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# THE IMPACT OF CASH CONVERSION CYCLE ON THE PERFORMANCE OF CEMENT INDUSTRY IN SAUDI ARABIA

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## ABSTRACT

*The primary objective of this research is to examine the relationship between cash conversion cycle (CCC) and net profit margin (NPM) of cement industry of Saudi Arabia. The study selected five companies out of 14 companies from Saudi Arabia's cement industry over the period from 2009 to 2019. The relationship between CCC and NPM was investigated using correlation and regression analysis. The analysis shows that the cash exchange period and the net profit margin have a negative association. As explained this study is based on cement industry hence its result cannot be generalised with other manufacturing companies however similar studies across the Saudi industries could be conducted to identify the presence of a relationship between CCC and NPM*

**Key words:** Cash Conversion Cycle, Net Profitability Margin, Inventory Period, Collection Period, Payable Period, Saudi Cement Industry

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## 1. INTRODUCTION

Today's highly competitive world, the survival of any business is dependent on the role of wise and active financial planning. It has become a necessity for almost all the businesses planning, specifically dealing with financial matters, to react to the complexities of financial affairs

(Padachi, 2006). Sustainability of industry relies not only on the ease of access to transnational capital markets but at the same time, there is a strong need for organizational and financial transaction transparency.

High profitability may be correlated with a shorter cash exchange time because it increases the performance of working capital. A fast cash exchange within shorter time shows that the company is more efficiently handling its inventory, accounts receivables and transferring cash to vendors. This improves the productivity of a firm's internal processes and results in better performance, cash flows with a greater net present value, and a company's stronger market value (Gentry et al., 1990). Longer the money tied up in working capital means the cash exchange period will also increase. Reducing cash period would require faster manufacturing and marketing products to consumers. Alternatively shortening receivable will occur by accelerating collections, or delaying payable by carrying down disbursements to vendors. On the other hand, reducing the time for cash conversion may damage organizational activities causing poor results. For example, firms may reduce the level of manufactured inventory to release capital stuck in inventories although this might reduce the conversion cycle however there could be a danger of running out of stocks which may result in losing customers with a good credit score.

Although bigger firms usually have better access to both capital and money markets, nevertheless shorter cash conversion period is a valuable tactic of measuring a company's liquidity, particularly for low budgeted companies that typically run with low resources of funds. One key source of funding for small scale industry may be to shorten the duration of cash conversion time.

The long-life success of any business normally relies on well-organized cash conversion time control including the collection duration - from raw materials to finished goods conversion and deferral of the payment period (Weinraub & Visscher, 1998). The crucial area of a firm's financial relations is the optimal use of funds along with effective operations control. Cash transfer is a systematic measure of management of account receivables, inventory control and wisely treatment with account payables (Jose and Stevens, 1996).

Long-lasting investment planning, such as decisions regarding capital budgeting, planning of capital structure and dividend policies, have become the traditional subject of corporate finance. Over the last two decades, though, participation in working capital management has grown (Lyroudi and Lazaridis, 2000), and further interest in working capital management is seen from the scholars and financial officers. For instance, Dell and Wal-Mart, mention that certain strategies of net working capital are the major source of their competitive edge (Ruback 2003).

A very clear example of the value of performance of CCC is given by Shin and Soenen in 1988. It is indicated by them that Wal-Mart and Kmart, were very big name of a departmental store in United States. Their capital investment was almost the same but the cash conversion cycle of Wal-Mart was shorter than the Cash conversion cycle of K-Mart. It was 61 days and 40 days respectively. K-Mart had to arrange some unexpected burden of \$198.3 million in one year just because of this 61 days of the cash conversion cycle. This evidence shows that poor management of the working resources of Kmart was the reason of its failure (Moussawi et al., 2006).

The cash conversion period is a comprehensive indicator of success used to evaluate the capacity of firms to handle their resources. The cash exchange period shows the success of current asset management. The reduced cash exchange period helps businesses to produce more income from the amount spent, showing that companies have used their capital to generate full benefit (Moss & Stine, 1993).

