

# Determinants of Working Capital in Cement Industry- A case study of ACC Ltd.

**Dr. S. Vijayalakshmi\***  
**Nikhel Bansal\*\***

\*Associate Professor, IBS Hyderabad, Hyderabad,  
Andhra Pradesh, India

\*\*Pursuing MBA at IBS Hyderabad, Hyderabad,  
Andhra Pradesh, India

## Abstract

Working capital is considered to be the life force of an economic entity and its efficient management decides the trade off between liquidity and profitability. There are several factors that determine the working capital requirement in a firm for ex. growth in sales, performance of the firm, size of the firm etc.

This paper tries to identify the factors which determine the working capital requirement in Indian cement industry. A case study is performed on ACC cements, a company listed on both NSE (National Stock Exchange) and BSE (Bombay Stock Exchange) of India. 12 years data (2000-2012) was considered for this study. A regression analysis was performed using WCR (working capital requirement) as dependent variable and growth in sales, size of the firm, performance, operating cash flow, operating efficiency, debt equity ratio, business indicator, price of raw materials as independent variables. It was found that only debt to equity ratio plays a significant role in determining working capital requirement of the firm.

**Keywords:** Working capital, ACC, CEMENT etc0

## Introduction

The cement sector notably plays a critical role in the economic growth of the country and its journey towards conclusive growth. Cement is vital to the construction sector and all infrastructural projects. The construction sector alone constitutes 7 per cent of the country's gross domestic product (GDP). The industry occupies an important place in the Indian economy because of its strong linkages to other sectors such as construction, transportation, coal and power.

India is the second largest producer of quality cement in the world. The cement industry in India comprises 183 large cement plants and over 365 mini cement plants. Currently there are 40 players in the industry across the country.

The cement industry in India is experiencing a boom on account of overall growth in the economy. The demand for cement, being a derived one, depends mainly on the industrial activities, real estate business, construction activities and investment in the infrastructure sector.

The Indian cement industry is involved in production of several types of cement such as Ordinary Portland Cement (OPC), Portland Pozzolana Cement (PPC), Portland Blast Furnace Slag Cement (PBFS), Oil Well Cement, Rapid Hardening Portland Cement, Sulphate Resisting Portland Cement, White Cement, etc. They are produced strictly as per the Bureau of Indian Standards (BIS) specifications and their quality is comparable with the best in the world.

Indian cement majors—ACC Ltd, Shree Cement Ltd and Ultratech—have signed a cooperation pact to support low-carbon investments in India. The pact was signed in Geneva with member companies of the World Business Council (WBC) for Sustainable Development's Cement Sustainability Initiative and International Finance Corporation (IFC). Under the pact, a Low Carbon Technology Roadmap for the Indian cement industry is to be launched this year-end. The roadmap will outline a possible transition path for the cement industry to reduce its direct emissions by 18 per cent by 2050.

The cement industry of India is expected to add 30-40 million tonnes per annum (MTPA) of capacity in 2013. The industry has a current capacity of 324 MTPA and operates at 75-80 per cent utilisation.

"It is anticipated that the cement industry players will continue to increase their annual cement output in coming years and the country's cement production will grow at a compound annual growth rate (CAGR) of around 12 per cent during 2011-12 - 2013-14 to reach 303 million metric tonne (MMT)," according to a report titled 'Indian Cement Industry Forecast to 2012', by research firm RNCOS.

The developing economies are generally faced with inefficient deployment of resources available to them. Capital is the scarce productive resource in such economies and proper utilization of resource promotes the rate of growth, cuts down the cost of production, and above all beefs up the efficiency of the productive system. Hence, the purposeful harnessing of capital is of paramount importance in any development policy of economies. The total capital of a company comprises of fixed capital and working capital. The emphasis has ever been on the growth and efficiency of fixed capital. The management of working capital has often been neglected, resulting in sub-optimal utilization of not only working capital but also fixed capital. Management of working capital in a given enterprise has profitability and liquidity implications. Working capital represented by current assets, constitutes a dominant and controllable segment of investment, particularly in manufacturing enterprises, and efforts to prune it or optimize its size must promptly enhance the profitability. These efforts would simultaneously activate the flow of funds through the enterprise by focusing on dormant inventories and overdue outstanding and by curbing the long established tendency of

