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PROFITABILITY ANALYSIS OF CEMENT COMPANIES IN INDIA

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Abstract:

The objective of the companies is to maximise their wealth by using the funds employed by them. It is the ultimate measure of the effectiveness of the companies. The term profitability is comprised of two words, 'profit' and 'ability'. The term ability refers to the 'earning power' or 'operating performance' of the concern in its investment. From the accounting point of view, total expenses are deducted from total revenues to obtain profit. The profitability analysis will reveal the profits out of total transactions made during the year. The analysis of profitability ratios is important for the shareholders, creditors, prospective investors, bankers, and government. This research paper focuses on the analysis of profitability of the cement companies in India**.** The statistical tools such as mean, standard deviation, co-efficient of variation, correlation and regression analysis were used for this study. The study encompasses the profitability position of the 15 cement companies from 2005 to 2015. In this study, we have analysed the gross profit, net profit, operating profit, return on asset and return on equity with the help of ratio analysis.

Introduction:

According to Harward & Upton, "profitability is the ability of a given investment to earn a return from its use". Profitability is an important yardstick for measuring the efficiency of a company to earn profit. The profit figure simply reveals a satisfactory balance between the values received and values given. Profit refers to the total income earned by the enterprise during the specific period, while profitability refers to the operating efficiency of the enterprise. The enterprise can make a profit on sales and investment. The enterprise can get sufficient return from the capital invested and employees used in the business operation. As Weston and Brigham rightly notes "to the financial management profit is the test of efficiency and a measure of control, to the owners a measure of the worth of their investment, to the creditors the margin of safety, to the government a measure of taxable capacity and a basis of legislative action and to the country profit is an index of economic progress, national income generated and the rise in the standard of living", while profitability is an outcome of profit. In other words, no profit drives towards profitability. Profitability ratios are most important because they show the amount of profit earned by the company on the sales and also return earned from the assets or capital employed by the company. Profitability ratios show whether everything is going good or not with the company. Profitability ratio is used as a tool for all the companies to measure their efficiency in business. If profitability ratios are not right then the company is facing some problem as the profitability decides the future of the company as without profits no company can survive and grow.

Review of Literature:

Nishanthini and Nimalathasan (2013) made a study on "Determinants of Profitability: A case study of listed manufacturing companies in Sri Lanka". Data collected from financial reports of the selected manufacturing companies, which were published by Colombo Stock Exchange. In this study, selected manufacturing companies have different ranking based on each profitability indicators such as GPR, NPR, OPR, ROI and ROCE and the results are less satisfactory.

Shishir and Vikas (2014) in their paper "A Comparative Study of Profitability Analysis of Indian Aluminium Industry between public and private sector". The primary objective of this research paper is to analyse the profitability position of the selected Aluminium companies for five years (2008-2014). The study based on the secondary data. The tools used for the analysis are profitability ratios and regression analysis. From the study, the Aluminium industry in India revealed satisfactory performance in concern with profitability.

Shanthini (2014) examined the "Profitability analysis of listed manufacturing companies in Sri Lanka". In this study, they selected ten listed manufacturing companies from 2008 to 2012. GPR, NPR, ROA and ROE are used as financial performance indicators. Results showed that the companies are profitable in case of GPR and ROA but less profitable in NPR and ROE.

Mohan et al. (2015), in their article "Profitability Analysis of Selected Cement Companies in India". The research paper mainly focuses on the analysis of profitability of the selected cement companies in India from 2005 to 2014. The tools used for analysis are mean, standard deviation, co-efficient of variation and compound annual growth rate. The study found that the profitability position of Ambuja cement is satisfactory when compared to other companies.

Thyigarajan and Uday (2015) in their paper "Profitability analysis of selected aluminium companies in India". The primary objective of this research paper is to analyse the profitability position of the selected aluminium companies for 10 years (2005-2014). The study based on the secondary data. The tools used for analysis are Mean, Standard deviation, co-efficient of variation and compound annual growth rate. The study ascertains the National Aluminium Company Limited shows satisfactory performance in concern with profitability.

Many studies are conducted on profitability and liquidity, profitability and working capital management, but there are only a few studies made on profitability alone. To fulfill the research gap, this paper attempts to study the profitability position of cement industry for a 10 year period from 2005 to 2015.

Objective of the Study:

To assess the profitability position of the selected cement companies in India.