The CCC is the utmost common indicator of the efficacy of working capital management. A company's (OC) operating cycle is the period from the commencement of the production process to the receipt of amount from the credit sale. The operating cycle is made up of two main short-term asset groups, stock and accounts receivable. It is measured by the sum of the average inventory age (AAI) and the average collection period (ACP) in elapsed time:  $OC = AAI + ACP$ . However, the process of producing and selling a commodity often involves the purchase of production inputs (raw materials) on credit, resulting in payable accounts. Accounts payable reduce the time of company's resources tied up in the operational period. The typical payment period is the time it takes to repay the accounts payable, calculated in days (APP). The operating cycle yields cash conversion cycle, less average payment period. For the cash conversion cycle, the formula is  $CCC = OC - APP$ .

It can be seen that three key components of the CCC are (i) average inventory period, (ii) average collection time, and (iii) average payment period. Therefore CCC can be calculated through this formula:  $CCC = AIP + ACP - APP$  if a company changes any of these periods, the amount of money tied up in the company's day-to-day operation changes.

## 2. LITERATURE REVIEW

The researchers in this chapter study the current literature on the relations between the duration of cash inflow and outflow period (as a complex indicator of management of working capital) and the earning of the company. An important and negative association was seen in several findings of research that empirically investigated the link between the CCC and income.

The findings of a Deloof (2003) analysis revealed a substantial and negative connection between the period of cash conversion and the performance of Belgian businesses. ALShubiri (2011) believes that working capital funds should be used as secret sources that can be used to increase the performance of businesses. The study results of the Karaduman et al. (2011) analysis found an important but negative association between the period of cash transfer and its earning calculated by the ROA (return on assets) of Istanbul Stock Exchange firms.

For the time from 1975 to 1994, Shin and Soenen (1998) evaluated the statistics of many American companies to assess the correlation between earning and the length of cash conversion. The output of their analysis demonstrates that profitability and the period of cash conversion are inversely related to each other. Earning can be improved by decreasing the cash exchange time duration due to the clear negative interaction between these two factors.

In the background of emerging economies, the Zariyawati (2009) analysis companies of Malaysia between 1996 and 2006 indicates that they have a negative or adverse association between the period of earning and cash conversion cycle. Dong and Su (2010) have published the same outcome for the period from 2006-2008 between the earning association and the cash conversion period of Vietnam Stock Market

In his writing, Schilling (1996) addresses the ideal liquidity state, which is the minimum liquidity ratio required to sustain a specified level of market operation. In brief, the deployment of money between working capital and capital investment is important. He notes since the return on capital investment is normally higher than the return on investment. Hence it is important to deploy working capital services as well as to retain the best liquidity ratio. Schilling (1996) defines the relationship between the CCC and the lowest possible liquidity in such a manner that the minimum required liquidity increases if the CCC is big; conversely, if the CCC reduces then in turn the need for liquidity also declines.

Rehman and Nasir (2007) study found results of ninety-four companies listed on the 'Karachi Stock Exchange' from 1999 to 2004 to analyse the pattern of current asset and current liability practices of Pakistani firms, which include the receivable, inventory, payable and their relationship along with firm's earnings. They used cash conversion cycles, components of cash

in his research. Adverse correlation between the CCC and the earning of ninety-four selected industries was shown by Regression and Pearson's correlation results. From the results of the report, it is clear that Shareholder equity is increased by the financial manager while he reduced the length of cash conversion cycle.

Caballero *et al.* (2010) analyzed the vulnerability of working capital management to business inadequacies for example asymmetrical knowledge, controversies between entities or financial burden. Their analysis has found that working capital competes with investing in noncurrent assets for companies' funds when there are financial restrictions. Their studies have also demonstrated that management of working capital relies upon negotiating ability and other monetary considerations, for instance, the existence of interior funding, borrowing costs and access to capital markets. For companies registered in Istanbul Stock Exchange. Uyar (2009) studied the relationship between the CCC, size and earning. Study showed a remarkable adverse correlation between the cycle of cash convertibility and profitability, along with between the CCC and the size of the firm. The outcomes also revealed that the retail/wholesale firms had a smaller period of cash transfer than that of the manufacturing sector.

Research performed on retail companies by Moss and Stine (1993), it was discovered that business size is a reason in the duration of the cash conversion cycle. The research showed that larger organizations usually had small CCC. Another interesting observation from the same analysis is that a strong positive association has been found when the CCC is related to current and rapid ratios.

For all companies, small, medium or big, liquidity management is important. Since it involves receiving cash in time from consumers so that short-term loans are not impossible to settle. Consequently, if a firm does not treat its liquidity properly, it would have financial deficits and will have trouble paying obligations. As a result, liquidity management is important for continuing worry, in addition to profitability.

