

## **Working Capital and Liquidity Performance of Cement Companies - An Empirical Analysis**

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**ABSTRACT:** *In the post liberalization era working capital management has grabbed more attention in determining the financial health of a firm. Liquidity of the firm sometimes proves more important than the long-term solvency of the firm because day to day operations depend on variety of sources of funds which determines the credit worthiness of the firms. There are firms which liquidated due to inefficient working capital management. Hence a study about working capital is critical in the present scenario. This particular study tries to assess the nature of relationship of Working Capital Management (WCM) and liquidity with the selected firm's performance in cement industry. It is necessary for every firm to maintain an optimum level of working capital which makes a perfect trade-off between profitability and liquidity of the firm. Current ratio, Quick ratio, Current assets to Total assets ratio, Current Assets turnover ratio, working turnover ratio etc. are some of the parameters to measure the firm soundness towards working capital. A sample of 5 cement companies listed on Bombay stock exchange for a period of 2008 to 2017 has been selected for the study. Final outcomes of the analysis suggest that efficient management of working capital and liquidity leads to financial success.*

**KEYWORDS:** *Cement Industry, Current Ratio, Liquidity, Working Capital Management, Quick ratio.*

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### **I. INTRODUCTION**

Working Capital Management is an important component of Corporate Financial Management. Management of working capital is essential to meet day to day expenses. The primary objective of working capital management is to ensure smooth operating cycle of the business. Working Capital management is juggling various sources of finance to maintain liquidity of the firm. Liquidity of the firm has an important bearing on the financial soundness of the firm. Working capital management calls for addressing two basic issues one to decide the extent of maintaining the current assets and identifying the limits of investment in current assets.

Firms should maintain a perfect tradeoff between liquidity and profitability. It is opined that organisations which could tackle these two issues reasonably are able to combat solvency problems comparatively more efficiently and proved to be financially sound.

### **II. PROFILE OF CEMENT INDUSTRY**

India is the second largest producer of cement in the world. With the deregulation of Cement Industry in the year 1982 many foreign investors established plants in India. There by it contributed directly and indirectly towards employment. Recent initiatives by the Government like building houses for the poor, development of 98 smart cities are the positive indicators for the growth of the sector. Abundant availability of raw materials like lime stone and coal is the significant factor for the growth of the sector.

The housing and real estate sector is the biggest demand driver of cement, accounting for about 65 per cent of the total consumption in India. The other major consumers of cement include public infrastructure at 20 per cent and industrial development at 15 per cent. India's total cement production capacity is nearly 455 million tonnes, as of 2017-18. Cement consumption is expected to grow by 4.5 per cent in FY19 supported by pick-up in the housing segment and higher infrastructure spending. The industry is currently producing 280 MT for meeting its domestic demand and 5 MT for exports requirement. The Indian cement industry is dominated by a few companies. The top 20 cement companies account for almost 70 per cent of the total cement production of the country. A total of 210 large cement plants account for a cumulative installed capacity of over

350 million tonnes, with 350 small plants accounting for the rest. Of these 210 large cement plants, 77 are located in the states of Andhra Pradesh, Rajasthan and Tamil Nadu.

### **III. LITERATURE REVIEW:**

The National council of applied Economic Research (NCEAR) 1966 was the first time formal study conducted on working capital management in India. The council published a structure of working capital which explains the limited analysis of the creation of working capital with special attention to the fertilizers, and cement and sugar industries. The main objective of this study was emphasized on come out with result that working capital management practices were extremely unplanned and hence need to develop proper accounting policies like inventory management, debtors' management, etc.

J P Singh and Shishir Pandey (2008) have studied the impact of working capital management on profitability of Hindalco Industries Limited. This study is based on secondary data and data are collected from annual reports of company for 17 years period i.e. 1990 -2007. The research methodology used in this paper is ratio analysis, percentage method, correlation coefficients and multiple regression analysis. Regression results of the study show that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio have statistically significant impact on the profitability of Hindalco Industries Limited.

