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AN ANALYTICAL STUDY OF AMBUJA CEMENTS LTD. AND ACC LTD. BASED ON VARIOUS PROFITABILITY MEASUREMENTS

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ABSTRACT
The Indian cement industry plays a vital role in the country's economic development, contributing significantly to the country's GDP and providing employment to millions of people. The current analytical study focuses on two major players in the industry, Ambuja cements ltd. and ACC ltd. The main objective of these study to measure the profitability based on sales and related to overall return on assets / investments of Ambuja cements ltd. and ACC ltd. The study analyses the financial statements of both companies for the period of December 2017-2021 using various profitability ratios (EBITDA margin ratio, EBIT margin ratio, net profit margin ratio, return on capital employed and return on assets) and also use statistical analysis. (Average, minimum, maximum, standard deviation, coefficient of variation and compound annual growth rate). In summary, Ambuja cements ltd. appears to be more profitable in terms of EBITDA margin ratio, EBIT margin ratio, and net profit margin ratio. However, ACC ltd. appears to be more effective in generating returns from its capital investments and using its assets to generate profits. the coefficient of variation is relatively high for the net profit margin ratio and EBIT margin ratio for ACC ltd. and it is relatively high for the ROCE for Ambuja cements ltd., indicating a greater degree of variation in these ratios compared to the other ratios. The EBIT margin ratio and net profit margin ratio for both companies show a steady increase in their growth rates, while the ROCE and ROA ratios show a slight increase in their growth rates. The study provides useful insights for investors and other stakeholders interested in analysing the profitability of these companies.

Keywords: *Indian Cement Industries, Ambuja Cements Ltd. and ACC Ltd., Profitability Analysis: Sales Ratio, Return on Assets / Investments Ratio and Statistical Analysis.*

JEL Classification: M410

1. INTRODUCTION

India is the world's second largest cement producer country. India's cement market accounts for 7% of the global installed capacity. Ambuja cements ltd and ACC ltd are both Indian cement manufacturing companies. Ambuja cements ltd has a production capacity of 29.65 million tonnes per year. The company has 5 integrated cement manufacturing plants and 8 cement grinding units across India. ACC ltd has a production capacity of 33.41 million tonnes per year and has 17 cement manufacturing plants and over 50 cement distribution centres across India.

1.1. Profitability Analysis

Profitability analysis to measure and evaluate a company's ability to generate revenue relative to, assets, operating costs, and shareholders' equity. higher ratio results are often more favourable because company is generating enough revenue, profit and cash flow.

1.1.1. Profitability Ratios Based on Sales

EBITDA Margin Ratio - it is a measure of a company's profitability that reflects the percentage of revenue that remains after deducting operating expenses. excluding non-cash expenses such as depreciation and amortization.

EBITDA Margin Ratio = EBITDA / Net Revenue from Operation *100
EBITDA = Earnings Before Interest, Taxes, Depreciation, and Amortization
EBIT Margin Ratio - it is a financial ratio that measures the profitability of a company by dividing its EBIT by its revenue. it is also measuring the profitability of a company's core business activities.
EBIT Margin Ratio = EBIT / Net Revenue from Operation *100
EBIT = Earnings Before Interest and Taxes
Net Profit Margin Ratio - it is an important financial metric that indicates the efficiency of a company in generating profit from its operations. in general, the higher net profit margin ratio indicates better profitability and financial performance of a company.
Net Profit Margin Ratio = Net Profit (PAT) / Net Revenue from Operation *100
PAT = Profit After Tax

1.1.2. Profitability Ratios Related to Overall Return on Assets / Investments

Return on Capital Employed (ROCE) - it is a financial metric that measures the profitability of a company by evaluating its ability to generate profits from the capital employed in its operations.
Return on Capital Employed = EBIT / Capital Employed *100
Return on Assets (ROA) - it is a financial ratio that measures how efficiently a company uses its assets to generate profits. it is calculated by dividing net profit by total assets.
Return on Assets = Net Profit / Total Assets *100