Two different aspects analyze organizational liquidity: static or dynamic perspectives from (Lancaster *et al.*, 1999; Farris and Hutchison, 2002; and Moss and Stine, 1993). The static view is based on widely used conventional ratios that are calculated from the balance sheet numbers, such as the current ratio and the acid test ratio. At a given point in time, certain equations measure liquidity, while complex views measure liquidity. Tests continuing liquidity from the actions of the company. As a sophisticated indicator of time, it takes a business to switch from cash outflow to cash inflow, determined by the period of cash receipts and payments.

Karaduman, Akbas, Caliskan, and Durer (2011) indicated that the planner of invoice receivables, inventory and account payables should be deemed the financial manager's most significant decision because of the effect on the company's valuation and the earning of the whole company. As a conclusion, it can be said that by reducing the period for cash exchange cycle, the profitability of the businesses could be increased.

### **3. DEFINING CASH CONVERSION CYCLE:**

In finance-related textbooks, CCC is listed in the framework of working capital management, (Keown *et al.*, 2003; Bodie and Merton, 2000). As a quantitative indicator of working capital, the CCC is just used as it illustrates the time difference in spending for the Raw material acquisitions and selection of finished product transactions (Padachi, 2006, p. 49)

It is already mentioned in the literature, a production company's cash transfer time can be determined as a feature of [days when the amount is received from debtors + days when inventory changes in sales - days when the amount is paid to creditors] (Deloof, 2003; Lazaridis & Tryfonidis, 2006). We hypothesize in this analysis that shorter cash exchange time increases the financial efficiency of businesses.

Daily operations control of the current assets and current liabilities of a company plays a significant part in the company's performance. Without successful cash control, firms with bright long-term opportunities and stable bottom lines cannot stay solvent (Jose et al., 1996, p.33).

Following definitions of Cash conversion cycle are given by different authors:

- **Cash conversion cycle time:** Add (number of days when Raw material converts into finished goods) with (the number days when cash is collected after credit sales) and minus (from the number days when the amount is paid for credit purchase). Keown et al. (2003, p.109).
- **Cash Cycle Time:** This is the difference of some days between two activities. First, in how many days of credit purchase the amount is paid to the suppliers and second, in how many days of Credit sales the cash is received. Bodie and Merton (2000, p.89).
- **Cash Cycle:** The number of days between the day on which the company must begin paying its vendors money and the day from which it starts collecting money from its clients. Jordan (2003, p. 643).
- **Cash Gap:** It calculates the period between real spending on economic goods in cash and actual receipts from the selling of credit. Eljelly (2004, p.50)

#### 4. METHODOLOGY

The main reason of this study is to analyze the relationship between the cash conversion time and its impact on the company's earnings. Almost 14 cement companies are registered in Saudi stock exchange. For our research only five companies are taken named (i) Saudi Cement Company (ii) Najran Cement Company (iii) Qassim Cement Company (iv) Yamama Saudi Cement Company and (v) Madina Cement Company. These are more than 25% of registered cement companies of Saudi Stock Exchange. Data of 11 years is analyzed from 2009 to 2019. This Data is collected from the "ARGAAM", a Saudi Arabian financial news portal which was established in March 2007 in Riyadh Saudi Arabia. Its website address is argaam.com.

Data from financial statements, including revenue, COGS, A/R (Account Receivables), value of stock, A/P (Accounts Payables) and amount of net profit, were collected for the purpose of the report. This data is used to measure the time of receipt receivable, the period of conversion of inventory, the period of deferral payable and the cycle of transfer of currency.