Shishir Pandey and Vikas Kumar Jaiswal (2011) analyzed the effect of working capital management on profitability of manufacturing firms. The study period was five years i.e. 2005 – 2010. The research methodology applied by author is correlation and regression analysis. The result of correlation analysis show there is negative relationship between profitability and debtor's days, inventory days, and creditor's days. The results of regression analysis shows cash velocity, size of the firm, and net working capital leverage are significant both method.

Ashok Kumar Panigrahi, (2012) analyses the impact of working capital management on profitability of ACC Cement Company. The study is based on secondary data, data was collected from the websites money control as well company websites and study periods are for 10 years i.e. 1999-2000 to 2009-2010. The research methodology used in this paper is correlation coefficient, multiple correlation analysis and multiple regression analysis. In this paper few variables show a strong and positive correlation with the profit whereas some others do not have. The results show that there is moderate relationship between the efficiency of working capital and the profitability.

Arunkumar O.N. and T.Radharamanan (2012) examined the effect of working capital management on profitability of Indian manufacturing firms. The study period was of 2005-06 to 2009-10 i.e. for 5 years and methodology used on this study was correlation and regression analysis. The results of research shows that in correlation analysis profitability has negative relationship between profitability and debtor day, inventory day and creditor day. And a result of regression analysis shows that there is positive relationship between number days of inventory and number of days of account payables.

Kruti A. Patel (2015) studied on impact of working capital management on profitability of Indian Oil Corporation. The study was based on secondary data and study period was 2009-10 to 2013-14. Pearson correlation, descriptive statistic and SPSS were applied as research methodology. The results show that there is significant negative correlation between working capital management and net profit and it also indicates that there is negative relationship between liquidity and profitability.

Poonam Gautam Sharma and Preet Kaur (2015) examine the impact of working capital management on profitability of Bharti Airtel Telecom Company. The study period was 2007-08 to 2014-15. The results reveal that there is significant negative relationship between liquidity and profitability of the company.

### **IV. OBJECTIVES OF THE STUDY:**

Keeping the importance of working capital management in view the present study aims to analyze:

- (i) The liquidity position of the selected cement companies in India
- (ii) The working capital turnover position of the selected cement companies in India.

#### **Hypotheses of the Study:**

The present study tests the null hypotheses:

- ❖ H<sub>01</sub>: The average current ratios of sample companies do not differ significantly.
- ❖ H<sub>02</sub>: The average quick ratios of sample companies do not differ significantly.
- ❖ H<sub>03</sub>: The average current assets to total assets ratios of sample companies do not differ significantly.
- ❖ H<sub>04</sub>: The average current assets turnovers of sample companies do not differ significantly.
- ❖ H<sub>05</sub>: The average working capital turnovers of sample companies do not differ significantly.

**V. METHODOLOGY OF THE STUDY:**

The present study was conducted among the five commercial cement companies listed on Bombay Stock Exchange. The companies considered for the study are: Birla Corporation Ltd (BCL), India Cements Ltd (ICL), KCP Ltd (KCP), The Ramco Cements Ltd (RAM), Ultra Tech Cement Ltd (UTC). The data of 10 years i.e from 2007-2008 to 2016-17 is considered for the study. The analysis is carried out with the help of variables: Current Ratio (Current Assets/Current Liabilities); Quick Ratio (Quick assets/Current Liabilities); Ratio of Current Assets to Total Assets (Current Assets/Total assets\*100); Current Assets turnover ratio (Sales/Current Assets) and Working Capital Turnover Ratio (Sales/Working Capital), which measure the efficiency of working capital management. Apart from these ratios the study also used statistical tools like averages and one-way ANOVA. MS Excel was also used in the analysis to derive the results.