Data and Methodology:

The study consists of secondary data, which are taken from CAPITALINE PLUS database. In this study, cement companies in India are taken to analyse profitability. Fifteen cement companies are selected for the ten-year study period from 2005 to 2015.

The data includes gross profit, net profit, operating profit, total assets, shareholders equity and sales. These figures help to calculate the Gross profit ratio, Net profit ratio, Operating profit ratio, Return on Asset and Return on Equity.

Significance of the Study:

This study assists the company to measure the profitability position by analysing the ratios such as Gross profit, Net profit, Operating profit, Return on Asset and Return on Equity. Also, these ratios help the companies to maintain their asset value and the shareholders to know about the company's equity. Corporate managers can make use of the results of this study to reformulate their strategies to increase profits of the company.

More profits promote value addition which in turn facilitates a better return to the shareholders. Any decision to invest based on profitability ratios, could also be validated by using the results of the study. Bankers and financial institutions will expect their borrowers to have a sound financial discipline.

Framework of Analysis:

The statistical tools like Mean, Coefficient of Variation, Correlation, and Multiple Regression are used to analyse the data for identifying the determinants of profitability of the cement industry. Profitability ratios used are Gross Profit Ratio, Net Profit Ratio, Operating Profit Ratio, Return on Asset and Return on Equity.

A. Independent Variables:

Three independent variables are selected to test for their influence on the profitability of cement companies.

- ✓ **Gross Profit Ratio (GPR):** Gross profit ratio is calculated by dividing net sales from gross profit and multiplied by 100 where gross profit is calculated by deducting the cost of goods sold from sales, and net sales is calculated by return inwards from total sales. A high gross profit ratio indicates a good sign of management as it implies that the cost of production is kept at low level. It may also indicate higher sales price without a corresponding increase in the cost of goods sold. A low gross profit ratio may arise due to increase in cost of production without a corresponding increase in sales price or even decrease in the sales price without a corresponding decline in the cost of production. There is no standard norm for gross profit ratio, and it may vary from business to business as well as from year to year for the same business firm.
- ✓ **Net Profit Ratio (NPR):** Net profit ratio is calculated by dividing net sales by net profit and multiplied by 100. The net profit comes after subtracting all operating and non-operating expenses from gross profit and adding non-operating and operating income to gross profit. The ratio of net profit to sales expresses the cost price effectiveness of the company. This ratio is the overall measure of the firm's ability to turn sales into net profit. Net profit is the percentage remains of all interest and has been deducted from a company's total revenue. Net profit ratio is a key performance indicator of the profitability of companies.
- ✓ **Operating Profit Ratio (OPR):** Operating profit ratio is calculated by dividing net sales from operating profit and multiplied by100. The operating profit is calculated by adding non-operating expenses and deducting non-operating income from net profit. This ratio typically measures the operating performance and efficiency of the company. A higher net profit ratio but lower operating profit ratio is indicative of the poor operational performance of the company as profit has increased due to other income and not due to operating or business income. It shows the efficiency of a company by controlling the costs and expenses associated with business operations.

B. Dependent Variables:

Return on Asset (ROA) and Return on Equity (ROE) are the dependent variables used to represent profitability in the present study.

- ✓ **Return on Asset (ROA):** Return on Asset is calculated by dividing average total assets from net profit. The average total assets can be calculated by adding total assets at the beginning of the year and total assets at the end of the year and divided by 2. A higher ratio implies that company has been utilising its assets productively and efficiently whereas a lower ratio would mean that company has not been using its assets judiciously.
- ✓ **Return on Equity (ROE):** Return on Equity is calculated by dividing shareholders equity from net profit after preference dividends. The shareholder's equity is calculated by subtracting total liabilities from total assets. ROE measures a corporation's profitability by revealing how much profit a company generates from the invested money of shareholders. ROE measures the rate of return for an ownership interest. ROE shows how well a company uses investments to generate earnings. Hence in a way this ratio is more useful for investors than the company because it helps the investors in knowing whether their capital is used properly or not.

Profitability Indicators:

The various indicators that are used to define the profit are Gross profit, Net profit, Operating profit, Return on Asset, and Return on Equity. These indicators are analysed company wise that is being presented to individual companies in Table 1.