In the study, cash conversion cycle is used which is mainly dependent on three elements (i) days of credit sales also known as days of sales outstanding (ii) conversion days from raw material to finished goods or days of sales inventory and (iii) days of credit purchase of raw material. The following formula is used for calculating the CCC:

Cash Conversion Cycle (CCC) = Number of days of credit sales + Number of days between raw material converted into finished goods – Number of days of credit purchase

Above mentioned three elements are found through the set following formulas:

$$\text{Number of days of Collection Period} = \frac{\text{Accounts Receivables} \times \text{dy}}{\text{Sales}/365}$$

$$\text{Number of days of Inventory Period} = \frac{\text{Average Inventories}}{\text{Cost of Goods Sold}/365}$$

$$\text{Number of days of Payment Periods} = \frac{\text{Accounts Payables}}{\text{Cost of Goods Sold}/365}$$

Result of CCC is compared with the income of the business. If CCC is small the income of the business will be large and if CCC is long the income will be small. Favourable result is considered if a relationship is negative between CCC and income

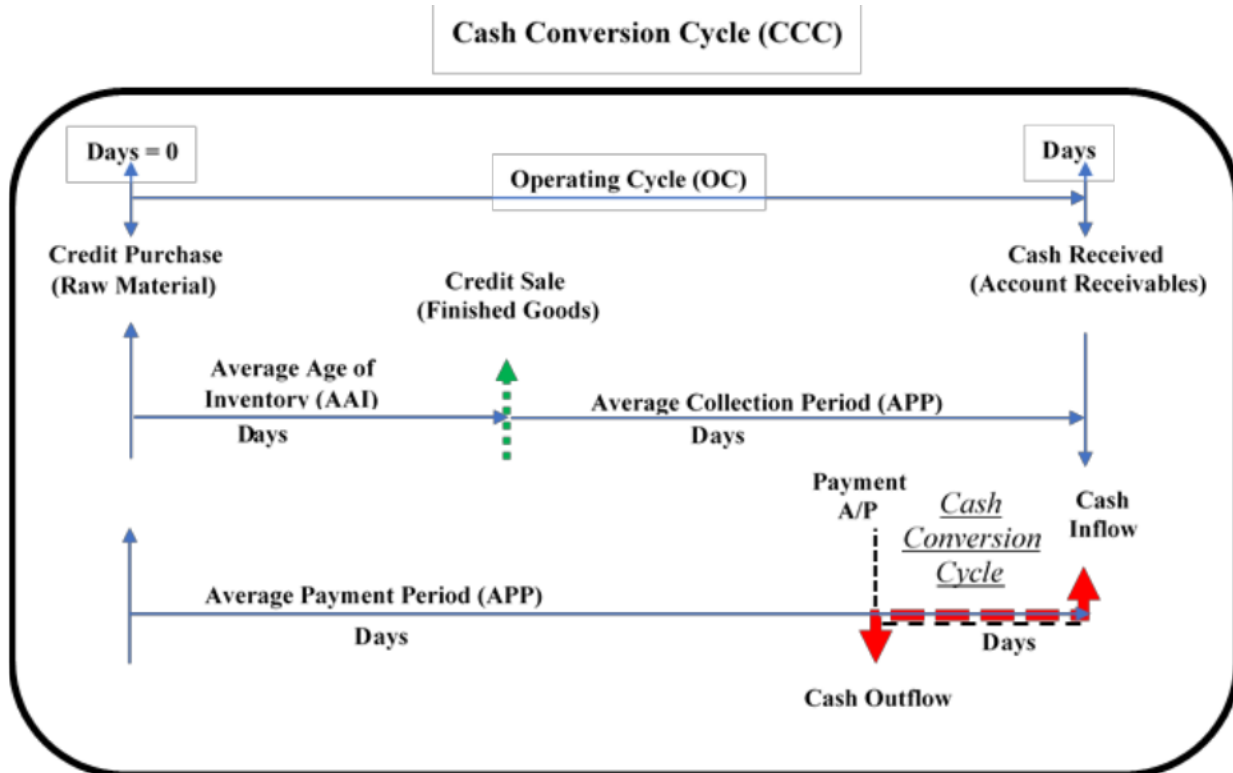


Figure 1

**Regression Model**

$$Y_{it} = \alpha + \beta_{it1} CCC + U_t \tag{I}$$

Whereas;

$Y_{it}$  = Dependent Variable (Net Profit Margin)

$\alpha$  = Coefficient of Intercept

$\beta_{it1}$  = Independent Variable (CCC)

$U_t$  = Error term

**5. ANALYSIS**

This section of the study represents the outcomes of the CCC, in how many days cash is collected from the receivables, in how many days raw material is converted into finished goods and how many days are taken to pay the suppliers. To find out these results some statistical tools are used which are as follows (i) descriptive statistics (ii) single regression and (iii) Karl Pearson’s coefficient of correlation.