**Analysis and Interpretation of Results:**

The analysis and interpretation part of the study is carried on in sequential order of the parameters mentioned in the methodology of the study. Thus, the discussions in terms of cross sectional are as follows:

❖ **Current Ratio:**

Year	BCL	ICL	KCP	RAM	ULC	Mean
2008	0.73	1.43	1.91	0.82	0.82	1.142
2009	0.98	1.13	1.9	1.14	0.88	1.206
2010	0.92	1.46	1.88	1.39	1.09	1.348
2011	0.88	1.27	1.17	0.64	1.37	1.066
2012	0.93	0.87	1.07	0.69	1.49	1.01
2013	0.95	1	0.96	0.78	1.25	0.988
2014	0.99	1.08	1.09	0.73	1.57	1.092
2015	1.2	1.02	1.03	0.83	0.9	0.996
2016	0.92	1.03	0.82	0.88	0.86	0.902
2017	1	0.87	0.77	0.7	1.55	0.978
Mean	0.95	1.116	1.26	0.86	1.178	1.072

Source: Annual reports of the companies accessed from www.moneycontrol.com

Table-1 explains the Current Ratio of selected Cement companies. The current ratio of the selected cement companies varied between the highest of 1.348 times in 2010 and the low 0.902 times in 2014 with ten-year average of 1.072 times. From the above table it is observed that Birla Corporation Ltd failed to maintain its current ratio above the selected companies total average in any year. The ten-year average of India Cements Ltd, KCP Ltd, Ultra tech Cement Ltd were higher than the ten years selected companies total average i.e 1.072 times. The mean current ratio of Birla Corporation Ltd and The Ramco Cements Ltd was below the selected companies total average. The distribution of selected companies total average current ratio reveals that the KCP Ltd had healthy current ratio followed by Ultra Tech Ltd and India Cements Ltd. However, the average current ratios of all sample companies were below the standard ratio 1:2 times, indicating poor liquid position of the selected Cement companies. The current ratios of sample companies were computed using one-way ANOVA and were tested by the following hypothesis(H<sub>01</sub>). The results were shown in the Table 2.

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.083408	4	0.270852	3.289345	0.018981	2.578739
Within Groups	3.7054	45	0.082342			
<b>Total</b>	<b>4.788808</b>	<b>49</b>				

Source: ANOVA is performed using MS Excel Software

❖ **H<sub>01</sub>:** The average current ratios of Birla Corporation Ltd, India Cements Ltd, KCP Ltd, The Ramco Cements Ltd, Ultra Tech Cement Ltd do not differ significantly.

❖ **Inference:** F<sub>cal</sub> > F<sub>crit</sub>, therefore, reject H<sub>01</sub> and conclude that the average current ratios of the samples companies differ significantly

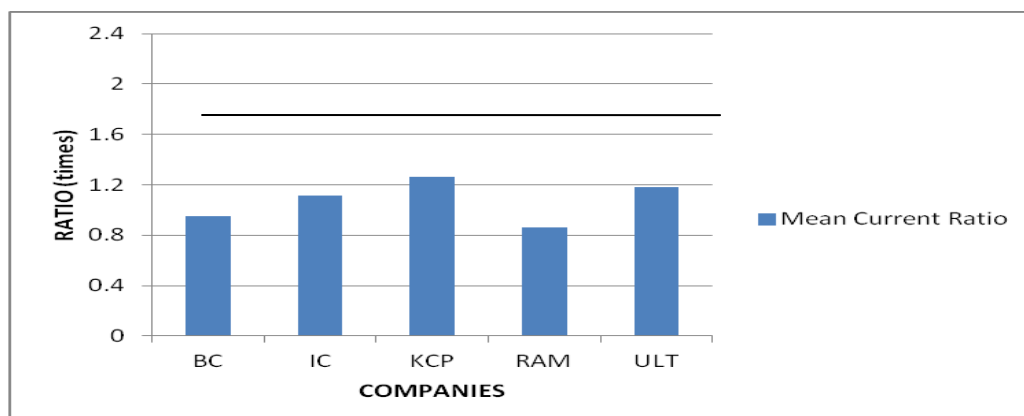


Figure-1: Mean Current Ratios of Selected Companies

Figure-1 shows that all sample companies mean quick ratios is maintained below the standard ratio, i.e., 1:2 times and the sample companies ten years average is also registered below the norm.

