ANALYSING SELECTED CEMENT COMPANIES OF INDIA: A LIQUIDITY SCENARIO PERSPECTIVE

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ABSTRACT

Liquidity analysis is an important measure of a company's financial health, as it indicates the ability of the company to meet its short-term obligations. The main objective of these study to analysing selected cement companies of India: a liquidity scenario perspective. For the period 2012-2013 to 2021-2022. The secondary data is used for the research. It has been collected from selected ten cement companies' annual reports. The used tools & techniques: liquidity ratios analysis (current ratio, quick ratio and cash ratio), descriptive statistics analysis, analysis of variance (ANOVA) and Post-hoc Tukey test. It is concluded that there is a considerable variation in the liquidity ratios of the companies in the cement industry. While some companies have a strong liquidity position (e.g., Ambuja Cements Ltd. Shree Cements Ltd. ACC Ltd.), others have a weaker liquidity position (e.g., The India Cements Ltd., The Ramco Cements Ltd. and Prism Johnson Ltd.). Therefore, it is important to evaluate each company's liquidity position based on its specific circumstances and needs. Overall, the 95% confidence interval for the mean values for all three liquidities ratios. which suggests that the true mean values for all three liquidities ratios for all cement companies in the industry is likely to fall within this range. It is also concluded that all the null hypotheses have not been accepted meaning thereby all alternative hypotheses are accepted. There are significant differences between the current ratio, quick ratio and cash ratio of selected cement companies of India.

Key Words: Liquidity analysis (current ratio, quick ratio and cash ratio), Descriptive statistics analysis, Analysis of variance (ANOVA) and Post-hoc Tukey test.

JEL Classification: M410

1. INTRODUCTION

Liquidity analysis is an important measure of a company's financial health, as it indicates the ability of the company to meet its short-term obligations. Here are some commonly used metrics for liquidity analysis: current ratio, quick ratio, cash ratio and operating cash flow ratio. By analysing these metrics, investors and analysts can get a better understanding of a company's liquidity position and make informed investment decisions. The Indian cement industry is one of the largest in the world, second only to China in terms of production capacity. The industry contributes significantly to the Indian economy, providing employment opportunities to millions of people and generating substantial revenue through exports.

2. REVIEW OF LITERATURE

Kirkham, R. (2012)

Has study been to examine the value in analysis of the liquidity of companies using the traditional ratios as compared to the more recently devised cash flow ratios. The research involved the comparison between the traditional ratios and cash flow ratios of twenty-five companies in the same industry over a five-year period. The companies were all from the telecommunications sector and the data was obtained from the Fin Analysis database. The ratios examined were – the current ratio, quick ratio, interest coverage ratio – the cash flow ratio, critical needs cash coverage ratio, and cash interest coverage ratio. The study revealed that differences existed between the traditional liquidity ratios and the cash flow ratios. A conclusion based solely on the traditional ratios could well have led to an incorrect decision regarding the liquidity of a number of companies. In certain instances that may have been that a company was deemed to be liquid when it faced cash flow problems or that a company was not liquid when in fact it had sufficient cash flow resources.

Panigrahi, A. (2013)

In this paper a comparative study on the liquidity position of five leading Indian cement companies has been done to know the liquidity position of the companies. The study covers a period of 10 years viz, 2000-2001 to 2009-

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2010. For the purpose of investigation purely secondary data is used. The techniques of mean, standard deviation, coefficient of variation, ratio analysis, and Motaal's ultimate rank test has been applied to analyse the data. It has been found that the liquidity position of small companies is better as compared to big ones and most interestingly the growth rate of current ratio, quick ratio and working capital to current assets of all the companies are negative which indicates an unsound liquidity position. In any other situation, it is a sign that a company may be facing bankruptcy or serious financial trouble. In our case, Motaal's Ultimate Rank Test shows that the liquidity position of Shree Cements is sounder as compared to other companies.

Billah, N. & et al. (2015)

Have study liquidity analysis of selected public-listed companies in Malaysia. This study examines, over the three years (2010-2012) period, the liquidity position of selected companies from three prominent sectors (Consumer products, Industrial products and Trading/Services) of the Malaysian economy using cash flow statement ratios and traditional liquidity ratios suggested by various researchers. Traditional ratios were obtained from the Osiris database and cash flow ratios were calculated by using financial statements of selected companies. Correlation analysis was performed to investigate the strength of the relationship between traditional ratios and cash flow ratios. The empirical results of the correlation analysis show a statistically significant positive relationship between traditional ratios and cash flow ratios. Finally, pair t-tests results show that there is statistically significant difference between traditional ratios and cash flow ratios. The implication of the above empirical results suggests that traditional liquidity ratios should not be used solely for measuring liquidity since a company can have serious cash flow problems with positive liquidity ratios and increasing profits. Liquidity ratios developed using the statement of cash flows provide additional information or sometimes better insight on the financial strength or weakness of a company.