In Table 1, the descriptive statistics are given below. The company's average period of the sum collected from consumers is 57 days (maximum volume 354) according to the descriptive data, 36 days is the average period of payment to vendors (maximum value 53). To convert raw material into sales, an average period of one day is taken (maximum value 300). The mean NPM is 40, with a maximum value of 51 and a minimum value of 19. Overall the average period of cash conversion cycle is one and a half days (maximum value 354)

**Table 1** Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
CCC	11	56.62	354.02	1.5683E2	90.18154	8.133E3
NPM	11	19.06	51.25	40.2827	11.22649	126.034
DIP	11	60.84	300.34	1.3553E2	70.88298	5.024E3
DCP	11	26.40	94.56	57.3309	21.09587	445.036
DPP	11	16.52	53.33	36.0245	12.56928	157.987
Valid N (listwise)	11					

Implementing the Karl Pearson correlation coefficient, the association between the earning of the cement industry and the cash conversion period of companies and its element variables have been studied.

Table 2 shows the relation of variables with each other. The value of the correlation lies between -1 and +1. To this end, -1 is a negative relationship, while +1 is a perfect correlation between variables.

**Table 2** Correlations

		NPM	CCC	DIP	DCP	DPP
Pearson Correlation	NPM	1.000				
	CCC	-.919	1.000			
	DIP	-.916	.984	1.000		
	DCP	-.676	.743	.657	1.000	
	DPP	.288	-.378	-.318	.048	1.000

The study indicates that at 0.05 significance amounts, there is a strong degree of association between these variables. CCC and NPM have a negative relation. While DIP also shows negative relations with NPM. Whereas DCP and NPM also indicate a negative relation with NPM. DPP shows a positive relation with NPM

**Table 3** Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R	Std. Error of	Durbin-Watson
1	.919 <sup>a</sup>	.844	.826	4.67636	3.070

a. Predictors: (Constant), CCC

b. Dependent Variable: NPM

**Table 4** ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1063.526	1	1063.526	48.633	.000 <sup>a</sup>
Residual	196.815	9	21.868		
Total	1260.341	10			

a. Predictors: (Constant), CCC

b. Dependent Variable: NPM

Table 3 Model summary indicates the R and R<sup>2</sup> results. Overall R<sup>2</sup> result is good. While Table 4 shows the goodness of the model fit. The F statistics results show that the model is reliable and appropriate.

**Table 5 Coefficients<sup>a</sup>**

Model	Unstandardized		Standardized	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	58.217	2.933		19.850	.000		
CCC	-.114	.016	-.919	-6.974	.000	1.000	1.000

a. Dependent Variable:

Table 5 explains the regression results coefficients. It indicates that there is a significant negative association with NPM. It means that there is an inverse relationship with NPM. When CCC increases NPM will decrease of the cement industry of Saudi Arabia. The results are in aligned with the theory that there is a negative relation between CCC and firm performance. CCC co-efficient is -.114 and t value is -6.974 which shows that CCC brings a substantial change in NPM of the said industry.

## 6. DISCUSSION AND CONCLUSION

This analysis was carried out on the cement listed firms on the Saudi Stock Market. The main problem is to assess the impact on company efficiency of the cash exchange period. It shows a negative relationship between the CCC and NPM of the cement sector of Saudi Arabia. Days of inventory period (DIP) shows that if the raw material is converted into finished goods in a shorter period, in turn, increases the profitability of a business. This analysis shows a negative connection between inventory days and the company's profitability. As far as the collection period is concerned, it is used to indicate the effectiveness of a firm that turns the pending receivables into cash as soon as possible. The study findings suggest that the receivable recovery cycle has a negative association with the company's profitability. Profitability is based on the length of the CCC i.e. if the length is shorter profit may be higher and vice versa. In this context, the CCC of the cement sector of Saudi Arabia is quite reasonable. Management should emphasis to make shorter Cash conversion cycle so that they could earn more profit. When profit increases the chances of business expansion also increase. Expansion of business creates new jobs opportunities and ultimately. It would also play an extremely important role in Saudi Arabia's economy.

The study findings indicate that the profitability of cement firms in Saudi Arabia is affected by the duration of the cash exchange period, i.e. the higher NPM is impacted by the shorter CCC. It is noted that the greater duration of the cash conversion cycle decreases the profitability of companies and the lower length of the cash conversion cycle increases the profitability of cement sector.

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