❖ **Quick Ratio:**

Years	BCL	ICL	KCP	RAM	ULC	Mean
2008	0.65	1.49	1.36	0.56	0.44	0.9
2009	0.9	1.23	1.41	0.73	0.43	0.94
2010	0.93	1.54	1.37	0.88	0.48	1.04
2011	1.05	1.57	0.7	0.37	0.99	0.936
2012	1.06	0.76	0.58	0.36	1.04	0.76
2013	0.8	1.46	0.6	0.41	0.88	0.83
2014	0.8	1.34	0.62	0.33	1.16	0.85
2015	0.96	1.2	0.48	0.47	0.59	0.74
2016	0.69	1.17	0.39	0.51	0.66	0.684
2017	0.67	0.76	0.42	0.42	1.27	0.708
MEAN	0.851	1.252	0.793	0.504	0.794	0.8388

Source: Annual reports of the companies accessed from www.moneycontrol.com

Table-2 explains the Quick Ratio of selected Cement companies. The quick ratio of the selected companies varied between the highest of 1.04 times in 2010 and the low 0.684 times in 2016 with ten-year average of 0.8388 times. The mean quick ratio of The Ramco Cements Ltd (0.504 times) was much below the selected companies total average followed by KCP Ltd (0.793 times) and Ultra tech Cement Ltd (0.794 times). India Cements Ltd has the highest mean quick ratio (1.252 times) among the sample companies. However, the average quick ratios of all the sample companies and the industry were below the standard ratio 1:1 times except India Cements Ltd indicating poor liquid position of the other selected Cement companies. The quick ratios of sample companies were computed using one-way ANOVA and were tested by the following hypothesis(H<sub>0</sub>), The results were shown in the Table-3.

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.870788	4	0.717697	8.695516	2.74E-05	2.578739
Within Groups	3.71414	45	0.082536			
Total	6.584928	49				

Source: ANOVA is performed using MS Excel Software

❖ **H<sub>0</sub>:** The average quick ratios of Birla Corporation Ltd,India Cements Ltd,KCP Ltd,The Ramco Cements Ltd,Ultra Tech Cement Ltd do not differ significantly.

❖ **Inference:**  $F_{cal} > F_{crit}$ . We reject H<sub>0</sub> and conclude that the average quick ratios of the samples companies differ significantly.

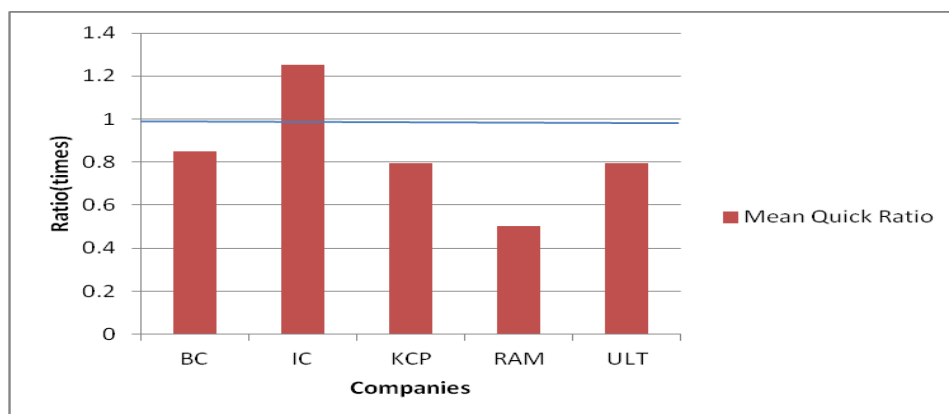


Figure-2: Mean Quick Ratios of Selected Companies

Figure-2 explains the mean quick ratios across the selected firms in the industry. The mean quick ratios of the India cements Ltd alone could reach the standard norm 1:1 times while all the firms are below the standard norm.

