

Cash Conversion Cycle and Firms' Profitability Relationship - A Study of Listed Cement Manufacturing Companies of India

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Abstract- *This study investigated the relationship between cash conversion cycle and firms' profitability. It is used a sample of 16 Cement Manufacturing Companies by net profit listed in Bombay Stock Exchange(BSE), India for the period of 2012-2016. The results of the study will be helpful for academics and industry experts for policy making and control purposes. The study takes return on assets as measures of profitability to represent dependent variables. Firm size and debt ratio are taken as control variables. Cash conversion cycle is treated as independent or explanatory variable. Results showed that the selected companies are having low average return on asset with negative cash conversion cycle. Regression results showed that cash conversion cycle is having positive relationship with return on assets indicating that it is not necessary that always there must be lesser the cash conversion cycle greater would be the profitability measured through return on assets. The selected cement manufacturing companies are not under pressure to reduce the receivable collection period and inventory selling period along with the extension of payment period to increase the profitability.*

Keywords- Cash Conversion Cycle, Return on Assets, Return on Equity, Profitability, Size, Debt

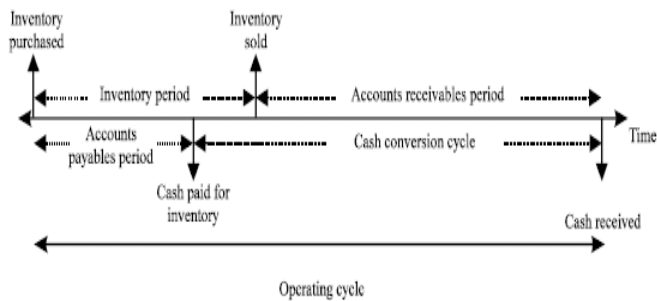
I. INTRODUCTION

As a result of changing world's economy, advancement of technology and increased global competition among the companies, every company is determined to increase their profits and for that companies are putting every endeavour to bring their cash conversion cycle at optimum level to increase profitability. The liquidity position of a firm is materially impacted by the levels of accounts receivable, inventories and short-term debt (Lyroudi & McCarty, 1993), and therefore a proper management of these components may lead to a firm attaining a good liquidity and profitability situation. In ascertaining the firm's liquidity, the current and quick ratios have been recognised traditionally as appropriate measures of the liquidity position of a firm, the former being the expression of firm's total current assets in comparison with its total current liabilities; while the latter being the expression of highly convertible current assets in comparison with total

current liabilities (Watson & Head, 1998). Recently, financial analysts as well as scholars such as Appuhami (2008) and Anser and Malik (2013) applaud another measure of a firm's liquidity, the cash conversion cycle, which is said to be one of the most commonly used measures to evaluate and measure the risks and returns associated with liquidity management.

Cash conversion cycle is defined as the time period between a firm paying out cash for its costs of production and receiving cash from the sale of its goods. The measure of the cash conversion cycle highlights how the firms or the entire industry are performing in addition to revealing the areas where further improvement may be required (Padachi, 2006) by indicating the extent of working capital financing required for particular level of operations. Managers therefore need to appropriately evaluate the working capital needs and identify the basic elements of liquidity in order to efficiently and effectively decide over the firm's operation and be able to balance between liquidity and profitability (Manoori & Muhammad, 2012). Determining the important factors affecting working capital management, as identified in Lyroudi and McCarty (1993), would help managers to determine the optimal level of investment in current assets as well as the appropriate sources to finance them, and this will make them well prepared and ready for unpredicted situations that have unexpected effects on firms' performance.

Cash Conversion Cycle is used as an overall measure of Working Capital, as it shows the gap between expenditure for purchases and collection of sales (Padachi 2006). Jordan (2003) defined cash cycle as "The time between cash disbursement and cash collection". Mathematically, the cash conversion cycle (CCC) is defined as the sum of the receivables collection period (RCP) plus the inventory conversion period (ICP), minus the payment deferral period (PDP).



Cash conversion cycle (Jordan 2003)

Theoretically, the smaller the cash conversion cycle the quicker the firm can recover its cash from the sales of its products, and the more cash the firm will have, the more liquid it will be. Contrariwise, if the cash conversion cycle is high, it means that the company takes longer to recover cash back into its system. Thus, a high cash conversion cycle would indicate a liquidity problem. This is in agreement with Gattis (2009) who argues that it is important to view the cash conversion cycle in a trend; where a downward trend is positive, indicating that the operating cycle is shortening, while an upward trend is negative, indicating that the cycle is lengthening, hence cash is tied up for a longer period.

