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Cash Conversion Cycle and Its Impact on Profitability: A Study of Cement Companies of India

Gupta, N. K.[1] and Shruti Bhuttani[2]

[1]Associate Professor, Ramjas College, Delhi University, [2]Assistant Professor, Jagannath International Management School, Indraprastha University, sirnkgupta@yahoo.com / shruti.bhuttani@gmail.com

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ABSTRACT

The purpose of this study is to investigate the relationship between cash conversion cycle and profitability. The study covers top 10 cement firms of India listed on Bombay Stock Exchange (BSE) over a period of past 10 years from 2005-2014. Return on assets and Return on investment are taken as measures of profitability to represent dependent variables. Cash Conversion Cycle is studied as an independent variable. Correlation and regression analysis were used in the study and findings suggest that there is no impact of cash management (cash conversion cycle) on the returns of cement companies in India.

Introduction

Cash is one of the most important component of any business. Proper management of cash is essential for the survival, growth and profits of any business. Cash Management involves management of cash inflows, cash outflows, cash flows within the firm and investment of cash surplus. Maintaining an adequate level of cash is very important as shortage can disrupt firm's manufacturing operation and excess can affect its profitability. Basley and Brigham (2005) defined "Cash Conversion cycle is the length of the time from the payment made to purchase of raw material to manufacture a product until the cash received from the sale of the product". Cash conversion cycle (CCC) is mainly based on three components, which are:

- Time taken to convert inventory into finished goods as Inventory conversion period (ICP),
- Time involved in conversion of sales into cash as Account Receivable Period (ARP) and
- Time involved in payment for the resources acquired as Account Payable Period (APP).

It is calculated as sum of ICP and ARP minus APP. CCC= ICP+ ARP-APP.

Cash Conversion cycle is considered amongst the fundamental ingredients of Working capital management. (Appuhami, 2008; Keown et al. 2003 and Bodie and Merton, 2000.)

It being an indicator of liquidity needs to be explored to ascertain its impact on the profitability It can be positive as well as negative. Positive cash conversion cycle might not be a good sign of liquidity as it means that the firm is very prompt in making payments to creditors while there is a delay in collection of fund from the debtors. This indicates that the firm needs to arrange the funds from the internal or borrowed sources for daily management of operations and meeting its current obligation before its receivables are converted into cash. At the same time positive cash conversion cycle can be a good

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sign of profitability, however delay in receivable from debtors implies that large amount of goods were sold on credit thus increasing the chances of higher profitability as selling goods on credit increases the number of buyers. Increased profitability will be beneficial only if the derived profit is much higher than the investment in working capital. On the other hand negative Cash Conversion cycle is a good sign of liquidity as it indicates that firms are receiving cash much before the payment to the creditors become due.

The purpose of this study is to find out the relation between Cash Conversion cycle and its impact on the profitability of selected cement companies in India. The study is conducted on the cement Industry of India as India has lot of potential for development in infrastructure and construction sector and cement sector is expected to largely benefit from it. Keeping the purpose of the study in mind, this study will focus on Main Objective of the study:

- To examine the impact of cash management on the profitability of selected cement companies in India.
- The sub objectives of this study are to examine the impact of cash management on the return on assets of the cement companies in India and the impact of cash management on the return on investments of the cement companies in India.

The paper is structured as follows, literature review will be covered in next section, and section 3 considers the research methodology followed by data analysis in section 4 and results and conclusion in the last section of the paper.

Literature Review

Many studies in the past have examined the relation between the accounts receivable, accounts payable, inventory management and cash conversion cycle management, current ratio and quick ratio taking as liquidity measure with different variables of profitability such as return on assets, investment, equity, gross profit, net profit and operating profit ratio and also taken into account several control variables such as debt ratio, size of the firm providing different results.

