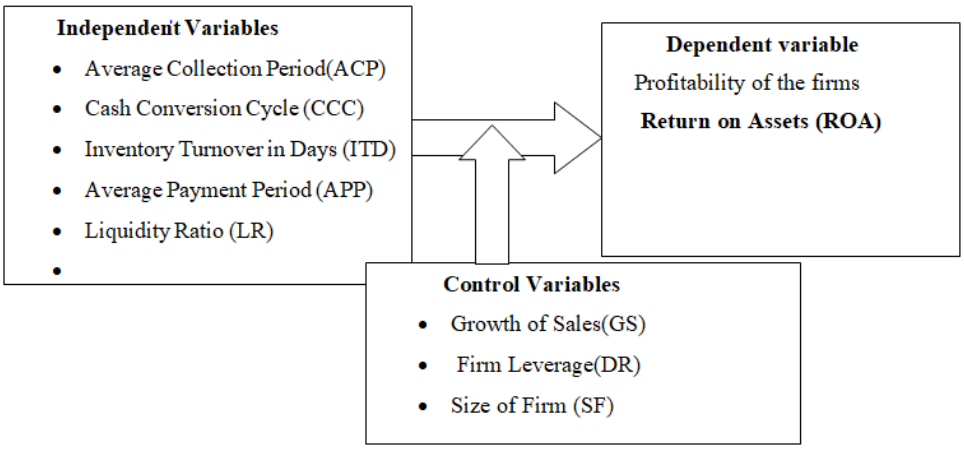

Figure 1
CONCEPTUAL FRAMEWORK

RESEARCH METHODOLOGY

Research Design and Sampling Design

The explanatory type of study with a quantitative approach would be employed to analyze the data collected. The research design used in this study is a pooled panel data analysis of cross-sectional and time series data. Pooled panel data analysis, also called the constant coefficients model is one where both intercepts and slopes are constant, where the cross section firm data and time series data are pooled together in a single column assuming that there is no significant cross section or temporal effects (Gujarati, 2003). This study is conducted on Cement manufacturing firms in Ethiopia with the intention to provide evidence for the effects of working management on the profitability of such firms. The total population of the study is all Cement manufacturing companies located and operating in Ethiopia. The criterion used in selecting sample units to be included in the study is holding a complete six years financial statement data.

Data Source and Collection Methods

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The data required for the purpose of analysis would be obtained from secondary sources; audited financial statements including balance Sheet and Income Statement of Cement manufacturing companies for a period of six years (2002-2007 E.C). Most of the required data would be obtained from the financial statements submitted to the Ethiopian Revenues and Customs Authority (ERCA), for income tax purpose if possible, otherwise the data would be obtained directly from the respective companies.

Data Analysis

Descriptive statistics would be used as the first step in the analysis and it would be used to describe relevant aspects of observable facts about the variables and provide detailed information about each relevant variable. At this stage, mean, standard deviation, maximum and minimum values of the required variables would be computed. The data obtained would be also analyzed by using two quantitative analysis methods. First, Pair wise Correlation analysis is used to measure the degree of association between the dependent variables and explanatory variables. Second, linear panel data regression models would be used to analyze the causal relationships of profitability variables with working capital management and control variables.

"By combining time series of cross-section observations, panel data gives more informative data, more variability, less co-linearity among variables, more degrees of freedom and more efficiency" (Baltagi cited by Gujarati 2003:637). STATA software would be used for the purpose of analysis and tables are used to present the results from the analysis.

Model Specification

It is important to note that the ROA depend upon *LR; ACP; APP; ITD and CCC* the following model is formulated to measure the impact of working capital management on profitability. According to previous studies the firm's profitability is modeled as a function of the above core working capital management measures in addition to other firm characteristics. The effects of working capital management on the firm's profitability are modeled using the following equations to obtain the estimates:

$$ROA = f(LR;ACP;APP;ITD;CCC;GS:DR:SF)$$

$$ROA = \beta o + \beta 1\ LR + \beta 2\ ACP + \beta 3\ APP + \beta 4\ ITD + \beta 5\ CCC + \beta 6\ GS + \beta 7\ DR + \beta 8\ SF + \acute{\varepsilon}$$

The purpose of this paper is to contribute towards a very important aspect of financial management known as working capital management with reference to Cement manufacturing companies in Ethiopia. Here the researchers would assess the relationship between working capital management practices and its effects on profitability of Cement manufacturing firms for a period of six years from 2002 – 2007. The data collected will be analyzed using multiple regression and correlation analysis to establish the relationship between the independent variables of working capital: ACP, APP, ITID,LR and CCC and the dependent variable (Operating Profit). According to Kothari (2004), regression analysis is concerned with the study of how one or more variables affect changes in another variable.