❖ **Ratio of Current Assets to Total Assets:**

Year	BCL	ICL	KCP	RAM	ULC	Mean
2008	35.33	29.83	58.27	23.23	20.78	33.48
2009	33.14	28.62	65.63	19.63	17.62	32.92
2010	27.70	26.26	46.27	21.60	17.59	27.88
2011	45.97	22.35	32.52	16.21	35.40	30.49
2012	41.42	24.75	35.63	17.09	29.64	29.70
2013	33.18	16.74	32.03	19.34	28.51	25.96
2014	46.99	16.54	27.80	18.19	30.24	27.95
2015	46.68	18.29	26.28	16.96	22.46	26.13
2016	49.67	18.36	21.88	18.53	25.38	26.76
2017	24.98	15.95	22.91	20.23	31.74	23.162
Mean	38.50	21.76	36.92	19.10	25.93	28.44

Source: Annual reports of the companies accessed from www.moneycontrol.com

The ratio of current assets to total assets of the selected companies is presented in Table- 5. The current assets of the selected companies constituted the highest percentage of total assets by 33.48 percent in 2006 and the lowest of 23.12 percent in 2017 with the selected companies average of 28.44 percent. Table 6 explains that Birla Corporation Ltd has blocked more funds in current assets by an average of 38.50 percentage of the total assets followed by KCP Ltd (36.92%) and Ultra Tech Cement Ltd (25.93%). India Cements Ltd and The Ramco Cements Ltd invested the least amount of funds i.e 21.76 percent and 19.10 percent respectively. The average ratios of current assets to total assets of sample companies were computed using one-way ANOVA and were tested by the following hypothesis ( $H_{03}$ ). The results were shown in the Table 6.

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3111.983	4	777.9958	10.4204	4.64E-06	2.578739
Within Groups	3359.739	45	74.66086			
Total	6471.722	49				

Source: ANOVA is performed using MS Excel Software

❖  **$H_{03}$ : The average ratios of current assets to total assets of Birla Corporation Ltd, India Cements Ltd, KCP Ltd, The Ramco Cements Ltd, Ultra Tech Cement Ltd do not differ significantly.**

❖ **Inference:**  $F_{cal} > F_{crit}$ . We reject  $H_{03}$  and conclude that the ratios of current assets to total assets of the samples companies differ significantly.

❖ **Current Assets turnover ratio:**

**Table-7: Current Assets turnover of selected Cement Companies (in times)**

Year	BCL	ICL	KCP	RAM	ULC	Mean
2008	2.41	1.60	1.59	2.57	4.22	<b>2.47</b>
2009	2.63	1.66	1.15	2.76	4.68	<b>2.57</b>
2010	2.57	1.79	1.19	2.47	4.78	<b>2.56</b>
2011	1.30	1.97	1.17	2.82	1.88	<b>1.82</b>
2012	1.35	2.05	1.84	3.14	2.69	<b>2.21</b>
2013	1.73	3.11	2.22	3.06	2.58	<b>2.54</b>
2014	1.31	3.07	2.16	2.94	2.25	<b>2.34</b>
2015	1.37	2.90	2.19	3.03	2.89	<b>2.47</b>
2016	1.27	2.79	3.26	2.76	2.43	<b>2.50</b>
2017	2.08	3.40	3.16	2.78	1.91	<b>2.66</b>
<b>Mean</b>	<b>1.80</b>	<b>2.43</b>	<b>1.99</b>	<b>2.83</b>	<b>3.03</b>	<b>2.41</b>

Source: Annual reports of the companies accessed from www.moneycontrol.com

The current assets turnover ratio is depicted in Table-7. The above table states that in the 10 years current assets turnover ratio of the sample cement companies varies between the highest of 2.66 times in 2017 and the lowest of 1.82 times in 2011 with the mean ratio of 2.41 times. The average current assets turnover ratio of Ultra Tech Cement Ltd (3.03 times), the Ramco Cements Ltd (2.83 times) are greater than the average of the sample companies (2.41 times). The current assets turnover ratio of India Cements Ltd (2.43 times) is almost similar to the total sample companies average. In the case of Birla Corporation Ltd, KCP Ltd the ratio is 1.80 times and 1.99 times respectively which is much below the total average of the sample companies. However, it should be observed that Ultra Tech Cement Ltd was highly efficient in achieving higher sales with lower investment in current assets followed by The Ramco Cements Ltd and India Cements Ltd.