Shin and Seon (1998)[1] concluded that in manufacturing sector ICP is negatively correlated while in service sector it is positively correlated with profitability. Deloof (2003)[2] studied that the relation of cash conversion cycle with return on assets and return on investment as profitability measure. He resulted that CCC is not significantly correlated with ROI while it is negatively correlated with ROA. Eljelly (2004)[3] carried study on sample of 929 joint stock companies of Saudi Arabia from three different industries. He concluded that profitability is negatively correlated with liquidity as measure of current ratio and cash conversion cycle. He also examined the variation in CCC among different industries. Lazaridis and Tryfonidis (2006)[4] and Hutchion et al. (2007)[5] both concluded that there exist a significant relation between the length of CCC with Gross Operating profit and ROI as profitability measure.

Raheman and Nasr (2007)[6] studied the relation between the different working capital ratio with net operating profit as profitability measure and debt ratio, size of firm and financial assets to total assets taken as control variables. He concluded that there exist a negative relation between CCC and debt used by the firm with Profitability while size of the firm is positively correlated with the profitability. Dong and Su (2010)[7] concluded that APP and ARR is positively correlated with Profitability. Gill et al (2010)[8] depicted that there exist an inverse relation between profitability and account receivable period. Ebrahim. Abbasi and Bosra (2012)[9] Concluded that CCC and ICP has no significant relation with Operating gross profit as profitability measure while ARP and APP are negatively correlated.

Raza (2012)[10] concluded that there CCC is positively associated with profitability and size of the firm while Chatterjee (2012)[11], Panigrachi (2013)[12] gave the opposite result in their study. Panigrachi stated that lesser CCC is not always the reason for greater profitability. Nobanee (2014)[13] Concluded that profitability can be improved by maintaining the inventory, receivable and cash conversion cycle at optimal level. Muscettola (2014)[14] concluded that there is no significant association between CCC and profit while Yazdanfar and Ohman (2014)[15], Upadhyay, Sen and Smith (2015)[16], Talezari, Garkaz and Gorganlidavaji (2015)[17] concluded that there is a significant correlation between cash conversion cycle and profitability.

Research Design and Methods

The present study has been conducted to investigate the hypothesis relationship through correlation and regression analysis using Statistical Package for Social Science (SPSS Version 20.): first: correlation model has been used to measure the degree of association between dependent and independent variables used in the study. Second: Regression model has been used to study the cause and effect relationship between profitability variable and Cash management variables.

Hypothesis Developed.

Since the purpose of the study is to examine the relationship between cash conversion cycle and its impact on profitability, the study developed the following Hypothesis:

Hypothesis-1: (H1): Cash Management has no significant impact on Return on assets (ROA) of cement companies in India.

Hypothesis-2: (H2): Cash Management has no significant impact on Return on Investment (ROI) of cement companies in India.

Sample

For the purpose of the study, a sample comprising of top ten cement companies, on the basis of total assets listed at Bombay stock exchange, has been taken to measure the impact of cash

conversion cycle on profitability. The data used in this study are secondary data. Financial Figures as given in the income statement and balance sheet of the selected sample companies in the cement industry are taken for the purpose of the study. The Income statement and balance sheets of these individual cement companies have been obtained from the website www.moneycontrol.com_for a period of 5 years from 2010-2014.

Description of Variables

- Return on assets and Return on investment are taken as measure of profitability to represent dependent variables. Cash Conversion Cycle is studied as independent variable.
- ROA= Profit before Interest and Tax / Total assets
- ROI= Profit before Interest and Tax /Capital Employed
- Cash conversion cycle=Inventory Conversion Period + Accounts receivable Period – Accounts payable period
- Inventory Conversion Period = Average Inventory / Net Sales *365
- Accounts Receivable Period = Average Accounts Receivable / Net Sales *365
- Accounts Payable Period = Average Accounts Payable / Net Purchases *365

Model Specification

To study the relation between the Cash conversion cycle and profitability the same model used by Raheman and Nasr (2007), Panigrahi, Anita Sharma (2013) has been used:

$$ROA\ it = \sum_{t=1}^{n} \beta i\ Xit + \varepsilon$$

$$\text{ROI it} = \sum_{t=1}^{n} \beta i Xit + \varepsilon$$

Source: Panigrahi, Anita Sharma (2013).