2. REVIEW OF LITERATURE

Nishanthini, A. & Nimalathasan, B. (2013)
Determinants of profitability: A case study of listed manufacturing companies in Sri Lanka. data were collected from secondary sources mainly from financial report of the selected companies, which were published by Colombo stock exchange in Sri Lanka. The results revealed that the profitability of manufacturing companies is less satisfactory. On the basis of result and analysis, selected manufacturing companies has different ranking based on each profitability indicators. Based on the Gross Profit Ratio, Operating Profit Ratio, Net Profit Ratio, Royal Cheramic PLC is at first whereas Chevron Lubricants PLC is at first based on ROI, ROCE. Outcome of the study is beneficial to academicians, policy makers, practitioners and so on.
Baskar, R. (2019)
Conducted the study to profitability performance analysis of JK Tyre & Industries limited in India. the period was covered for ten years from 2008-2009 to 2017-2018 to follow the respected company published annual reports. The researcher used tools for analysis profitability ratios, mean and compound annual growth rate (CAGR). Hence, the result of the profitability performance of JK tyre & Industries limited was show the net profit-earning capacity of the company was not satisfactory during the study period. At the time operating profit ratio of the company was more than net profit ratio. So, a company should not be properly managed its non-operating incomes and non-operating expenses. The profitability of the company was found to be good in terms of return on assets, return on capital employed and return on equity. The rate of profitability was more than a normal rate of return.
Tank, N. & Dhadhal, C. (2019)
Have study of profitability analysis of selected cement companies. The present paper analyses the profitability of five major cement companies namely J.K. Cement, J.K. Laxmi Cement, Deccan Cement, UltraTech Cement and Shree Cement. The data has been collected from the annual reports of the cement companies since 2009 to 2018. In order to achieve the objectives of the study, the researcher have employed the analysis of various ratios and ANOVA. All the null hypotheses have been rejected meaning thereby acceptance of alternative hypotheses. The analysis of the data shows that there is a significant difference in selected cement companies in India with respect to net profit ratio, return on equity ratio, return on capital employed ratio and return on asset ratio.
Mayilsamy, R. & Pradeep, S. (2021).
Conducted a study on financial performance of ultra tech cement ltd. Cement industry is one of the most advanced industries in the country. The analysis of the company was undertaken with the help of ratios, which are important tools of financial analysis. Source of data in secondary and Period of Study 2015-2016 to 2019-2020. In this study the technique like ratio analysis is used to find out profitability. After the study of financial performance of Ultra tech cement ltd from various financial aspects like profitability position of the company is more or less depends upon better utilization of resources, decreased expenses etc and its less than satisfactory level as the ratios are

decreasing every year. As in the case of liquidity ratios, cash position ratio was unable to even touch the ideal ratio, thus it has to increase short term liquidity to pay off its current dues. Hence the study reveals there was a gradual rise and fall in the growth of company during the study period.

Parmar, H. & Shukla, D. (2021)

Have study comparative financial analysis of cement manufacturing company and relationship between inventory management and profitability ratio. In such a scenario inventory management is one of the important tools to improve the company performance. ratio analysis of financial statements is performed to know the profitability performance of the Indian cement industry by using descriptive statistics. also, this paper analysed and discusses the impact of inventory management practices on profitability performance by correlation analysis. The required data has been collected from the annual reports of the respective cement companies for the period of 2011 to 2020. The result helps the investor in the investment decision. Correlation analysis was used to determine the nature and magnitude of the relationship between inventory turnover ratio and gross profit margin. The results indicate that there exists a positive correlation between the variables.

2.1. Research Gap

The researcher has reviewed 5 research paper before undertaking this study. It is observed that an analytical study of Ambuja cements ltd. and ACC ltd. based on various profitability measurements. is largely absent. Hence, the researcher has made an attempt to compare the profitability ratio of the specified two companies. It was also found that there is possibly lacuna of study covering the pre-COVID and post-COVID contextual research for this topic. Also, the other studies covered different set of companies, while we have taken the top 2 companies in terms of revenues. In addition, all the profitability metrics have been utilized which most other studies lack to cover. The combination of all these aspects makes high argument for reckoning to be a fine research gap.

3. RESEARCH METHODOLOGY

Research methodology decides the territory of proposed study and gives information to the readers about adopted process of analysis for the respective study.

3.1. Objectives of the Study

The study has the following objectives:

(1) To evaluate the profitability analyses of Ambuja cements ltd. and ACC ltd.
(2) To study various ways to measure the profitability based on sales of Ambuja cements ltd. and ACC ltd.
(3) To study various ways to measure the profitability related to overall return on assets / investments of Ambuja cements ltd. and ACC ltd.

3.2. Sample Design

The companies hereunder are selected on randomly of two cement companies.

(1) Ambuja Cements Ltd.
(2) ACC Ltd.

3.3. Data Collection

Secondary sources of data will be utilized for this proposed research study secondary data have been collected from company annual reports.

3.4. Period of Study

Five years of financial statements will be analysed for cement companies taken under study. financial ratios from December 2017 to 2021 will be studied.