**Table-8: ANOVA Results for the Average Current Assets Turnover Ratios of the Selected Companies**

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	11.07853	4	2.769633	5.2123	0.001548	2.578739
Within Groups	23.91142	45	0.531365			
Total	34.98995	49				

Source: ANOVA is performed using MS Excel Software

❖ **H<sub>0</sub><sub>4</sub>: The average current assets turnover ratios of Birla Corporation Ltd, India Cements Ltd, KCP Ltd, The Ramco Cements Ltd, Ultra Tech Cement Ltd do not differ significantly.**

❖ **Inference:**  $F_{cal} > F_{crit}$ . We reject H<sub>0</sub><sub>4</sub> and conclude that the average current assets turnover ratios of the samples companies differ significantly.

❖ **Working capital turnover ratio:**

**Table-9: Working Capital turnovers of Selected Cement Companies (in times)**

Year	BCL	ICL	KCP	RAM	ULC	Mean
2008	-15.98	-11.82	3.33	-11.55	-19.14	<b>-11.03</b>
2009	12.26	-26.51	2.44	22.27	-34.89	<b>-4.88</b>
2010	19.04	-4.50	2.55	8.87	55.39	<b>16.27</b>
2011	2.09	5.25	7.94	-5.09	6.973	<b>3.43</b>
2012	2.26	4.97	26.74	-6.93	8.21	<b>7.05</b>
2013	3.16	-5.86	-52.21	-10.62	12.78	<b>-10.55</b>
2014	2.15	-5.04	26.81	-8.09	6.20	<b>4.40</b>
2015	1.89	-7.37	65.01	-14.96	-26.23	<b>3.66</b>
2016	2.07	-6.02	-15.30	-19.72	-15.03	<b>-10.8</b>
2017	4.11	-9.42	-10.37	-6.56	5.41	<b>-3.36</b>
<b>Mean</b>	<b>3.305</b>	<b>-6.632</b>	<b>5.694</b>	<b>-5.238</b>	<b>-0.0327</b>	<b>-0.58</b>

Source: Annual reports of the companies accessed from www.moneycontrol.com

Table-9 reveals the working capital turnover of selected Cement companies. The average working capital turnover ratio of the selected companies is -0.58 times which speaks that on an average the selected firms are inefficient in using a firm's short-term assets and liabilities to support sales in the period of ten years. KCP Ltd, Birla Corporation Ltd are much efficient in using the working capital i.e., 5.694 times and 3.305 times respectively compared to other firms.



Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1132.034	4	283.0086	0.741647	0.568642	2.578739
Within Groups	17171.76	45	381.5947			
Total	18303.8	49				

Source: ANOVA is performed using MS Excel Software

❖ **H<sub>0</sub>**: The average Working capital turnover ratios of Birla Corporation Ltd, India Cements Ltd, KCP Ltd, The Ramco Cements Ltd, Ultra Tech Cement Ltd do not differ significantly.

❖ **Inference**:  $F_{cal} < F_{crit}$ . We accept H<sub>0</sub> and conclude that the average working capital turnover ratios of the samples companies not differ significantly.

## VI. CONCLUSION:

The structure of working capital was analysed through the construction of tables highlighting ratios during the year 2007-2008 to 2016-17. It should be noted that all the sample companies' current ratio is below the standard norm of 1:2 times and the same is the case with the quick ratio, whose standard norm is 1:1. The study indicates that the average current ratios, average quick ratios, average current assets to total assets ratios, average current assets turnover ratios of the sample companies in cement industry do not differ significantly. However, average working capital turnover ratios of the selected companies differ significantly.

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