Kala, K. & et al. (2020)

This research paper is basically focused on liquidity of selected real estate companies. In this research paper tried for mentioning various important factors affecting to liquidity of companies. The present study is concerned with the five-year data of DLF and Godrej Properties i.e. (from 2013-14 to 2017-18). The data is secondary in nature and is obtained from annual reports of the companies. For the analysis liquidity ratios are calculated and averages, standard deviation and co-efficient are also calculated and for testing the hypothesis t test has been used. The study clearly indicates that liquidity of both the companies had so much fluctuating trend during the period of study. In the current ratio the null hypothesis is rejected because there is significant difference between the selected companies under study but in the remaining three ratios i.e., quick ratio, cash to current assets ratio and cash turnover ratio had also fluctuating trend in throughout the period of study but the null hypothesis is accepted in remaining three ratios because there is no significant difference in these ratios between the selected companies under study.

2.1. Research Gap

The research gap in the proposed topic "Analysing selected cement companies of India: A liquidity scenario perspective" could be the lack of existing literature that specifically focuses on the liquidity scenario of cement companies in India. While there are several studies on the financial performance of cement companies in India, there is a dearth of research that specifically examines the liquidity aspect of these companies. It was also found that there is possibly lacuna of study covering the pre-COVID and post-COVID contextual research for this topic. During the phase of my literature review, I found that there is almost no research on the kind of duration I have taken. There is visible unavailability of such study for the time span of 10 years ranging from 2012-13 to 2021-22. Also, the companies covered by this study are top 10 companies in the cement industry while most other similar studies have comprised few selected companies only. Also, the selection of ratio utilized by my study combined with the above-mentioned speciality gives the study uniqueness. Overall, the proposed research could contribute to the existing literature on financial analysis and provide valuable insights into the liquidity scenario of selected cement companies in India.

3. RESEARCH METHODOLOGY

3.1. Objectives of the Study

The study has the following objectives:

    (1) To evaluate the liquidity analysis of selected cement companies of India.
    (2) To measure the liquidity based on current ratio of selected cement companies of India.
    (3) To study liquidity based on quick ratio of selected cement companies of India.
    (4) To study liquidity based on cash ratio of selected cement companies of India.

3.2. Hypothesis of the Research Study

Table No.3.1. List of Hypothesis will be Taken Under Study	
Null Hypothesis (H_0)	Alternative Hypothesis (H_1)
There is no significant difference between the current ratio of selected cement companies of India.	There is significant difference between the current ratio of selected cement companies of India.
There is no significant difference between the quick ratio of selected cement companies of India.	There is significant difference between the quick ratio of selected cement companies of India.
There is no significant difference between the cash ratio of selected cement companies of India.	There is significant difference between the cash ratio of selected cement companies of India.

3.3. Sample Design

The companies hereunder are selected on randomly for the period 2012-2013 to 2021-2022.

Table No.3.2. List of Selected 10 Cement Companies		
No.	Company Name	Market Cap (₹ Crore)
1	Ultratech Cement Ltd.	204,102.92
2	Shree Cements Ltd.	90,974.54
3	Ambuja Cements Ltd.	70,162.77
4	ACC Ltd.	32,647.75
5	J.K. Cement Ltd.	21,581.02
6	The Ramco Cements Ltd.	16,857.10
7	JK Lakshmi Cement Ltd.	8,133.35
8	The India Cements Ltd.	5,815.22
9	Prism Johnson Ltd.	5318.06
10	Heidelberg Cement India Ltd.	3,852.42

Source: 14 March 2023 BSE

3.4. Data Collection

Secondary sources of data will be utilized for this proposed research study secondary data have been collected from selected cement companies' annual reports. Ratio data is taken from different sources like screener, moneycontrol etc.

3.5. Period of Study

Ten years of financial statements will be analysed for selected cement companies taken under study. Financial ratios from 2012-2013 to 2021-2022 will be studied.

3.6. Tools & Techniques

This study has been done by analysing and interpreting data in following ways.
    (1) Liquidity ratios analysis.
    (2) Descriptive statistics analysis. (Mean, std. deviation, std. error, 95% confidence interval for mean, lower bound, upper bound, minimum and maximum)
    (3) Analysis of variance (ANOVA)
    (4) Post-hoc Tukey test

3.7. Limitations of the Study

    (1) The present study will be largely based on secondary data which would be taken from official websites of respective organization and annual reports selected cement companies of India as such finding depends entirely on the accuracy of such data.
    (2) The present study will be largely based on liquidity ratios analysis which has its inherent limitations. the different views have been applied in the calculation of different ratios.
    (3) There is proper care taken to overcome the limitations of the statistical tools used in the present study but still limitations of the tools applied in the present study.
    (4) The present study has been undertaken comprising only 10 selected cement companies. The financial data taken has been taken for a duration of 10 years. Also, out of the wide range of financial ratios, this study has focused on selected 3 liquidity ratios.