The mean value of Return on Asset for Mangalam Cement Ltd (18.23) is the maximum, followed by ACC Ltd (17.07) and the mean value of CCI Ltd (-42.06) is the minimum. The coefficient of variation for CCI Ltd (-478.38) is the least indicating that there is less variation in ROA over the study period. All the fifteen companies in the cement industry display a positive trend except Andhra Cements Ltd and CCI Ltd in the Return on Asset disclosing a mean value of 5.31.

The mean value of Return on Equity for Ramco Cements Ltd (1344.12) is the maximum, while the mean value of Andhra Cements Ltd (-10.31) is the minimum. The coefficient of variation for Andhra Cements Ltd (-325.06) is the least indicating that there is less variation in ROE over the period of study. All the fifteen companies in the Cement industry display a positive trend except Andhra Cements Ltd in the Return on Equity disclosing a mean value of 262.66.

Table 1: Profitability Ratios

Company	ROA		ROE		GPR		NPR		OPR	
	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV
ACC	17.07	40.65	530.82	44.43	22.98	32.70	13.17	34.98	24.35	29.76
Andhra	-5.35	-274.98	-10.31	-325.06	-2.95	-1117.70	-29.53	-146.21	9.42	350.47
Birla	14.50	72.33	304.03	62.21	20.40	50.85	12.27	61.18	22.32	44.43
CCI	-42.06	-478.38	9.37	652.57	4.08	1014.79	10.15	1521.93	60.54	205.81
Chettinad	7.92	85.52	258.00	67.89	25.10	31.49	7.37	67.57	30.37	21.81
HEI	2.20	751.45	6.66	634.93	8.37	132.43	1.98	572.88	11.61	68.76
India	3.47	148.38	65.57	144.42	13.81	75.34	5.40	184.31	20.71	39.80
JKC	6.33	78.10	189.85	68.17	15.79	47.02	7.06	66.06	34.89	131.97
JKL	6.81	92.28	197.39	73.28	18.67	38.82	8.96	90.87	22.95	30.97
KCP	10.30	85.30	205.73	81.61	18.83	51.01	10.54	64.66	23.06	34.45
Mangalam	18.23	77.17	209.54	64.11	23.04	63.83	11.46	59.17	24.63	60.86
Prism	11.37	144.05	19.75	162.89	15.46	95.01	7.99	126.46	18.68	70.63
Ramco	8.32	69.90	1344.12	68.83	22.61	32.10	10.67	50.66	27.23	23.09
Sri Vishnu	8.77	228.21	30.37	204.73	8.07	133.45	2.63	323.07	13.66	64.57
Ultratech	11.81	62.78	579.04	56.47	20.93	34.95	10.56	53.30	23.19	27.64
Overall Mean	5.31		262.66		15.68		6.04		24.51	

The mean value of Gross profit ratio for Chettinad Cement Corporation Ltd (25.10) is the highest followed by Mangalam Cement Ltd (23.04) while the mean value of Andhra Cements Ltd (-2.95) is the lowest. The coefficient of variation for Andhra Cements Ltd (-1117.70) is the least indicating that there is less variation in GPR over the study period 2006-2015. All the fifteen companies in the cement industry show a positive trend except in Andhra Cements Ltd and CCI Ltd in the GPR disclosing a mean value of 15.68.

The mean value of Net profit ratio is the highest for ACC Ltd (113.17) followed by Birla Cement Corporation Ltd (12.27) and then by Mangalam Cement Ltd (11.46) whereas it is the lowest for Andhra Cements Ltd (-29.53). The coefficient of variation for Andhra Cements Ltd (-146.21) is the least indicating that there is less variation in NPR over the study period. All the fifteen companies in the cement industry display a positive trend except Andhra Cements Ltd in the NPR disclosing a mean value of 6.04.

The mean value of Operating profit ratio for CCI Ltd (60.54) is the maximum, while the mean value of Andhra Cements Ltd (9.42) is the minimum. The coefficient of variation for Chettinad Cement Corporation Ltd (21.81) is the least indicating that there is less variation in OPR over the study period 2006-2015. All the fifteen companies in the cement industry display a positive trend in the OPR disclosing a mean value of 24.51.

Correlation Analysis:

The correlation analysis is used to find out the nature and strength of the relationship between Return on Asset and selected variables, also in Return on Equity and selected variables. Simple Correlation Analysis has been used to ascertain the relationship between the variables. The coefficient of Determination has been calculated to find out the variation in the Return on Asset and Return on Equity.