funds to stagnate at different stages in the enterprise operations. Thus working capital offers a common front for profitability and liquidity management. Significance of working capital can further be judged from the fact that many a time the main cause of the failure of a business enterprise has been found to be the shortage of current assets and their mishandling. Inadequate working capital is a serious handicap in the business. Whereas fixed capital investment generates production capacity, working capital makes the utilization of that capacity possible. Competent administration of current assets solves the problem of underutilization of capacities. Cement industry, which is being investigated in the present study, is indeed the backbone of economic growth in any country. A thick relationship has been found between the level of economic growth and the quantum of cement consumption in developed as well developing countries. Cement industry, through its forward linkages provides the maximum stimulus to growth in other industry also. One employee in cement manufacturing activity supports eight to ten persons in related activities. In India, since independence, great emphasis has been laid on the development of cement industry. It is one of the key basic industries in India. It plays dominant role in the national economy. Cement industry ranks second after the Iron and steel industry. Cement is indispensable in building and construction works. The production and consumption of cement, to a large extent, indicates a country's progress. The development of transport, infrastructure, irrigation and power projects etc. depends to a very large extent on the availability of the cement. The per capita consumption level of cement is regarded as one of the indicators of development and standard of living in a nation. Keeping in mind the above importance of the cement industry in the economic development, it is required to do an in-depth study of the problems faced by the industry especially in the area of working capital management. The study aims to analyze the various factors that play an important role in the working capital of a firm. The motive is to identify the determinants of working capital for the Cement Industry of India.

### Conceptual Framework

Working capital of a firm refers to the firm's capital which is used to finance short term or current assets like cash, inventory, receivables, debtors etc. It is the amount of money which is required to cover the cost of operating the enterprise.

Current assets are considered to be one of the important components of the total assets of the firm. A firm may be able to reduce its investment in fixed assets by leasing or renting, but, the same cannot be done with current assets.

Keeping high levels of current assets gives a firm a better liquidity position. With high level of current assets, a firm is

able to meet its obligations on time and the operations of the firm are smooth. But, high levels of current asset come at a cost, namely, profitability. The amount blocked in the current assets has an opportunity cost. As the amount of current assets increase, the cost associated with it also increases and the profitability of the firm decreases.

The factors that influence the working capital requirement of a firm can be broadly classified into two categories depending on their relationship with the firm. These categories are:

1. **Endogenous factors:** factors which are internal to the firm and can be controlled to some extent. These factors include:
  - a. Size of the firm.
  - b. Debt equity ratio.
  - c. Operating cash flow.
  - d. Operating efficiency.
  - e. Performance of the firm.
2. **Exogenous factors:** these are the factors which are external to the firm and cannot be controlled. These factors include:
  - a. Business environment.
  - b. Prices of raw materials.
  - c. Growth in sales of the firm.

Several studies have been conducted on the working capital management of the firms, but, very few of them concentrate on the determinants of working capital requirements of a firm.

The aim of this study is to identify factors that influence the working capital requirement of firms in the Indian cement industry. ACC Ltd., a listed company, has been chosen for the purpose of this study. It is the third largest firm in the Indian cement industry (by Market Capitalisation) and has averaged a sales growth of approximately 9% per annum over the past 12 years.

### Literature review

In his paper *Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market*, International Journal of Commerce and Management, Eljelly (2004) mentioned that the type of business the company is in and the history of the company play a vital role in determining the working capital requirement of the company. The cash gaps of the company and the working capital required by the company also differ from industry to industry. It also depends on the ability of the company to obtain credit from the suppliers. Some companies which are able to obtain large amount of

credit from the suppliers maintain negative cash gaps or short term working capital.

There are several factors which affect the working capital requirement of a company. But, these factors are not constant and keep on changing with time.

Hawawini, Viallet and Vora (1986) in their study *Industry Influence on Corporate Working Capital Decisions*, Sloan Management Review said that the working capital requirement is dependent on the industry. That is, the type of industry determines the working capital requirement of the firm. They also suggested that working capital management policies remain stable over a period of time, that is they are not very volatile and tend to remain more or less constant. Working capital requirement is also affected by the inventory level of the firms. Hence the working capital requirement will differ from industry to industry. Moreover, since inventory levels are different for firms as well, hence the working capital requirement will be different from firm to firm. This can also be observed in the difference in the working capital requirement of services firms which do not require any inventory and manufacturing firms which require huge amounts of inventory.

