



LINKING CORPORATE SOCIAL RESPONSIBILITY AND PROFITABILITY OF SELECTED CEMENT COMPANIES IN INDIA: AN EMPIRICAL VALIDATION

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ABSTRACT

Aim: This study aims at discussing corporate social responsibility and profitability of selected cement companies in India.

Methodology/Approach: Secondary data were used to do this study. Initially, 5 cement companies listed on BSE were selected. The study covered a period of five years, from 2017-2018 to 2021-2022. Data is collected from annual reports of the selected cement companies and national CSR portal. Research models and techniques used are; simple linear regression model and correlation analysis.

Summary: The results indicate a moderately positive correlation between CSR (Corporate Social Responsibility) spent amount and total revenue, with CSR spent amount significantly affecting the revenue. The analysis also reveals a strong positive correlation between CSR spent amount and net profit, with increasing CSR spent amount leading to an increase in net profit. However, no significant relationship exists between CSR spent amount and ROCE or ROA, indicating other factors may have a stronger influence on these metrics. The study further shows a weak positive correlation between CSR spent amount and EPS, but other factors are the primary drivers of variation in EPS. These findings suggest that while CSR spent amount may impact certain profitability for selected cement companies in India, it is necessary to consider multiple variables when analysing profitability.

KEYWORDS: CSR Spent Amount, Profitability, Simple Linear Regression Model and Correlation Analysis.
JEL Classification: M14, M41.

1. INTRODUCTION

There was a proliferation of researches conducted all over the world in order to establish an empirical association between CSR activities and financial performance of companies. Section 135 of the Companies Act (2013) prescribes mandatory provisions Indian companies as follows: 2 % of their average net profits made during the three immediately preceding financial years are spent in pursuance of their corporate social responsibility policy.

Corporate Social Responsibility (CSR) is a company's voluntary actions to address social, environmental, and economic issues that are beyond their legal obligations. Financial performance, on the other hand, refers to a company's ability to generate profits and increase shareholder value. Some studies have shown that companies that invest in CSR initiatives tend to outperform their peers in terms of financial returns. This can be due to a number of factors, including enhanced brand reputation, increased customer loyalty, reduced operating costs, and improved access to capital. It is important to note that the relationship between CSR and financial performance is not always straightforward, and there may be instances where CSR investments do not result in immediate financial benefits.



2. REVIEW OF LITERATURE

Rajput, N. et al. (2012)

The aim of this study is to better understand the relationship between CSR and financial performance in Indian context. Previous research on the relationship between corporate social responsibility and financial performance has largely based on international data. CSR indexes (www.karamyog.org) and financial performance (annual reports) measures were taken to allow the estimation of regression analysis conducted to examine the relationship between CSR and financial performance. Their preliminary results revealed statistically significant relationship between corporate social responsibility (CSR) and financial performance (CFP) as measured by sales revenue and profits of five hundred Indian companies i.e. it concluded that, there is a marked financial benefit for companies that are innovative to invest in CSR.

Cho, S. J. et al. (2019)

This study analyzed whether a systematic relationship exists between corporate social responsibility (CSR) performance and corporate financial performance using 191 sample firms listed on the Korea Exchange. The Korea Economic Justice Institute (KEJI) index of 2015 was used to measure CSR performance; profitability and firm value were used to measure corporate financial performance. Return on assets was used as a proxy for profitability, and Tobin's Q was used as a proxy for firm value. The correlation between these variables and CSR performance was examined through correlation and regression analysis. The results confirm that CSR performance has a partial positive correlation with profitability and firm value. In the relationship between CSR performance and profitability, only social contribution yields a statistically positive correlation. Analysis of the correlation between CSR performance and financial performance indicators revealed a positive relationship between the growth rate of total assets and corporate soundness and social contribution. Both soundness and social contribution showed a positive correlation with Tobin's Q, the measure of corporate value.

Sung Kim, W. & Oh, S. (2019)

This study explores the relationship between corporate social responsibility (C.S.R.) and financial performance of Indian firms. They also examine the relationship between C.S.R. and financial performance in context of Indian business group firms, which are known to have unique characteristics which differ from those of Indian stand-alone firms. Using a sample of Indian listed firms between 2010 and 2015, we find that C.S.R., as measured by E.S.G. disclosure score, has a U-shaped relationship with Tobin's Q, supporting the slack resource theory at lower level of CSR and supporting the stakeholder theory at higher level of C.S.R. The empirical results imply that an improvement in CSR actions does not always result in higher firm value but should exceed a certain level of C.S.R. to have a positive effect on firm value. In addition, they find that at lower level, a negative relationship between C.S.R. and Tobin's Q weakens in group affiliate firms. However, this complement effect of business group disappears at higher level, weakening the positive relationship between C.S.R. and Tobin's Q. This study offers new insights for the different influence of business groups on C.S.R. performance.

Sekhon, A. & Kathuria, L. (2020)

His study aims to analyze the impact of CSR on financial performance in the Indian context. Using a panel of top 137 companies from CNX-500 for 10 years (2008-2017), the impact of CSR on three indicators of financial performance, namely, return on assets (ROA), return on equity (ROE) and net profit margin (NPM), is evaluated using the panel data regression analysis. The technique of content analysis is used to collect data on CSR from the annual reports of selected companies. The study finds that the impact of CSR on financial performance may be neutral (with ROA and NPM) or negative (with ROE). The negative influence of CSR on ROE of firms supports the theory by Friedman (1970) that the only responsibility of business is to maximize profits and returns for its shareholders.