Since every company is immensely concerned about how to maintain and improve profitability, for this reason they have to keep an eye on the factors affecting the profitability. In this regard, liquidity management has its implications on risks and returns of the companies. Hence, cash conversion cycle being indicator of the liquidity management needs to be explored as to how it may affect the profitability of the companies. The present study is concerned about evaluating and measuring the relationship between cash conversion cycle and profitability of the listed cement manufacturing companies of India.

Objective of Study

The specific research objective of the study is to measure the relationship of cash conversion cycle with profitability of the listed cement manufacturing companies of India and to investigate the existing literature on the role of cash conversion cycle in enhancing profitability of the firms.

Scope of Study

The study considers only the listed cement manufacturing companies of Bombay stock Exchange of India.

Significance of Study

The results of the study will be helpful for academics and industry experts for policy making and control purposes.

II. REVIEW OF LITERATURE

Extensive research has done on Cash Conversion Cycle relationship with firms' profitability. Richards & Laughlin (1980) presented the idea of cash conversion cycle as a tool for measuring the liquidity management and performance of a company. Gentry et al. (1990) suggested that cash conversion cycle affects the market value of a firm. Schilling (1996) proved that the increase in cash conversion cycle increases the minimum liquidity requirements of the business organizations and similarly decrease in cash conversion cycle decreases the minimum liquidity requirements of the business organizations. He further stated that the optimal level of liquidity position is obtained at minimized level of liquidity therefore the deployment of available resources in working capital in a way to attain and maintain optimal level of liquidity is mandatory, the study add up the association of cash conversion cycle with the required minimal level of liquidity in a way that if at times cash conversion cycle increases the minimal level required for liquidity gets to upper levels; and if at times the cash conversion cycle decreases the minimal level required for liquidity moves down to lower levels.

Manufacturing firms had higher level of liquidity due to higher level of accounts receivable and inventories (Soenen, 1993). Shin and Soenen (1998) analyzed the data of some American firms for the period of 1975 to 1994. The findings of their study show that profitability and cash conversion cycle are inversely related with each other. Due to strong negative relationship between these two variables profitability can be enhanced by reducing the period of cash conversion cycle. Furthermore, the study conducted by Jose and Lancaster (1996) on 2,718 US firms over the period 1974 to 1993 shows the negative relationship between account receivable, inventory and return on assets.

Lyroudi and Lazaridis (2000) provided some evidence that cash conversion cycle significantly affects the liquidity of the company. Filbeck & Krueger (2003) investigated that there are some other factors that affect the working capital management like interest rate, if the interest rate rises it will make longer the cash cycle period. Deloof (2003) studied the impact of working capital management practices on earning efficiency of 1009 companies for a period of 5 years data using the cash conversion cycle period as the efficiency tool for good working capital management practices. He concluded with a strong negative association between the cash conversion cycle period and profitability.

Nobanee et al. (2004) suggested that for better performance of company inventory must be converted into cash as early as possible. Eljelly (2004) found significantly inverse association and linkage between the profitability and the liquidity represented by the cash conversion cycle. Banomyong (2005) argued that a company with a lower cash conversion cycle is more efficient because it turns its working capital over more times per year, and that allows it to generate more sales per money invested which eventually lead to profitability.

The length of payable deferral period plays an important role in the formation of cash conversion cycle. Higher payment period will reduce the firms cash conversion and lower payment period will expand the firms cash conversion cycle (Lazaridis & Tryfonidis, 2006). Moss, J. D. & Stine, B. (1993), "Cash conversion cycle and firm size: a study of retail Padachi (2006) found that if the firm is invested higher in the inventories then the optimum level will diminish and profit will go down.

Teruel & Solano (2007) explained that company's profitability would be increased by reducing days in receivables, days in inventories and length of cash cycle. Raheman & Nasr (2007) reported significant and negative association of components of liquidity with profitability. Teruel & Solano (2007) suggested that firm should delay in making the payments for efficient performance. Raheman & Nasr (2007) stated that for better performance the time duration for collection of receivable should be kept short. Appuhami (2008) investigated that operating cash flows have significant impact of firm working capital management. Luo et al. (2009) stated that if the value of the firm enhances the cash cycle will decrease. Dong & Su (2010) observed significant association of cash conversion cycle with the return on investments of the companies. They found cash conversion cycle and its components determine the efficient level of account receivable and inventory; and manager can improve the firm profitability by managing the period covered by the cash conversion cycle, it can be achieved by keeping optimal level for each of the components of cash conversion cycle.