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RESULTS AND DISCUSSION

Descriptive Statistics

Table 1 below presents a summary of descriptive statistics of the dependent and independent variables for four Cement manufacturing companies for a period of six years from 2002 to 2007 E.C making a total of 24 study observations.

Table 1
DESCRIPTIVE STATISTICS

Variables	Mean	Std.Dev	Minimum	Maximum
ACP	22.12	8.20	11.70	41.54
ITD	115	15.68	80.19	154.12
APP	76.20	30.16	53.09	192.14
CCC	59.93	28.33	-23.98	100.97
LR	2.35	1.28	0.60	4.01
FS	16.45	4.20	13.25	20.28
DR	0.30	0.14	0.24	0.60
SG	0.18	0.20	-0.30	0.84
ROA	0.70	0.18	0.40	0.94

Table 1 above shows that the average value of operating profitability is 70% of total sales, and standard deviation is 18%. This means that the value of profitability can deviate from the mean to both sides by 18%. The maximum and minimum values of operating profitability are 94% and 40% respectively. Information from Table 1 also indicates that the mean value of cash conversion cycle that used as a comprehensive measurement of managing working capital is 60 days and standard deviation is 28 days.

The maximum and minimum values of cash conversion cycle are 101 days and -24 days respectively. The firms receive payment against sales after an average of 22 days and standard deviation is 8.20 days. Minimum time taken by a company to collect cash from receivables is 11.70 days while the maximum time for this purpose is 42.54 days. It takes an average 115 days to sell inventory with standard deviation of 15.68 days. The maximum time taken by a company to sell inventory is 154.12 days, which is not a very large time period to convert inventory into sales for manufacturing firms.

The firms wait an average 76.20 days to pay their purchases with standard deviation of 30.16 days. The minimum time taken by a company to pay its purchases is 53.09 days and maximum time taken for this purpose is 192.14 days. The size of the firm and its relationship with profitability as measured by natural logarithm of sales is used as a control variable. The mean value of log of sales is 16.45 while the standard deviation is 4.20. The maximum value of log of sales for a company in a year is 20.28 and the minimum is 13.25. In the same way to check the liquidity of the companies, a traditional measure of liquidity is used. The average current ratio for manufacturing firms included in this study is 2.35 with a standard deviation of 1.28. The highest current ratio for a company in a particular year is 4.01 times and in the same way the minimum ratio for a company in a year is 0.60. The average leverage/debt ratio is 0.30

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with a standard deviation of 0.14. The maximum and minimum of leverage/ debt ratio are 0.60 and 0.24 respectively.

Pearson Correlation Analysis

Table 2 below presents the Pearson correlation for the variables that are used in the regression model. Pearson's correlation analysis is used to find the relationship between dependent and independent variables (working capital management and operating profit of manufacturing firms). The table shows how variables relate to one another in the process of making company profitability analysis. ACP is related positively to ITD, APP and LR meaning that as ACP increases ITD, APP and LR also increase. There is a negative relationship between ACP and CCC and FS which shows that as ACP goes up CCC increases. ITD has a positive relationship with APP, CCC and CAR meaning that as ITD increases APP, CCC and LR also increase. APP has a positive relationship with LR showing that as APP increases LR also increases while it relates negatively with CCC. Finally, there exists a negative relationship between CCC and CAR indicating that LR is lower when CCC is higher.