3.5. Tools & Techniques

This study has been done by analysing and interpreting data in following ways.

(1) Profitability Ratios Analysis.
(2) Statistical Analysis. (Average, minimum, maximum, standard deviation, coefficient of variation and compound annual growth rate).

3.6. 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, annual reports selected 2 cement companies of India. as such finding depends entirely on the accuracy of such data.
(2) The present study will be largely based on profitability 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 2 cement companies. the financial data taken has been taken for a duration of 5 years. also, out of the wide range of financial ratios, this study has focused on selected 5 profitability ratios.

4. DATA ANALYSIS AND INTERPRETATION

4.1. Profitability Ratios Based on Sales

4.1.1. EBITDA Margin Ratio = EBITDA / Net Revenue from Operation *100
4.1.2. EBIT Margin Ratio = EBIT / Net Revenue from Operation *100
4.1.3. Net Profit Margin Ratio = Net Profit (PAT) / Net Revenue from Operation *100

Table No 1. Profitability Ratios Based on Sales

Year	EBITDA Margin Ratio (%)		EBIT Margin Ratio (%)		Net Profit Margin Ratio (%)	
	Ambuja Cements Ltd.	ACC Ltd.	Ambuja Cements Ltd.	ACC Ltd.	Ambuja Cements Ltd.	ACC Ltd.
2017	21.98	15.36	16.50	10.54	11.94	6.89
2018	19.95	14.74	15.13	10.69	13.09	10.17
2019	22.07	17.37	17.41	13.52	13.10	8.67
2020	26.54	18.54	21.96	13.93	15.74	10.26
2021	25.01	19.84	21.06	16.14	14.89	11.27
Average	23.11	17.17	18.41	12.96	13.75	9.45
Minimum	19.95	14.74	15.13	10.54	11.94	6.89
Maximum	26.54	19.84	21.96	16.14	15.74	11.27
Standard Deviation	2.63	2.13	2.96	2.37	1.53	1.71
Coefficient of Variation (%)	11.39	12.43	16.07	18.24	11.14	18.05
Compound Annual Growth Rate (%)	2.62	5.25	5.00	8.90	4.51	10.34

4.1.4. EBITDA Margin Ratio Interpretation

The table no 1. shows the EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) margin ratio for Ambuja cements ltd. and ACC ltd. from 2017 to 2021. The minimum and maximum EBITDA margin ratios for Ambuja cements ltd. are 19.95% and 26.54%, respectively, while for ACC ltd., they are 14.74% and 19.84%. From the table, we can see that the average EBITDA margin ratio for Ambuja cements ltd. over the five-year period is 23.11%, while for ACC ltd.., it is 17.17%. Ambuja cements ltd. has a higher EBITDA margin ratio than ACC ltd. over the five-year period.
The standard deviation for Ambuja cements ltd. is 2.63% and for ACC ltd. is 2.13%. The coefficient of variation for Ambuja cements ltd.is 11.39%, indicating moderate variability in its EBITDA margin ratio, while for ACC ltd., it is higher at 12.43%, indicating higher variability. The compound annual growth rate (CAGR) for Ambuja cements ltd. and ACC ltd. is 2.62% and 5.25%, respectively, over the five-year period. This indicates that the EBITDA margin ratio has been growing at a faster rate for ACC ltd. compared to Ambuja cements ltd.

4.1.5. EBIT Margin Ratio Interpretation

The table no 1. shows the EBIT (Earnings Before Interest and Taxes) margin ratio for Ambuja cements ltd. and ACC

ltd. for the years 2017 to 2021, along with the average, minimum, and maximum values, standard deviation, coefficient of variation, and compound annual growth rate for each company.
For Ambuja cements ltd., the EBIT margin ratio increased from 16.50% in 2017 to 21.06% in 2021, with an average of 18.41%. The minimum EBIT margin ratio was 15.13% in 2018, and the maximum was 21.96% in 2020. The standard deviation was 2.96%, and the coefficient of variation was 16.07%. The compound annual growth rate was 5.00%.
For ACC ltd., the EBIT margin ratio increased from 10.54% in 2017 to 16.14% in 2021, with an average of 12.96%. The minimum EBIT margin ratio was 10.54% in 2017, and the maximum was 16.14% in 2021. The standard deviation was 2.37%, and the coefficient of variation was 18.24%. The compound annual growth rate was 8.90%.
Overall, both companies experienced an increase in their EBIT margin ratio over the years, with Ambuja cements ltd. having a higher ratio and a lower coefficient of variation than ACC ltd.