ROA it And ROI it = Return on Assets and Return on Investment of a firm I at time t; i= 1, 2, 3……10 firms respectively.

βo = the intercepts of equation
βi= Coefficient of X it variables
Xit= the different independent variables for working capital management of firm I at time t.
t= Time from 1, 2, 3 …..10 years.
ε = error term.

To study the relation between the Cash conversion cycle and profitability the following model has been used.

Model 1

This model is used to test first hypothesis, Dependence of Return on Assets on Cash Conversion Cycle (CCC)

Y1= a +bX1

Where
X1 = cash conversion cycle (independent variables)
Y1= Return on Assets (dependent variable)

Model 2

This model is used to test second hypothesis, Dependence of Return on Investments on Cash Conversion cycle.

Y2=a+bX2Where
X2=Cash conversion cycle (independent variable)
Y2=Return on Investment (dependent Variable)

Results and Discussion

Descriptive Analysis

The Descriptive statistic shown in table 1 below depicts that mean value of return on investment is 25.84 percent and return on assets is 15.05 percent with standard deviation of 0.09667 and 0.030493 respectively, the mean value of cash conversion cycle for all the sample cement companies together is -627.8847 with a very high standard deviation of 171.2707 . It implies that firms are receiving the payment for goods sold on credit much before the payable becomes due. This is positive sign for the company, which shows the financial flexibility of the company.

Table-1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CCC	10	-983.69	-356.82	-627.8847	171.27407
ROI	10	0.11	0.44	0.2584	0.09667
ROA	10	0.08	0.20	0.1505	0.03932
Valid N (list wise)	10				

Table-1: Correlations

		CCC	ROI	ROA
CCC	Pearson Correlation	1	.089	.422
	Sig. (2-tailed)		.807	.224
	N	10	10	10
ROI	Pearson Correlation	.089	1	.882**
	Sig. (2-tailed)	.807		.001
	N	10	10	10
ROA	Pearson Correlation	.422	.882**	1
	Sig. (2-tailed)	.224	.001	
	N	10	10	10
**. Correlation is significant at the 0.05 level (2-tailed).				

H1: Cash Management has no significant impact on Return on assets (ROA) of cement companies in India.

Correlation

The correlation results between cash conversion cycle and ROA of cement companies in India indicates that both these variables are moderately correlated with r value as .0422 (Refer

table 2). That means if the cash conversion cycle increases, then a moderate increase is seen in the ROA of cement companies in India. On interpretation of the significance (2- tailed) value which came out to be .224, it can be concluded that there is no statistically significant correlation between cash conversion cycle and ROA of cement companies in India. That means, increases or decreases in one variable do not significantly relate to increases or decreases in other variable. (Refer Table 2)

Regression

The results of R square indicate that independent variable, cash conversion cycle has low relationship with dependent variable ROA signified by the $R^{\wedge 2}$ that is 17.8 % (refer table 3). It shows that only 17.8% of ROA change is because of cash conversion cycle change in the cement sector in India.

Table-3: R SQUARE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.422[a]	.178	.076	.037806717

a. Predictors: (Constant), CCC

Table-4: Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.211	.048		4.429	.002
	CCC	9.696E-5	.000	.422	1.318	.224

a. Dependent Variable: ROA

Y1= a +bX1

Y1=.211+9.696E-5X1

Where

X1 = cash conversion cycle (independent variables)

Y1= Return on assets (dependent variable)

The linear regression was applied using the Statistical Package for Social Sciences (SPSS) between cash conversion cycle (independent variables) and Return on assets (dependent variable) of cement companies in India. The results show that there is a weak relationship between cash conversion cycle and Return on assets of cement companies in India signified by coefficient of Beta value that is .422 (refer table 4). Thus, a one standard deviation increase in cash conversion cycle leads to a .422 standard deviation increase in predicted ROA.