The variables Gross profit ratio, Net profit ratio, and Operating profit ratio have been analyzed for their association to know the strength and nature of their relationship with Return on Asset and Return on Equity. From the correlation analysis undertaken the following variables, namely, Gross profit ratio, and Net profit ratio are found to be associated with the Return on Asset. All three variables are found to be associated with the Return on Equity. Their nature of the relationship is disclosed in the Table 2 and 3.

Gross Profit Ratio and Return on Asset:

The Gross profit ratio of the companies is found to have a significant association with the Return on Asset. The correlation analysis shows that Gross profit ratio is positively correlated with Return on Asset indicating that an increase in this ratio would increase the profitability position of the companies. The coefficient of determination (r^2) reveals that the Gross profit ratio accounts for 0.116 per cent of the variation in the level of profitability.

Table 2: Return on Asset – Correlation Analysis

Variables	**r**	**r^2**
GPR	0.34**	0.116
NPR	0.15*	0.023
OPR	0.09	0.008

** Significant at one per cent level * Significant at five per cent level

Net Profit Ratio and Return on Asset:

The Net profit ratio is significantly associated with Return on Asset. It is revealed from the correlation analysis that Net profit ratio is positively correlated with Return on Asset implying that an increase in this ratio would also increase the level of the profitability. The coefficient of determination (r^2) reveals that the Net profit ratio accounts for 0.023 per cent of the variation in the level of profitability.

Table 3: Return on Equity – Correlation Analysis

Variables	**r**	**r^2**
GPR	0.19**	0.039
NPR	0.82**	0.676
OPR	0.85**	0.728

**Significant at one per cent level

Gross Profit Ratio and Return on Equity:

The Gross profit ratio of the companies is found to have a significant association with the Return on Equity. From the correlation analysis gross profit ratio is positively correlated with Return on Equity indicating that an increase in this ratio would increase the profitability position of the companies. The coefficient of determination (r^2) reveals that the Gross profit ratio accounts for 0.039 per cent of the variation in the level of profitability.

Net Profit Ratio and Return on Equity:

The Net profit ratio has a significant association with Return on Equity. From the correlation analysis, Net profit ratio is positively correlated with Return on Equity implying that an increase in this ratio would also increase the level of the profitability the cement companies. The coefficient of determination (r^2) reveals that the Net profit ratio accounts for 0.676 per cent of the variation in the level of profitability.

Operating Profit Ratio and Return on Equity:

The Operating profit ratio is significantly associated with Return on Equity. It is revealed from the correlation analysis Operating profit ratio is positively correlated with Return on Equity implying that an increase in this ratio would also increase the level of the profitability of the firms. The coefficient of determination (r^2) shows that the Operating profit ratio accounts for 0.728 per cent of the variation in the level of profitability.

Multiple Regression Analysis:

The results of the multiple regression analysis found that the Gross profit ratio of the three explanatory variables is found to be significantly associated with the level of Return on Asset. All the three explanatory variables (i) Gross profit ratio, (ii) Net profit ratio, and (iii) Operating profit ratio are found to be significantly associated with the level of Return on Equity. The results of the regression analysis are presented in Table 4 and 5.

Regression Equation 1:

$$ROA_t = a + b_1\, GPR_t + b_2\, NPR_t + b_3\, OPR_t + e$$

Where,

ROA = Return on Asset

a = Intercept term
b1, b2, b3 = Regression coefficients
t = time period
GPR = Gross Profit Ratio
NPR = Net Profit Ratio
OPR = Operating Profit Ratio
e = Error term

Regression Equation 2:

$$ROE_t = a + b_1\, GPR_t + b_2\, NPR_t + b_3\, OPR_t + e$$

Where,

ROE = Return on Equity
a = Intercept term
b1, b2, b3 = Regression coefficients
t = time period
GPR = Gross Profit Ratio
NPR = Net Profit Ratio
OPR = Operating Profit Ratio
e = Error term

The significance of the regression coefficient is tested through ‘t’ statistic. R^2 value calculated to ascertain the goodness of fit of the regression equation. If the regression coefficient is significant at five per cent level, then the association is said to be highly significant.