Randall & Farris (2010) argued that by implementing a collaborative cash to cash management cycle by adopting weighted average cost of capital will increase the profitability. Ebaid (2011) examined that the current cash flows have significant impact to enhance the profitability of the firm. Karaduman, Akbas, Caliskan, and Durer, (2011) suggested the management for the account receivable, inventory and account payables is to be considered the most important decision for financial manager because of their impact on the firm's value and overall profitability of the firm. The findings of the study

concluded that the profitability of the firms may be improved by reducing the time period for cash conversion cycle. Napomech (2012) argues that profitability cannot be increased by lengthening the payables deferral period. This shows that, decreasing the cash conversion cycle by decreasing the inventory conversion period and the receivable collection period and not increasing the payment deferral payment has a positive effect on firm's profit. Nzioki, Kimeli, and Abudho (2013) investigated nine listed manufacturing companies on Nairobi Securities Exchange and recommended to managers to focus on reducing the cash conversion cycles and trying to collect receivables as soon as possible. In their findings, the length of the cash conversion cycle has a direct effect on the profitability of the firm.

III. METHODOLOGY

The basis of the research is to examine the relationship between cash conversion cycle and profitability. Previous literature portrayed mixed results, hence it may be concluded that the relationship must be investigated further under different settings to better generalize the results for future propositions in this regard. So in this research return on assets is taken as proxy of profitability to identify and measure the association and relationship between length of cash conversion cycle and profitability as measured by return on assets, while taking size of firm and debt as control variables.

Variables

The present study takes return on assets as measures of profitability to represent dependent variables. It explains how organizations can increase their revenue and generate sales by utilizing the available resources optimally. Firm size and debt ratio are taken as control variables whereas cash conversion cycle is considered as independent variable. The study looked into the various components of Cash Conversion Cycle (CCC) i.e.; Average Collection Period (ACP), Average Age of Inventory (AAI) and Average Collection Period (APP). All the two regression models used three control variables namely leverage (LEV), Firm Size (SIZE) and Fixed Asset Structure (FAS). The studied variables are calculated as follows:

Regression Model :

$$ROA = \beta_0 + \beta_1 (ACP) + \beta_2 (AAI) + \beta_3 (APP) + \beta_4 (LEV) + \beta_5 (SIZE) + \beta_6 (FAS) + \epsilon$$

Where

Return on Assets (ROA)= Net Profit/ Total Assets

ACP= Account receivables *365/Sales

AAI= Inventory *365/Cost of Sales

APP = Accounts Payables *365/Cost of Sales

CCC = AAI + ACP – APP

LEV = Total Debt / Total Assets

FAS = Fixed Assets / Total Assets

SIZE = Natural of logarithm of sales

e = Error term

Population and Sampling

For the purpose of the study, 16 cement manufacturing companies of India listed at Bombay Stock Exchange are taken to measure the impact of cash conversion cycle on profitability of the Cement Industry.

Period of Study

Study takes into consideration 5 years financial statements data starting from 2012 to 2016.

Data Collection

The research study mainly used secondary source of data. Data on CCC, WCM and financial performance measures e.g. profitability, quick ratio, debt to equity ratio etc. the secondary data was mainly acquired from BSE. The period covered by the study was extended to five years, starting from 2012-2016. The researcher used mainly the audited statement of financial position and Income statement. The specific data collected during the five year period were the annual profit after tax, sales turnover, current assets, and current liabilities, fixed assets, accounts receivable, inventory and accounts payable as well as the financing aspects including the long term debt and equity for each year of the financial statements of the sampled firms.

Hypothesis

H1: Cash conversion cycle has a significant inverse association with return on assets

IV. DATA ANALYSIS

The descriptive analysis shown in Table 1 below depicts that the mean value of the variable return on asset is around 5 % with standard deviation of 0.06; the mean value for cash conversion cycle of all the companies together is around 12 days which is negative and a high standard deviation. This means that the companies doesn't pay their suppliers until it receives payment from the debtors and therefore, they do not have a need to hold very much inventory and still hold onto their money for a longer period of

time. It is noted a negative cash conversion cycle. If this occurs it means that cement manufacturing companies are selling their inventory and collecting their receivables before they have to pay their payables.

Table -1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	80	(0.11)	0.42	0.05	0.06
ACP	80	17.65	288.13	95.13	58.86
AAI	80	21.31	111.07	59.63	18.71
APP	80	78.86	613.97	166.55	92.09
CCC	80	(-320.04)	210.26	(11.78)	84.30
LEVERAGE	80	0.18	1.07	0.56	0.17
FIRM SIZE	80	3.86	9.38	7.48	1.29
FAS	80	0.05	0.77	0.53	0.13
Valid N (listwise)	80				

Correlation Matrix is used to find the relationship between different variables. The correlation matrix table below discloses that there is positive and moderate correlation between cash conversion cycle and return on assets (ROA) and Average Collection Period (ACP) . Similarly negative and moderate weak correlation of cash conversion cycle was observed with Average Age of Inventory (AAI), Average Collection Period (APP), leverage (LEV), Firm Size (SIZE) and Fixed Asset Structure (FAS).