4. DATA ANALYSIS AND INTERPRETATION

4.1. Current Ratio

The current ratio is a financial ratio that measures a company's ability to pay off its short-term liabilities with its current assets. A higher current ratio indicates a company's better liquidity position, which means it has enough current assets to meet its current liabilities.

Current Ratio = Current Assets / Current Liabilities

Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013
JK Lakshmi Cement Ltd.	1.34	1.00	0.85	0.72	0.76	0.77	0.66	0.69	0.97	1.00
J.K. Cement Ltd.	1.37	1.72	1.31	1.34	1.34	1.19	1.29	1.22	1.32	1.15
The India Cements Ltd.	0.89	0.65	0.77	0.88	0.93	0.73	0.68	0.72	0.62	0.65
The Ramco Cements Ltd.	0.61	0.60	0.67	0.67	0.70	0.70	0.88	0.83	0.73	0.78
Ultratech Cement Ltd.	0.99	1.17	1.03	0.97	0.96	1.55	0.82	0.90	1.57	1.25
Prism Johnson Ltd.	0.85	0.89	0.86	0.78	0.69	0.68	0.91	0.98	0.88	0.80
Ambuja Cements Ltd.*	1.26	0.98	1.54	1.54	1.34	1.23	2.03	1.90	1.95	1.75
ACC Ltd.*	1.71	1.74	1.58	1.40	1.16	0.99	0.88	0.96	1.35	1.42
Shree Cements Ltd.*	1.69	2.05	1.79	2.01	1.92	1.65	1.56	1.61	1.56	1.60
Heidelberg Cement India Ltd.*	1.42	1.09	1.10	0.97	0.77	0.62	0.58	0.79	0.95	0.83

Table No.4.1. Current Ratio (Times)

Table No.4.1. Shows the current ratio of 10 cement companies in India for the years 2012-2022. Looking at the table, we can see that: The current ratio of the companies varies widely across the years. Shree Cements Ltd., Ambuja Cements Ltd., and ACC Ltd. have the higher current ratio in most of the years, indicating a better liquidity position. The Ramco Cements Ltd. and The India Cements Ltd. have the lower current ratio in most of the years, indicating a poorer liquidity position. we can observe that most of the companies have experienced fluctuations in their current ratios over the years, with some experiencing significant increases or decreases in certain years.

4.1.1. Descriptive Statistics of Current Ratio

Company Name	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
JK Lakshmi Cement Ltd.	10	0.88	0.21	0.07	0.73	1.02	0.66	1.34
J.K. Cement Ltd.	10	1.33	0.16	0.05	1.21	1.44	1.15	1.72
The India Cements Ltd.	10	0.75	0.11	0.04	0.67	0.83	0.62	0.93
The Ramco Cements Ltd.	10	0.72	0.09	0.03	0.65	0.78	0.60	0.88
Ultratech Cement Ltd.	10	1.12	0.26	0.08	0.93	1.31	0.82	1.57
Prism Johnson Ltd.	10	0.83	0.10	0.03	0.76	0.90	0.68	0.98
Ambuja Cements Ltd.	10	1.55	0.35	0.11	1.30	1.80	0.98	2.03
ACC Ltd.	10	1.32	0.31	0.10	1.10	1.54	0.88	1.74
Shree Cements Ltd.	10	1.74	0.19	0.06	1.61	1.88	1.56	2.05
Heidelberg Cement India Ltd.	10	0.91	0.25	0.08	0.73	1.09	0.58	1.42
Total	100	1.12	0.40	0.04	1.04	1.19	0.58	2.05

Table No.4.2. Descriptive Statistics of Current Ratio (Times)

Table No.4.2. Shows the descriptive statistics of the current ratio for ten cement companies. The table provides information on the sample size, mean, standard deviation, standard error, minimum, maximum, and 95% confidence interval for the mean.

The mean current ratio for all companies is 1.12 times, with a standard deviation of 0.40 times. This indicates that there is a significant variation in the current ratio among the companies. The highest mean current ratio is observed for Shree Cements Ltd. with 1.74 times, followed by Ambuja Cements Ltd. with 1.55 times and J.K. Cement Ltd. with 1.33 times. The lowest mean current ratio is observed for The Ramco Cements Ltd. with 0.72 times, followed by The India Cements Ltd. with 0.75 times and Prism Johnson Ltd. with 0.83 times. The standard error for all companies is relatively small, indicating that the mean current ratio for the population can be estimated with a high degree of accuracy based on the sample data. The 95% confidence interval for the mean provides a range of values within which the true population mean is likely to fall. For example, the 95% confidence interval for the mean current ratio of JK Lakshmi Cement Ltd. is between 0.73 and 1.02 times.