Filbeck, and Krueger (2005) and Yadav, Kamath and Manjreka (2009) in their study *An Analysis of Working Capital Management Results Across Industries*, Mid American Journal of said that working capital requirement of a firm varies with the economic cycles. Hence, during downturn, the working capital requirement will be low while, during the upturns, the working capital requirement will be high. They also concluded that, working capital policy is dynamic as it will change in accordance with the economic cycles. Thus, in times of high volatility, the companies use large amounts of capital and during low volatility, the firms tend to take an aggressive approach.

Ranjith's (2008) study on Thailand firms namely *The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand*, International Management View: identifies the importance of cash flows of a company in relation to the working capital requirement. If the future cash of a firm are fluctuating, then the short term cash held by the company and the short term investment of the company will increase. This shows that with the increase in the uncertainty of the future cash flows, the working capital requirement of the firm increases.

Singh in his study titled *Inventory and Working Capital Management: An Empirical Analysis*, The Icfai Journal of Accounting Research said that it is not just the inventory which governs the liquidity position of a firm. There are several other factors which also play an important role in determining the liquidity position of a firm. He said that

debtors, loans and advances, cash and bank balance bills receivable are also important in determining the liquidity of a firm.

Hill, Kelly, and Highfield. (2009) in their study named *Net Operating Working Capital Behavior: A First look* established a negative and a positive relationship between the various factor and the working capital ratio. It was established that working capital ratio had a positive operating cash flow and capital market access. It was also established that working capital ratio had a negative relationship with growth in sales, unexpected demand, rate of interest and financial difficulties.

Pandey and Perera in their study *Working Capital Management in Sri Lanka, Working Paper No. 1349*, studied the working capital management policies of private sector manufacturing companies in Sri Lanka. Many previous researches have established that size of a firm plays a vital role in determining the working capital requirement of a firm and it acts as one of the most important factors. This study also established that size of the firm plays a vital role in determining the working capital approach and policy of the firm.

Padachi in the study *Trends in Working Capital Management and Its Impact on Firms Performance: An analysis of Mauritian small Manufacturing Firms* conducted on small business firms in Mauritania working capital is very important for small firms. Working capital plays an important role for all the firms, whether they be small firms or large firms, but it becomes even more when the firm size is small because. This happens because small firms tend to emphasize more on the working capital, so that they can increase their returns and improve their performance by better working capital management.

Chiou and Cheng in their analysis of working capital determinants in *The Determinants of Working Capital Management* analysed factors like measures of liquidity namely net liquidity balance and working capital ratio along with other factors like business indicator, growth opportunity, firm performance, size of the firm, industry effect. These factors were tested for their impact on capital structure and working capital management.

It was found that capital structure of the firm had inverse relationship with net liquid balance and working capital ratio. While other factors namely business indicator, growth

opportunity, firm performance, size of the firm, industry effect did not have any significant impact on the working capital requirement of the firm.

## Methodology

### Sample and data

ACC limited, a company listed on both NSE (National stock Exchange) and BSE (Bombay stock exchange) was chosen for study. Study was performed on data of 12 years (2000-2012). The data was collected from CMIE database.

### Variables

**Independent variable:** Shulman and Cox (1985) proposed that working capital requirement represents the spontaneous uses and sources of funds over a firm's operating cycle, which are computed as follows:

WCR (Working Capital requirement) = Accounts receivables + Inventory – Accounts payable – other payables.

**Dependent variables:** all the variables except debt to equity ratio are used as their first order differences.

1. Performance of the firm: measured as ratio of profit after tax to total assets.
2. Size of the firm: measured as total assets of the firm.
3. Operating cash flow.
4. Debt equity ratio.
5. Business indicator: the IIP indicator of cement industry is used as the business indicator.
6. Price of raw materials: the yearly WPI index of metallic minerals is used to measure the change in price of raw materials.
7. Operating efficiency of the firm: measured as the ratio of PBDITA (profit before depreciation interest and tax) to sales.
8. Growth in sales of the firm (percentage).

### Analysis

OLS regression was performed using the statistical software SPSS. Alpha value is assumed to be 0.05 for the purpose of analysis.