Table - 2 Correlations

		ROA	ACP	AAI	APP	CCC	LEV	SIZE	FAS
ROA	Pearson Correlation	1	.081	.244*	-.285**	.282**	-.800**	.109	.248*
	Sig. (2-tailed)		.450	.021	.006	.007	.000	.310	.018
	N	90	90	90	90	90	90	89	90
ACP	Pearson Correlation	.081	1	-.255*	.259*	.835**	-.299*	-.332**	-.582**
	Sig. (2-tailed)	.450		.015	.014	.000	.004	.001	.000
	N	90	90	90	90	90	90	89	90
AAI	Pearson Correlation	.244*	-.255*	1	.142	-.209*	-.023	-.158	.271**
	Sig. (2-tailed)	.021	.015		.181	.048	.829	.139	.010
	N	90	90	90	90	90	90	89	90
APP	Pearson Correlation	-.285**	.259*	.142	1	-.300**	.451**	-.384**	-.106
	Sig. (2-tailed)	.006	.014	.181		.004	.000	.000	.319
	N	90	90	90	90	90	90	89	90
CCC	Pearson Correlation	.282**	.835**	-.209*	-.300**	1	-.571**	-.145	-.496**
	Sig. (2-tailed)	.007	.000	.048	.004		.000	.176	.000
	N	90	90	90	90	90	90	89	90
LEVERAGE	Pearson Correlation	-.800**	-.299*	-.023	.451**	-.571**	1	-.128	.078
	Sig. (2-tailed)	.000	.004	.829	.000	.000		.232	.464
	N	90	90	90	90	90	90	89	90
FIRM SIZE	Pearson Correlation	.109	-.332**	-.158	-.384**	-.145	-.128	1	.308**
	Sig. (2-tailed)	.310	.001	.139	.000	.176	.232		.003
	N	89	89	89	89	89	89	89	89
FAS	Pearson Correlation	.248*	-.582**	.271**	-.106	-.496**	.078	.308**	1
	Sig. (2-tailed)	.018	.000	.010	.319	.000	.464	.003	
	N	90	90	90	90	90	90	89	90

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

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

Table 3 shows the various coefficients on the first column with an intercept of 0.095 which shows that if all predictors were zero then ROA will be 0.095. The Coefficient of ACP, AAI, APP, and firm size are almost negligible in the model and the only significant variable is the APP as shown by the t statistic of being less than the 5% significant level. Whereas, leverage has a beta coefficient of -0.084 meaning if leverage were to be increased by 1 unit then the overall decrease in ROA will be 0.084 and fixed asset structure's coefficient is -0.003 meaning if 1 unit of proportionate fixed asset in relation to total assets is increased then ROA will increase by 0.003. The results present that the cash conversion cycle (CCC) is moderately and positively related to return on assets which contradicts the general rule of lesser the cash conversion cycle greater would be the profitability as measured by return on assets. This happens because firms have negative cash conversion cycle which indicates that the company is paid for sales before it pays for the product it sells, it has much more financial flexibility. This leads to rejection of the first hypothesis H1. Size and debt as control variables are insignificant. Size and debt as control variables are insignificant. The resulting multivariate linear regression model is as follows:

$$ROA = 0.095 + 0.000ACP + 0.001AAI + 0.000APP - 0.084Leverage + 0.001FirmSize - 0.003 \text{ Fixed Asset Structure}$$

Table - 3 Regression results - Return on Assets

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.095	.059		1.602	.113
	ACP	-.1518E-5	.000	-.041	-.255	.799
	AAI	.000	.000	.040	.345	.731
	APP	-.8.280E-5	.000	-.125	-.859	.393
	LEVERAGE	-.084	.050	-.265	-1.689	.095
	FIRM SIZE	.001	.006	.022	.181	.856
	FAS	-.003	.050	-.009	-.059	.953

a. Dependent Variable: ROA

V. CONCLUSION

The cash conversion cycle is a powerful performance measure for assisting how well a company is managing its working capital. Financial managers have to run the manufacturing companies for longer period and for that they make decisions to manage working capital by creating a balance between the available current assets and current liabilities. Moreover the financial managers can reduce the risk of future shortfall of cash and bankruptcy by managing cash conversion cycle well. In this study, a significant positive relationship was found between the cash conversion cycle and return on assets for BSE listed cement manufacturing firms for the selected sample. It is also observed that the firms are not under pressure to reduce the receivable collection period and inventory selling period along with the extension of payment period to increase the profitability.

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