4.1.2. Hypothesis Testing of Current Ratio

Null Hypothesis (H_0) There is no significant difference between the current ratio of selected cement companies of India.

Alternative Hypothesis (H_1) There is significant difference between the current ratio of selected cement companies of India.

Table No.4.3. ANOVA for Current Ratio					
Source of Variation	Sum of Squares	DF	Mean Square	F	p-value
Between Groups	11.41	9.00	1.27	26.20	0.00
Within Groups	4.35	90.00	0.05		
Total	15.76	99.00			

The significant value (p) is 0.00, which is lower than P-value of table (α) 0.05. Hence the null hypothesis is rejected. Further it is noted that there is significant difference between the current ratio of selected cement companies of India.

Table No.4.4. Post-hoc Tukey Test Current Ratio (Times)						
Company Name	N	Subset for alpha = 0.05				
		1	2	3	4	5
The Ramco Cements Ltd.	10	0.72				
The India Cements Ltd.	10	0.75				
Prism Johnson Ltd.	10	0.83	0.83			
JK Lakshmi Cement Ltd.	10	0.88	0.88			
Heidelberg Cement India Ltd.	10	0.91	0.91			
Ultratech Cement Ltd.	10		1.12	1.12		
ACC Ltd.	10			1.32	1.32	
J.K. Cement Ltd.	10			1.33	1.33	
Ambuja Cements Ltd.	10				1.55	1.55
Shree Cements Ltd.	10					1.74
Sig.		0.61	0.11	0.55	0.36	0.63

As the results for ANOVA analysis is significant the further analysis is conducted to know the groups that exists within selected cement companies based on current ratio. For further analysis post-hoc Tukey test is conducted and the results of the same with homogenous subsets are presented in table no.4.4. The results show that there is major three subsets or groups of selected cement companies.

4.2. Quick Ratio

The quick ratio is a financial ratio used to measure a company's short-term liquidity and its ability to meet its immediate obligations using its most liquid assets, such as cash, marketable securities, and accounts receivable, without relying on inventory. The interpretation of the quick ratio is that the higher the ratio, the better a company's liquidity position.

Quick Ratio = Current Assets – Inventories / Current Liabilities

Table No.4.5. Quick Ratio (Times)										
Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013
JK Lakshmi Cement Ltd.	0.91	0.76	0.54	0.48	0.52	0.58	0.46	0.49	0.83	0.82
J.K. Cement Ltd.	0.89	1.33	0.92	0.94	0.89	0.75	0.89	0.77	0.77	0.63

The India Cements Ltd.	0.58	0.42	0.48	0.54	0.58	0.41	0.41	0.43	0.38	0.43
The Ramco Cements Ltd.	0.31	0.35	0.40	0.40	0.40	0.42	0.51	0.47	0.33	0.41
Ultratech Cement Ltd.	0.72	0.98	0.77	0.69	0.68	1.27	0.60	0.59	1.16	0.88
Prism Johnson Ltd.	0.53	0.64	0.60	0.51	0.47	0.47	0.63	0.63	0.59	0.53
Ambuja Cements Ltd.*	0.99	0.81	1.33	1.20	1.08	0.95	1.75	1.62	1.62	1.43
ACC Ltd.*	1.50	1.55	1.34	1.04	0.87	0.69	0.57	0.63	1.01	1.09
Shree Cements Ltd.*	1.21	1.63	1.42	1.21	1.39	0.99	0.86	0.98	1.02	1.23
Heidelberg Cement India Ltd.*	1.21	0.91	0.95	0.79	0.62	0.43	0.39	0.59	0.62	0.54

Table No.4.5. Shows the quick ratio of ten different cement companies for the years 2012-2013 to 2021-2022. From the table, we can see that some companies have a quick ratio greater than 1, which indicates a good liquidity position, while others have ratios less than 1, which may signal potential liquidity problems. For instance, The Ramco Cements Ltd., The India Cements Ltd. and Prism Johnson Ltd., have quick ratios below 1, which indicates that they may have difficulty meeting their short-term obligations without relying on the sale of inventory. On the other hand, companies like Ambuja Cements Ltd., Shree Cements Ltd. and ACC Ltd. have quick ratios greater than 1, which implies that they have a good liquidity position and can meet their short-term obligations without relying on inventory sales