Table 2
CORRELATION ANALYSIS BETWEEN WORKING CAPITAL MANAGEMENT VARIABLES AND PROFITABILITY

Variables	ACP	ITD	APP	CCC	LR	FS	DR	SG
ACP	1							
ITD	0.0065	1						
APP	0.381	0.229	1					
CCC	-0.081	0.037	-0.753	1				
LR	0.238	0.308	0.327	-0.057	1			
FS	-0.149	0.124	-0.127	0.180	-0.309	1		
DR	0.036	-0.106	0.370	-0.390	0.221	-0.545	1	
SG	0.145	-0.076	0.025	-0.021	0.145	-0.012	0.109	

Regression Analysis

The results of the regression analysis are shown on Table 3 below .This shows the extent on how working capital management variables affect companies' profitability measured by return on assets.

Table 3
OLS REGRESSION OF DEPENDENT AND INDEPENDENT VARIABLES

Variables	Coefficients	Std Error	t- Stat	P-value
Constant	0.812	0.260	2.618	0.0157
ACP	-0.043	0.014	-3.219	.005
ITD	-0.035	0.014	-3.045	0.006
APP	0.047	0.014	3.169	0.005
CCC	0.045	0.014	3.126	0.004
LR	-0.020	0.023	- 0.878	0.369
FS	-0.014	0.008	- 1.785	0.069
DR	0.013	0.278	0.034	0.885
SG	-0.278	0.125	-2.350	0.029
R^2 = 0.560		*Adjusted R^2 = 0.350*		*F-value = 2.320*

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The adjusted R^2 of the model is 35% and value for the R^2 in the model is 0.56 which implies that 56% of the variation in the dependent variable is explained by the model. The 46% variation in the dependent variable remains unexplained by the independent variables of the study.

The results of regression indicate that the coefficient of ACP is negative with -0.043 and p-value of 0.005. This implies that the increase or decrease in ACP will significantly affect profitability of the firm. APP has a positive coefficient of 0.047 with p-value (0.005) implying that the increase or decrease in the average payment period, significantly affects profitability of the firm. The positive relationship between average payment period and profitability indicates that the more profitable the firms wait longer to pay their bills. The cash conversion cycle is used to measure efficiency of working capital management. Regression results indicate that there is a positive (0.045) relationship between cash conversion cycle and operating profitability which implies that the increase or decrease in the cash conversion cycle significantly affects profitability of the firm. Also inventory turnover in days shows a negative (-0.035) relationship with profitability which indicates that if the inventory turnover in days increases the profitability decreases.

The leverage/debt ratio used as a proxy for leverage has a significant positive relationship with the dependent variable, which means that, when leverage of the firm increases, profitability also increases. The size of the firm has a negative impact on profitability implying that with the increase in size, profitability declines, sales growth also shows a negative relationship with profitability which indicates that when the sales growth increases, the profitability decreases, and the current ratio has a positive impact on profitability.

CONCLUSION

The study attempted to empirically assess the role of working capital management on profitability of Cement manufacturing companies in Ethiopia. Working capital management is one of a company's most crucial financial decisions. Companies can achieve optimal working capital management by maintaining a balance between profitability and liquidity. A company's working capital must be carefully monitored and balanced at all times. The firm's capacity to run for longer periods of time is dependent on a trade-off between long-term and short-term investment management. Working capital shortages can result in a lack of liquidity as well as reduced productivity and revenue; on the other extreme, an excess of working capital can lead to a loss of investment options.

In general, the adjusted R^2 of the model is 35% and value for the R^2 in the model is 0.56 which implies that 56% of the variation in the dependent variable is explained by the model. The 46% variation in the dependent variable remains unexplained by the independent variables of the study. Similarly, the results of regression indicate that the coefficient of ACP is negative with -0.043 and p-value of 0.005. This implies that the increase or decrease in ACP will significantly affect profitability of the firm. APP has a positive coefficient of 0.047 with p-value (0.005) implying that the increase or decrease in the average payment period, significantly affects profitability of the firm. The positive relationship between average payment period and profitability indicates that the more profitable the firms wait longer to pay their bills.

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List of Abbreviations and Acronyms

- WCM: Working capital management
- ACP: Average Collection Period
- CCC: Cash Conversion Cycle
- ITD: Inventory Turnover in Days
- APP: Average Payment Period
- LR: Liquidity Ratio
- GS: Growth of Sales
- DR: Firm Leverage
- SF: Size of Firm
- CMC: Cement Manufacturing Company
- ROA: Return on Assets

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