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

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.976 <sup>a</sup>	.953	.826	379.81323	2.387

a. Predictors: (Constant), Operating\_efficiency, Growth\_in\_sales, Price\_of\_Metallic\_minerals, Size, OCF, Performance, Business\_indicator, Debt\_equity\_ratio

b. Dependent Variable: WCR

Durbin-Watson test shows D value close to 2, hence, auto correlation is within tolerable limits.

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	8709041.503	8	1088630.188	7.546	.062 <sup>b</sup>
Residual	432774.266	3	144258.089		
Total	9141815.769	11			

a. Dependent Variable: WCR

b. Predictors: (Constant), Operating\_efficiency, Growth\_in\_sales, Price\_of\_Metallic\_minerals, Size, OCF, Performance, Business\_indicator, Debt\_equity\_ratio

The result of the above regression shows that the beta of the regression model is insignificant. VIF values below 20 indicate that co linearity between the independent variables is within tolerable limits.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-8706.972	1624.162		-5.361	.013		
Price_of_Metallic_minerals	94.191	277.190	.049	.340	.756	.757	1.321
Growth_in_sales	10413.616	4081.782	.872	2.551	.084	.135	7.399
Performance	-4469.630	5969.253	-.211	-.749	.508	.200	5.012
Size	.127	.046	.899	2.742	.071	.147	6.808
OCF	.120	.075	.534	1.596	.209	.141	7.086
Debt_equity_ratio	666.740	118.923	2.224	5.606	.011	.100	9.968
Business_indicator	22.031	7.142	1.213	3.085	.054	.102	9.794
Operating_efficiency	-8390.738	6138.271	-.432	-1.367	.265	.158	6.316

a. Dependent Variable: WCR



## Conclusion

From the findings, it can be concluded that not all the factors play a significant role in determining the working capital requirement of the firm.

The coefficients of all the exogenous factors are insignificant. Therefore Prices of raw materials, growth in sales of the firm and business environment do not play any significant role.

Of all the endogenous variables, performance of the firm, size, operating efficiency and operating cash flow do not play a significant role. Only debt equity ratio plays a significant role in determining the working capital requirement of the firm.

## References

- Factors determining working capital management in cement industry: south Asian journal of management.
- The determinants of working capital requirements in Palestinian Industrial corporations : International Journal of Economics and Finance; Vol. 5, No. 1; 2013
- Working Capital Requirements and the Determining Factors in Pakistan.
- Shulman and Cox (1985).
- Eljelly, A. M. A. (2004). Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market. *International Journal of Commerce and Management*, 14(2), 48-61.
- Hawawini, G., Viallet, C., & Vora, A. (1986). Industry Influence on Corporate Working Capital Decisions, *Sloan Management Review*, 27(4), 15-24.
- Filbeck, G., & Krueger, T. M. (2005). An Analysis of Working Capital Management Results Across Industries. *Mid American Journal of Business*, 2(2), 12-18.
- Yadav, R., Kamath, V., & Manjreka, P. (2009). Working Capital Management: A study of Maharashtra's bulk drugs listed companies. *Chemical Business*, 27-34.
- Ranjith, B. A. (2008). The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand. *International Management View*, 4(1), 11-24.
- Singh, P. (2008). Inventory and Working Capital Management: An Empirical Analysis. *The Icfai Journal of Accounting Research*, 7(2), 53-73.
- Hill, M. D., Kelly, G. W., & Highfield, M. J. (2010). Net Operating Working Capital Behavior: A First look. *Financial Management*, 39(2)
- Pandey, I. M., & Parera, K. L. W. (1977). Working Capital Management in Sri Lanka, Working Paper No. 1349. Indian Institute of Management.
- Padachi, K. (2006). Trends in Working Capital Management and Its Impact on Firms Performance: An analysis of Mauritian small Manufacturing Firms. *International Review of business Research Papers*, 2(2), 45-58.
- Howorth, C., & Westhead, A. (2003). The Focus of Working Capital Management in UK Small Firms. *Management Accounting Research*, 14(2), 94-111.
- Chiou, J. R., & Cheng, L. (2006). The Determinants of Working Capital Management. *Journal of American Academy of Business*, 10(1), 149-155.