4.2.1. Descriptive Statistics of Quick Ratio

Table No.4.6. Descriptive Statistics of Quick Ratio (Times)								
Company Name	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
JK Lakshmi Cement Ltd.	10	0.64	0.17	0.05	0.52	0.76	0.46	0.91
J.K. Cement Ltd.	10	0.88	0.19	0.06	0.74	1.01	0.63	1.33
The India Cements Ltd.	10	0.47	0.07	0.02	0.41	0.52	0.38	0.58
The Ramco Cements Ltd.	10	0.40	0.06	0.02	0.36	0.44	0.31	0.51
Ultratech Cement Ltd.	10	0.83	0.23	0.07	0.67	1.00	0.59	1.27
Prism Johnson Ltd.	10	0.56	0.07	0.02	0.51	0.61	0.47	0.64
Ambuja Cements Ltd.	10	1.28	0.32	0.10	1.05	1.51	0.81	1.75
ACC Ltd.	10	1.03	0.35	0.11	0.78	1.28	0.57	1.55
Shree Cements Ltd.	10	1.19	0.24	0.08	1.02	1.36	0.86	1.63
Heidelberg Cement India Ltd.	10	0.71	0.26	0.08	0.52	0.89	0.39	1.21
Total	100	0.80	0.35	0.04	0.73	0.87	0.31	1.75

Table No.4.6. Provides the descriptive statistics of the quick ratio (times) for the ten cement companies over a ten-year period. Here's how to interpret the table: The mean quick ratio for all the companies is 0.80 times, with a minimum of 0.31 and a maximum of 1.75. The standard deviation of the quick ratio varies widely among the companies, ranging from 0.06 to 0.35. Ambuja Cements Ltd., Shree Cements Ltd. and ACC Ltd. have the higher mean quick ratio, while The Ramco Cements Ltd., The India Cements Ltd. and Prism Johnson Ltd have the lowest mean quick ratio over the past 10 years. The 95% confidence interval for the mean quick ratio suggests that we can be 95% confident that the true population mean of the quick ratio for each company falls within the reported range.

4.2.2. Hypothesis Testing of Quick Ratio

Null Hypothesis (H₀) There is no significant difference between the quick ratio of selected cement companies of India.

Alternative Hypothesis (H₁) There is significant difference between the quick ratio of selected cement companies of India.

Table No.4.7. ANOVA for Quick Ratio					
Source of Variation	Sum of Squares	DF	Mean Square	F	p-value
Between Groups	8.07	9.00	0.90	18.61	0.00
Within Groups	4.34	90.00	0.05		
Total	12.41	99.00			

The significant value (p) is 0.00, which is lower than P-value of table (α) 0.05. Hence the null hypothesis is rejected. Further it is noted that there is significant difference between the quick ratio of selected cement companies of India.

Table No.4.8. Post-hoc Tukey Test Quick Ratio (Times)						
Company Name	N	Subset for alpha = 0.05				
		1	2	3	4	5
The Ramco Cements Ltd.	10	0.40				
The India Cements Ltd.	10	0.47				
Prism Johnson Ltd.	10	0.56	0.56			
JK Lakshmi Cement Ltd.	10	0.64	0.64			
Heidelberg Cement India Ltd.	10	0.71	0.71			
Ultratech Cement Ltd.	10		0.83	0.83		
J.K. Cement Ltd.	10		0.88	0.88	0.88	
ACC Ltd.	10			1.03	1.03	1.03
Shree Cements Ltd.	10				1.19	1.19
Ambuja Cements Ltd.	10					1.28
Sig.		0.07	0.05	0.61	0.05	0.26

As the results for ANOVA analysis is significant the further analysis is conducted to know the groups that exists within selected cement companies based on quick ratio. For further analysis post-hoc Tukey test is conducted and the results of the same with homogenous subsets are presented in table no.4.8. The results show that there is major three subsets or groups of selected cement companies.

4.3. Cash Ratio

The cash ratio is a financial metric that indicates a company's ability to pay off its current liabilities using its cash and cash equivalents. It is calculated by dividing the company's cash and cash equivalents by its current liabilities. A higher cash ratio indicates a better ability to meet short-term obligations.

Cash Ratio = Cash and Cash Equivalents (I+C+B) / Current Liabilities

Table No.4.9. Cash Ratio (Times)										
Company Name	2021-2022	2020-2021	2019-2020	2018-2019	2017-2018	2016-2017	2015-2016	2014-2015	2013-2014	2012-2013
JK Lakshmi Cement Ltd.	0.77	0.56	0.34	0.29	0.34	0.35	0.20	0.24	0.58	0.62
J.K. Cement Ltd.	0.21	0.72	0.39	0.62	0.53	0.43	0.46	0.39	0.40	0.37
The India Cements Ltd.	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
The Ramco Cements Ltd.	0.06	0.06	0.04	0.05	0.07	0.06	0.06	0.04	0.03	0.03
Ultratech Cement Ltd.	0.27	0.65	0.32	0.18	0.38	0.95	0.38	0.31	0.70	0.52
Prism Johnson Ltd.	0.14	0.26	0.19	0.03	0.03	0.04	0.07	0.05	0.03	0.02
Ambuja Cements Ltd.*	0.78	0.64	1.06	0.90	0.85	0.75	1.54	1.44	1.42	1.26
ACC Ltd.*	1.24	1.23	0.97	0.64	0.56	0.45	0.34	0.42	0.77	0.89
Shree Cements Ltd.*	0.79	1.14	0.84	0.17	0.82	0.39	0.14	0.33	0.59	0.76
Heidelberg Cement India Ltd.*	0.46	0.47	0.51	0.37	0.25	0.02	0.01	0.16	0.19	0.13