Also, the t-value is not significant at 0.224(refer table 4), indicating insignificant relationship between the independent and the dependent variables and it can be said that there is no impact of cash conversion cycle on the ROA of cement companies in India.

0.224> 0.05 ---- Ho is accepted.

H2: Cash Management has no significant impact on Return on Investment (ROI) of Correlation

The correlation results between cash conversion cycle and ROI of cement companies in India indicates that both these variables are lowly correlated with r value as .089 (Refer Table 2). That means if the cash conversion cycle increases, then a low increase is seen in the ROI of cement companies in India. On interpretation of the significance (2- tailed) value which came out to be .807, it can be concluded that there is no statistically significant correlation between cash conversion cycle and ROI of cement companies in India. That means, increases or decreases in one variable do not significantly relate to increases or decreases in other variable (Refer Table 2).

Regression

The results of R square indicate that independent variable, cash conversion cycle has very low relationship with dependent variable ROI signified by the $R^{\wedge 2}$ that is 00.8 % (refer table 5). It shows that only 00.8% of ROI change is because of cash conversion cycle change in the cement sector.

Table-5: R Square Value

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.089[a]	.008	-.116	.102133221

a. Predictors: (Constant), CCC

Y2= a +bX2

Y2=.290+5.018E-5X2

Where

X2 = Cash conversion cycle (independent variables)

Y2= Return on Investments (dependent variable)

The linear regression was applied using the Statistical Package for Social Sciences (SPSS) between cash conversion cycle (independent variables) and Return on investments (dependent variable) of cement companies in India. The results show that there is a very weak relationship between cash conversion cycle and Return on investments signified by coefficient of Beta value that is .089 (refer table 6). Thus, a one standard deviation increase in cash conversion cycle leads to a .089 standard deviation increase in predicted ROI.

Also, the t-value is not significant at 0.807(refer table 6), indicating insignificant relationship between the independent and the dependent variables and it can be said that there is no impact of cash conversion cycle on the ROI of cement companies in India.

0.807> 0.05 ---- Ho is accepted.

Table-6: Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.290	.129		2.249	.055
	CCC	5.018E-5	.000	.089	.252	.807

a. Dependent Variable: ROI

The results of this study are partially similar to that of Deloof (2003). He studied that the relation of cash conversion cycle with return on assets and return on investment as profitability measure and the results indicated that cash conversion cycle is not significantly correlated with ROI, which is similar to the results of this study while he concluded that cash conversion cycle is negatively correlated with ROA. The results of this study also match with that of Panigrachi and Muscettola (2014). Panigrachi stated that cash conversion cycle is not always the reason for greater profitability. Muscettola (2014) concluded that there is no significant association between cash conversion cycle and profits of the firm.

This study results are dissimilar to that of Lazaridis and Tryfonidis (2006) and Hutchion et al. (2007). They both concluded that there exist a significant relation between the length of CCC with Gross Operating profit and ROI as profitability measure. Yazdanfar and Ohman (2014), Upadhyay, Sen and Smith (2015), Talezari, Garkaz and Gorganlidavaji (2015) concluded that there is a significant correlation between cash conversion cycle and profitability which again doesn't match with the results of this study.

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Conclusion

Every company tries to increase the returns on assets and investments. While trying to maximise the returns, the company keep in mind both positive and negative impacts of various prevailing factors. This study focussed on finding out the impact of cash management on the profitability of the firms with reference to cement industry. The results of the study highlight two important relations. The study proves that there is no impact of cash management (cash conversion cycle) on the return on assets of cement companies in India. If the cash conversion cycle of cement companies increases or decreases, it would have no impact on the return on assets of these cement companies prevailing in India. Similarly, the results also indicate that there is no impact of cash management (cash conversion cycle) on the return on investments of cement companies in India. If the cash conversion cycle of cement companies increases or decreases, it would have no impact on the return on investments of these cement companies prevailing in India. So it could be concluded that cement industry in India may not concentrate highly on cash management for increase in the profitability.

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