4.1.6. Net Profit Margin Ratio Interpretation
Based on the table no 1, we can see that: Ambuja cements ltd. had a higher net profit margin ratio than ACC ltd. in all the years. both companies had an increasing trend in their net profit margin ratio from 2017 to 2020, but in 2021, there was a slight decline in their ratios.
The average net profit margin ratio for Ambuja cements ltd. was 13.75%, while for ACC ltd., it was 9.45%. The minimum net profit margin ratio for Ambuja cements ltd. was 11.94%, while for ACC ltd., it was 6.89%. The maximum net profit margin ratio for Ambuja cements ltd. was 15.74%, while for ACC ltd., it was 11.27%.
The standard deviation for Ambuja cements ltd. was 1.53%, while for ACC ltd., it was 1.71%. The coefficient of variation for Ambuja cements ltd. was 11.14%, while for ACC ltd., it was 18.05%. This indicates that the net profit margin ratio for ACC ltd. was more volatile compared to Ambuja cements ltd. The compound annual growth rate (%) for Ambuja cements ltd. was 4.51%, while for ACC ltd., it was 10.34%. This indicates that ACC ltd. had a higher growth rate in its net profit margin ratio over the period.

4.2. Profitability Ratios Related to Overall Return on Assets / Investments
4.2.1. Return on Capital Employed = EBIT / Capital Employed *100
4.2.2. Return on Assets = Net Profit / Total Assets *100

Table No 2. Profitability Ratios Related to Overall Return on Assets / Investments

Year	Return on Capital Employed (%)		Return on Assets (%)	
	Ambuja Cements Ltd.	ACC Ltd.	Ambuja Cements Ltd.	ACC Ltd.
2017	8.42	13.93	5.07	6.14
2018	8.00	13.97	5.90	9.40
2019	9.01	17.08	5.66	7.95
2020	11.92	14.40	7.02	7.80
2021	12.89	17.47	7.38	8.70
Average	10.05	15.37	6.21	8.00
Minimum	8.00	13.93	5.07	6.14
Maximum	12.89	17.47	7.38	9.40
Standard Deviation	2.21	1.75	0.96	1.22
Coefficient of Variation (%)	21.98	11.41	15.55	15.25
Compound Annual Growth Rate (%)	8.89	4.63	7.80	7.22

4.2.3. Return on Capital Employed Interpretation
Table no 2. shows the major financial ratios, specifically the return on capital employed (ROCE) for two companies, Ambuja cements ltd. and ACC ltd., for the years 2017 to 2021.
Based on the table, we can see that ACC ltd. has a higher average ROCE of 15.37% compared to Ambuja cements ltd.10.05%. However, Ambuja cements ltd. has a higher CV of 21.98% compared to ACC ltd.'s 11.41%, indicating that ACC ltd.'s ROCE values are less variable over time. Both companies have experienced growth in their ROCE values over the five-year period, with Ambuja cements ltd. having a higher CAGR of 8.89% compared to ACC ltd.'s 4.63%.
Overall, the table provides useful information for investors and analysts to compare the performance of the two companies in terms of profitability and efficiency in utilizing capital.

4.2.4. Return on Assets Interpretation

The table no 2. provides information on another major financial ratio, which is the return on assets (ROA) for Ambuja cements ltd. and ACC ltd. for the years 2017 to 2021.

The minimum and maximum ROA for Ambuja cements ltd. were 5.07% and 7.38%, respectively, while for ACC ltd., they were 6.14% and 9.40%. This suggests that ACC ltd. had a wider range of ROA, indicating more significant fluctuations in the profitability of the company over the years. The average ROA for Ambuja cements ltd. was 6.21%, while for ACC ltd. it was 8.00%. This indicates that ACC ltd. was more efficient in generating profits with its assets compared to Ambuja cements ltd.

The standard deviation for Ambuja cements ltd. was 0.96, which was lower than that of ACC ltd., which was 1.22. This implies that the ROA of Ambuja cements ltd. was less variable than that of ACC ltd. The coefficient of variation (CV) for Ambuja cements ltd. was 15.55%, while for ACC ltd., it was 15.25%. This indicates that the variability of ROA was similar for both companies. Finally, the compound annual growth rate (CAGR) for Ambuja cements ltd. was 7.80%, while for ACC ltd. it was 7.22%. This implies that Ambuja cements ltd. had a slightly higher growth rate of ROA than ACC ltd. over the period covered by the table.

In summary, the table suggests that while ACC ltd. had a higher average ROA and wider range of ROA than Ambuja cements ltd., the latter had a more stable ROA with lower variability. Both companies had similar CAGR, indicating a similar rate of growth in profitability over the period.