Table No.4.9. Shows the cash ratio of ten different cement companies in India for the last ten years, from 2012-2013 to 2021-2022. Looking at the data, we can see that the cash ratio of the companies varies widely. Companies with a cash ratio above 1 are generally considered financially healthy, indicating that they have enough cash to

cover their short-term liabilities. However, many companies in this table have cash ratios well below 1, indicating that they may be at risk of defaulting on their short-term debts. The table also shows how the cash ratio of each company has changed over time. It appears that most of the companies have seen some fluctuations in their cash ratio, with some improving over time and others deteriorating. For example, JK Lakshmi Cement Ltd. had a cash ratio of 0.77 in 2021-2022, an improvement from its cash ratio of 0.56 the previous year. On the other hand, Ultratech Cement Ltd. had a cash ratio of 0.27 in 2021-2022, a decrease from its cash ratio of 0.65 the previous year.

4.3.1. Descriptive Statistics of Cash Ratio

Table No.4.10. Descriptive Statistics of Cash Ratio (Times)								
Company Name	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
JK Lakshmi Cement Ltd.	10	0.43	0.19	0.06	0.29	0.56	0.20	0.77
J.K. Cement Ltd.	10	0.45	0.14	0.05	0.35	0.55	0.21	0.72
The India Cements Ltd.	10	0.01	0.00	0.00	0.01	0.01	0.01	0.01
The Ramco Cements Ltd.	10	0.05	0.01	0.00	0.04	0.06	0.03	0.07
Ultratech Cement Ltd.	10	0.47	0.24	0.07	0.30	0.63	0.18	0.95
Prism Johnson Ltd.	10	0.09	0.08	0.03	0.03	0.14	0.02	0.26
Ambuja Cements Ltd.	10	1.06	0.33	0.10	0.83	1.30	0.64	1.54
ACC Ltd.	10	0.75	0.33	0.10	0.52	0.98	0.34	1.24
Shree Cements Ltd.	10	0.60	0.33	0.10	0.36	0.83	0.14	1.14
Heidelberg Cement India Ltd.	10	0.26	0.19	0.06	0.12	0.39	0.01	0.51
Total	100	0.41	0.38	0.04	0.34	0.49	0.01	1.54

Table No. 4.10 shows the descriptive statistics of the cash ratio (times) for 10 cement companies in the given time period. The statistics include the number of observations (N), mean, standard deviation, standard error, 95% confidence interval for mean, minimum, and maximum values. The mean cash ratio for the total sample is 0.41 times, with a standard deviation of 0.38. This indicates that there is a wide variation in the cash ratio across the sample companies. The minimum cash ratio is 0.01 times, while the maximum cash ratio is 1.54 times. Among the sample companies, Ambuja Cements Ltd. has the highest mean cash ratio of 1.06 times, while The India Cements Ltd. has the lowest mean cash ratio of 0.01 times. The 95% confidence intervals for the mean cash ratio suggest that there is a significant difference in the cash ratio between the companies in the sample. Overall, the cash ratio of the cement industry is relatively low, with the mean cash ratio of the sample companies being less than 1.

4.3.2. Hypothesis Testing of Cash Ratio

Null Hypothesis (H_0) There is no significant difference between the cash ratio of selected cement companies of India.

Alternative Hypothesis (H_1) There is significant difference between the cash ratio of selected cement companies of India.

Table No.4.11. ANOVA for Cash Ratio					
Source of Variation	Sum of Squares	DF	Mean Square	F	p-value
Between Groups	10.06	9.00	1.12	23.58	0.00
Within Groups	4.27	90.00	0.05		
Total	14.33	99.00			

The significant value (p) is 0.00, which is lower than P-value of table (α) 0.05. Hence the null hypothesis is rejected. Further it is noted that there is significant difference between the cash ratio of selected cement companies of India.