Table 4: Determinants of Return on Asset – Multiple Regression

Variables	Regression Coefficient	t
GPR	8.92*	4.38
NPR	-0.68	-0.53
OPR	-0.20	-0.16

*Significant at five per cent level

R Square : 0.120

Gross Profit Ratio and Return on Asset:

The regression coefficient between Gross profit ratio and Return on Asset is 8.92, which reveals that Gross profit ratio is positively related to Return on Asset. An increase of one rupee in Gross profit ratio will have the effect of increasing Return on Asset by Rs. 8.92.

It is evident from the value of R^2 that, the independent variables account for 12.00 per cent of variation in the profitability of cement companies. The value of R^2 is found to be highly significant indicating that the regression equation framed is the best fit.

Table 5: Determinants of Return on Equity – Multiple Regression

Variables	Regression Coefficient	t
GPR	-16.32*	-15.18
NPR	12.22*	18.12
OPR	9.99*	14.84

* Significant at five per cent level

R Square: 0.92

Gross Profit Ratio and Return on Equity:

The regression coefficient between Gross profit ratio and Return on Equity is -16.32. Gross profit ratio is negatively related to Return on Equity. An increase of one rupee in Gross profit ratio will have the effect of reducing Return on Equity by Rs.16.32.

Net Profit Ratio and Return on Equity:

The regression coefficient between Net profit ratio and Return on Equity is 12.22. Net profit ratio is positively related to Return on Equity. An increase of one rupee in Net profit ratio will have the effect of increasing Return on Equity by Rs. 12.22.

Operating Profit Ratio and Return on Equity:

The regression coefficient between Operating profit ratio and Return on Equity is 9.99, which reveals that Operating profit ratio is positively related to Return on Equity. An increase of one rupee in Operating profit ratio will have the effect of increasing Return on Equity by Rs. 9.99.

It is evident from the value of R^2 that, the independent variables account for 92.00 per cent of variation in the profitability of cement companies. The value of R^2 is found to be highly significant indicating that the regression equation framed is the best fit.

Findings:

The mean and coefficient of variation of the profitability ratios is calculated and analysed for the selected cement companies for the 10-year study period from 2005 to 2015. The mean value of Return on Asset for Mangalam Cement Ltd is the highest whereas CCI Ltd is found to be least consistent. CCI Ltd has the lowest coefficient of variation. The mean value of Return on Equity for Ramco Cements Ltd is found to be the highest and Andhra Cements Ltd is found to be lowest in mean and coefficient of variation. The mean value of Gross profit ratio for Chettinad Cement Corporation Ltd is found to be the highest, and Andhra Cements Ltd has the lowest mean and coefficient of variation. The mean value of Net profit ratio for ACC Ltd is found to be the highest whereas Andhra Cements Ltd is found to be lowest in mean and coefficient of variation. The mean value of Operating profit ratio for CCI Ltd is found to be the highest, and Andhra Cements Ltd has the lowest mean. Chettinad Cement Corporation Ltd has the lowest coefficient of variation.

From the correlation analysis undertaken the following two variables, namely GPR and NPR are found to have a significant association with Return on Asset which are positively correlated. From the correlation analysis undertaken the following three variables, namely GPR, NPR and OPR are found to have a significant association with Return on Equity which are correlated positively.

Multiple regression analysis has been carried out to identify the relationship of the selected variables GPR, NPR, OPR, ROA and ROE with the level of profitability. The results of the analysis indicate that only GPR of the three variables is found to be significantly associated with the level of Return on Asset. The overall contribution of the three explanatory variables identified by calculating R^2 value amounts to 12 per cent that signifies the extent of the contribution of the three variables to the level of profitability that is the Return on Asset.

The multiple regression analysis found that all the three variables are found to be significantly associated with the level of return on equity. The overall contribution of the three explanatory variables identified by calculating R^2 value amounts to 92 per cent that signifies the extent of the contribution of the three variables to the level of profitability that is the return on equity.

Conclusion:

The study has been made about profitability analysis of Cement industry in India**.** Correlation analysis reveals a positive relationship between GPR and NPR with ROA. Also GPR, NPR and OPR are positively correlated with ROE**.** From the regression analysis, it is evident that an increase of one rupee in GPR decreases ROA by Rs. 8.92. Also an increase of one rupee in GPR decreases ROE by Rs. 16.32 whereas NPR and OPR increases ROE by Rs. 12.22 and Rs. 9.99 respectively. All the companies are performing satisfactorily, and they can sustain or enhance their profitability by improving their operational performance. Andhra Cements Ltd and CCI Ltd should improve their operational efficiency to increase their profitability.

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