5. FINDINGS

Under this study calculate profitability ratios for Ambuja cements ltd. and ACC ltd. over a period of five years (2017-2021). Here are some major findings:

EBITDA margin ratio, EBIT margin ratio, and net profit margin ratio for both Ambuja cements ltd. and ACC ltd. show an increasing trend over the years, with a dip in 2018 and a peak in 2020. return on capital employed (ROCE) and return on assets (ROA) for both Ambuja cements ltd. and ACC ltd. show an increasing trend over the years.

The average EBITDA margin ratio is higher for Ambuja cements ltd. (23.11%) than for ACC ltd. (17.17%). This suggests that Ambuja cements ltd. is more efficient in generating income from its operations. The average EBIT margin ratio is higher for Ambuja cements ltd. (18.41%) than for ACC ltd. (12.96%). This indicates that Ambuja cements ltd. is more efficient in generating profits from its core business activities. The average net profit margin ratio is higher for Ambuja cements ltd. (13.75%) than for ACC ltd. (9.45%). This suggests that Ambuja cements ltd.is more efficient in generating profits after all expenses have been paid. Overall, Ambuja cements ltd. consistently had higher EBITDA, EBIT, and Net Profit Margin ratios compared to ACC ltd. over the five-year period.

The average ROCE is higher for ACC ltd. (15.37%) than for Ambuja cements ltd. (10.05%). This indicates that ACC ltd. is more effective in generating returns from its capital investments. The average ROA is higher for ACC ltd. (8.00%) than for Ambuja cements ltd. (6.21%). This suggests that ACC ltd. is more efficient in generating profits from its assets. Overall, the average return on capital employed and return on assets for ACC ltd. were also higher than those of Ambuja cements ltd.

The coefficient of variation indicates the degree of variation in the financial ratios. The higher the coefficient of variation, the higher the degree of variation. the coefficient of variation is relatively high for the net profit margin ratio and EBIT margin ratio for ACC ltd. and it is relatively high for the ROCE for Ambuja cements ltd., indicating a greater degree of variation in these ratios compared to the other ratios.

The compound annual growth rate provides an indication of the annual growth rate of the ratios over the five-year period. The EBIT margin ratio and net profit margin ratio for both companies show a steady increase in their growth rates, while the ROCE and ROA ratios show a slight increase in their growth rates.

6. SUGGESTIONS

Based on the research paper provided, here are some suggestions for analysing the profitability ratios of Ambuja cements ltd. and ACC ltd.:

Compare the profitability ratios of both companies over the years to identify any trends or patterns. This will help you understand how the companies have performed over time and whether there have been any significant changes in their profitability.

Look at the average and minimum/maximum values for each ratio to understand the range of values and how the companies compare to each other. For example, if one company consistently has a higher EBITDA margin ratio than the other, this may suggest that it is more efficient at generating profits from its sales. Consider other factors

that may impact profitability, such as industry trends, economic conditions, and company-specific factors such as management strategies, competition, and market share.
Analyses the standard deviation and coefficient of variation to determine the level of variability in the ratios. This can help identify any unusual or inconsistent results and whether the ratios are stable or volatile over time. Calculate the compound annual growth rate for each ratio to identify the rate of change over time. This can help determine whether the companies are growing at a consistent rate and how they compare to industry benchmarks.
Overall, analysing profitability ratios can provide valuable insights into the financial health and performance of companies, and help investors and analysts make informed decisions about investment opportunities.

7. CONCLUSION

The Indian cement industry is one of the largest cement industries in the world, with a capacity of over 500 million metric tons per annum. Ambuja cements ltd. and ACC ltd. are well-known brands in the Indian cement industry and are considered to be among the top cement producers in the country.
In summary, Ambuja cements ltd. appears to be more profitable in terms of EBITDA margin ratio, EBIT margin ratio, and net profit margin ratio. However, ACC ltd. appears to be more effective in generating returns from its capital investments and using its assets to generate profits. The financial ratios show that both companies have their strengths and weaknesses, and a comprehensive analysis would require a more detailed examination of their financial statements and other factors such as market conditions and competition. the coefficient of variation is relatively high for the net profit margin ratio and EBIT margin ratio for ACC ltd. and it is relatively high for the ROCE for Ambuja cements ltd., indicating a greater degree of variation in these ratios compared to the other ratios. The EBIT margin ratio and net profit margin ratio for both companies show a steady increase in their growth rates, while the ROCE and ROA ratios show a slight increase in their growth rates

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