Table No.4.12. Post-hoc Tukey Test Cash Ratio (Times)							
Company Name	N	Subset for alpha = 0.05					
		1	2	3	4	5
The India Cements Ltd.	10	0.01					
The Ramco Cements Ltd.	10	0.05					
Prism Johnson Ltd.	10	0.09					
Heidelberg Cement India Ltd.	10	0.26	0.26				

JK Lakshmi Cement Ltd.	10		0.43	0.43		
J.K. Cement Ltd.	10		0.45	0.45	0.45	
Ultratech Cement Ltd.	10		0.47	0.47	0.47	
Shree Cements Ltd.*	10			0.60	0.60	
ACC Ltd.	10				0.75	0.75
Ambuja Cements Ltd.	10					1.06
Sig.		0.24	0.50	0.78	0.08	0.06

As the results for ANOVA analysis is significant the further analysis is conducted to know the groups that exists within selected cement companies based on cash ratio. For further analysis post-hoc Tukey test is conducted and the results of the same with homogenous subsets are presented in table no.4.12. The results show that there is major three subsets or groups of selected cement companies.

5. FINDINGS

Current Ratio (Times) - Overall, we can observe that most of the companies have experienced fluctuations in their current ratios over the years, with some experiencing significant increases or decreases in certain years. The mean current ratio for all the companies is 1.12 times, indicating that on average, the companies have a sufficient level of current assets to cover their current liabilities. Shree Cements Ltd. has the highest mean current ratio of 1.74 times, indicating that the company has a strong ability to meet its short-term obligations. Ambuja Cements Ltd. has the second-highest mean current ratio of 1.55 times, followed by ACC Ltd. at 1.32 times, indicating that these companies also have a good ability to meet their short-term obligations. The India Cements Ltd. and The Ramco Cements Ltd. have the lowest mean current ratios at 0.75 and 0.72 times, respectively, indicating that these companies may have difficulty meeting their short-term obligations.

The standard deviation of the current ratio is 0.40, which suggests that there is a considerable variation in the current ratio values among the companies. Overall, the 95% confidence interval for the mean current ratio ranges from 1.04 to 1.19 times, which suggests that the true mean current ratio for all cement companies in the industry is likely to fall within this range. The result of ANOVA is null hypothesis is rejected. Further it is noted that there is significant difference between the current ratio of selected cement companies of India.

Quick Ratio (Times) - Overall, the quick ratios of the cement companies have been volatile and have fluctuated over the years. Some companies have shown an increasing trend, while others have shown a decreasing trend. The mean quick ratio across all companies was 0.80 times. The standard deviation was 0.35, indicating that there was a relatively high degree of variability in quick ratio among the companies. The 95% confidence interval for the mean quick ratio ranged from 0.73 to 0.87, indicating that we can be 95% confident that the true population mean quick ratio falls within this range. The standard errors of the mean for each company were relatively small, ranging from 0.02 to 0.11 indicating that our sample means are likely fairly representative of the true population means.

The quick ratios of the companies range from a minimum of 0.31 for The Ramco Cements Ltd. to a maximum of 1.75 for Ambuja Cements Ltd. Looking at the individual companies, we can see that Ambuja Cements Ltd. had the highest mean quick ratio of 1.28, while The Ramco Cements Ltd. had the lowest mean quick ratio of 0.40. Companies like Ambuja Cements Ltd., Shree Cements Ltd and ACC Ltd. have relatively higher quick ratios compared to other companies, while The Ramco Cements Ltd. and The India Cements Ltd. have lower quick ratios. High ratio indicating that they may have more than enough liquid assets to cover their short-term obligations. The result of ANOVA is null hypothesis is rejected. Further it is noted that there is significant difference between the quick ratio of selected cement companies of India.

Cash Ratio (Times) - Overall, we can conclude that different cement companies have shown different trends in their cash ratios over the years, with some companies showing consistency, while others have shown fluctuations. Some companies have also shown significant changes in their cash ratios, which may indicate changes in their financial position. The mean cash ratio for all companies is 0.41, with a standard deviation of 0.38. This indicates a wide variation in cash holdings among the companies analysed. Ambuja Cements Ltd. has the highest mean cash ratio of 1.06, which is significantly higher than the overall mean. This suggests that Ambuja Cements Ltd. has a relatively high level of cash reserves compared to the other companies. The India Cements Ltd. has the lowest mean cash ratio of 0.01, which is significantly lower than the overall mean. This suggests that The India Cements Ltd. has a relatively low level of cash reserves compared to the other companies. The range of cash ratios across all companies is quite wide, ranging from a minimum of 0.01 for The India Cements Ltd. to a maximum of 1.54 for Ambuja Cements Ltd.

The 95% confidence intervals for the mean cash ratio of each company do not overlap with each other, indicating a statistically significant difference in mean cash ratios between companies. The standard error of the mean cash ratio for all companies is 0.04, indicating a relatively high level of precision in the sample mean estimate. The

result of ANOVA is null hypothesis is rejected and alternative hypothesis is accepted. It means there is significant difference between the cash ratio of selected cement companies of India.

6. SUGGESTIONS

Based on the research study, here are some suggestions for cement companies:

Current Ratio - The Ramco Cements Ltd., The India Cements Ltd., Prism Johnson Ltd., JK Lakshmi Cement Ltd. and Heidelberg Cement India Ltd. have current ratios below the industry average of 1.12. These companies should focus on improving their liquidity position by increasing their current assets or reducing their current liabilities. ACC Ltd., J.K. Cement Ltd., Ambuja Cements Ltd. and Shree Cements Ltd. have current ratios above the industry average. These companies have a strong liquidity position but should ensure that they are not tying up too much capital in current assets. Overall, the cement industry has a wide range of current ratios, from as low as 0.66 to as high as 2.05. This indicates that there are significant differences in the liquidity positions of different companies in the industry. Cement companies should strive to maintain a healthy liquidity position to ensure their long-term viability.

Quick Ratio - The Ramco Cements Ltd., The India Cements Ltd., Prism Johnson Ltd., and JK Lakshmi Cement Ltd., have lower mean quick ratios compared to the other cement companies listed. This indicates that these companies may have a higher risk of not being able to meet their short-term financial obligations. This may suggest that the company may need to focus on improving its liquidity position, perhaps by managing its inventory levels or reducing its accounts receivable days. ACC Ltd., Shree Cements Ltd. and Ambuja Cements Ltd. have mean quick ratios that are above 1. This suggests that these companies have a healthy liquidity position and are likely to meet their short-term financial obligations without difficulty. Overall, the cement industry has a mean quick ratio of 0.80, which is lower than 1. This indicates that the industry as a whole may need to focus on improving its liquidity position to better manage its short-term financial obligations. Cement companies can achieve this by implementing measures such as improving their cash conversion cycles, reducing their debt levels, or improving their collection and inventory management practices.

Cash Ratio – The India Cements Ltd. has a very low cash ratio compared to the other companies listed. This could indicate that the company is struggling with liquidity and may need to find ways to improve its cash flow. Similarly, The Ramco Cements Ltd., Prism Johnson Ltd., and Heidelberg Cement India Ltd. also has a relatively low cash ratio compared to other companies. They should also consider ways to improve their liquidity. Ambuja Cements Ltd., ACC Ltd., and Shree Cements Ltd. have mean cash ratios that are higher than the overall average. This indicates that they may have stronger liquidity and could be better positioned to weather economic downturns or unexpected expenses. However, they should still monitor their cash flow to ensure they maintain adequate reserves. Overall, the average cash ratio for the cement companies in the sample is 0.41, which is relatively low. This suggests that the companies may want to focus on improving their financial positions by increasing their cash reserves and/or exploring other financing options.

7. CONCLUSION

Based on the research study we can draw the following conclusions:

The mean current ratio for Ultratech Cement Ltd., ACC Ltd. J.K. Cement Ltd. Ambuja Cements Ltd. Shree Cements Ltd. is higher than the overall mean, indicating that these companies are better able to meet their short-term obligations. The mean quick ratio for ACC Ltd. Shree Cements Ltd. Ambuja Cements Ltd. is higher than the overall mean, indicating that these companies have a higher ability to meet their short-term obligations with their quick assets. The mean cash ratio for ACC Ltd., Ambuja Cements Ltd. is higher than the overall mean, indicating that these companies have a better ability to meet their short-term obligations with their cash and cash equivalents. Overall, we can conclude that Ambuja Cements Ltd. had relatively high mean values for all three liquidity ratios analysed, indicating a strong liquidity position. On the other hand, The India Cements Ltd., The Ramco Cements Ltd. and Prism Johnson Ltd. had relatively low mean values for all three ratios, indicating weaker liquidity positions.

The standard deviation of all three liquidities ratios, which suggests that there is a considerable variation in all three liquidities ratios values among the companies. The standard error for all companies is relatively small, indicating that the mean values for all three liquidities ratios. for the population can be estimated with a high degree of accuracy based on the sample data. Overall, the 95% confidence interval for the mean values for all three liquidities ratios. which suggests that the true mean values for all three liquidities ratios for all cement companies in the industry is likely to fall within this range. It is also concluded that all the null hypotheses have not been accepted meaning thereby all alternative hypotheses are accepted. There are significant differences between the current ratio, quick ratio and cash ratio of selected cement companies of India.

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NOTES:

* = Ambuja Cements Ltd* and ACC Ltd* follows the calendar year, Shree Cements Ltd* 2012 to 2015 ending year in 30 June, Heidelberg Cement India Ltd* 2012 to 2014 follows the calendar year.

I+C+B = Current Investments + Cash and Bank balances