Bag, S. & Omrane, A. (2022)

The current study aims at testing the statistical relationship between CSR and corporate financial performance (CFP) of the top 100 companies listed by the National Stock Exchange (NSE) of India. After collecting the required financial data from the respective annual reports of these companies, a factor analysis, as well as a multivariate regression analysis, were carried out and reveal conclusive findings regarding the CSR-CFP relationship. Indeed, even if CSR activities have a significant impact on financial performance, there is a moderate positive association between the concerned variables in that context. Based on the results attained, it would be recommended that Indian corporate firms secure better financial performance by committing themselves in CSR activities.



3. RESEARCH METHODOLOGY

3.1. Data

Secondary data were used to analyse the CSR and profitability. Initially, top 5 cement companies namely; UltraTech Cement Ltd., Shree Cements Ltd., The Ramco Cements Ltd., Ambuja Cements Ltd. and ACC Ltd., which were listed on BSE and were selected randomly, the study covered a period of five years, from 2017-2018 to 2021-2022. Data were collected from annual reports of the selected cement companies and national CSR portal.

3.2. Objectives of the Study

The study has the following objectives:

- ♣ To identify interlinkages between CSR spent amount and total revenue of selected cement companies in India.
- ♣ To study the effects of CSR spent amount and net profit of selected cement companies in India.
- ♣ To link CSR spent amount and return on capital employed of selected cement companies in India.
- ♣ To find out cause and effect relationship between CSR spent amount and return on assets of selected cement companies in India.
- ♣ To understand cause and relationship between CSR spent amount and EPS (Earnings Per Share) of selected cement companies in India.

3.3. Research Models and Techniques

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

Simple Linear Regression Model

It is a statistical technique used to analyse the relationship between two continuous variables, where one variable (the independent variable) is used to predict the value of the other variable (the dependent variable). It assumes that there is a linear relationship between the two variables.

The model for simple linear regression can be expressed as:

$$Y = \alpha + \beta X + \epsilon$$

where:

Y is the dependent variable, X is the independent variable, α is the intercept or constant term, β is the slope coefficient, which represents the change in Y per unit change in X and ϵ is the error term.

Independent variables: CSR spent amount (₹ crore).

Dependent variables: Total revenue (₹ crore), net profit (₹ crore), return on capital employed (%), return on assets (%) and EPS.

Correlation Analysis

It is a statistical technique used to measure the strength and direction of the relationship between two or more variables. The most common correlation coefficient is the Pearson correlation coefficient, which measures the degree of linear relationship between two continuous variables. It ranges from -1 to +1, where a value of -1 indicates a perfect negative correlation, 0 indicates no correlation, and +1 indicates a perfect positive correlation. A positive correlation indicates that as one variable increases, the other variable also tends to increase, while a negative correlation indicates that as one variable increases, the other variable tends to decrease.

4. DATA ANALYSIS AND INTERPRETATION

4.1. Descriptive Statistics of Variable

Table No.4.1. Descriptive Statistics			
Variable Name	N	Mean	Std. Deviation
Total Revenue (₹ Crore)	25	16882.72	12734.55
Net Profit (₹ Crore)	25	1984.53	1623.77
Return on Capital Employed (%)	25	13.03	2.94
Return on Assets (%)	25	7.22	7.22
EPS	25	150.34	192.37
CSR Spent Amount (₹ Crore)	25	47.73	32.21

Overall, the descriptive statistics show that the companies in the sample vary widely in terms of their revenue, profits, and financial performance. The standard deviations for each variable suggest that there is a significant amount of variability within the sample for each variable. Additionally, the relatively high standard deviation for



the CSR spent amount variable indicates that some companies in the sample may be more committed to CSR than others.

4.2. Linking CSR Spent Amount and Total Revenue

Null Hypothesis (H_0): There is no significant effect of CSR amount spent on the total revenue of the selected cement companies of India.

Alternative Hypothesis (H_1): There is significant effect of CSR amount spent on the total revenue of the selected cement companies of India.

Table No.4.2. Simple Linear Regression Model -1 (CSR Spent Amount and Total Revenue)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
1	0.89 ^a	0.79	0.78	5997.93	85.19	1	23	0.00

a. Predictors: (Constant), CSR Spent Amount (₹ Crore)

The simple linear regression model -1 shows that there is a moderate positive correlation ($R = 0.89$) between the CSR spent amount and the total revenue. The coefficient of determination (R^2) of 0.79 indicates that approximately 79% of the variation in total revenue can be explained by the CSR spent amount. The adjusted R^2 value of 0.78 suggests that the model is a good fit for the data, and the addition of the CSR spent amount predictor variable has slightly improved the model's fit compared to a model without this variable. The standard error of the estimate of 5997.93 means that the predicted total revenue values are expected to deviate from the actual total revenue values by approximately 5997.93.

The F-statistic of 85.19 with a corresponding p-value of 0.00 indicates that the regression model is significant at the 0.05 level, which means that we can reject the null hypothesis and conclude that there is a significant effect of CSR spent amount on the total revenue. Overall, the results suggest that as the CSR spent amount increases, the total revenue of the selected cement companies of India also increases.

4.3. Linking CSR Spent Amount and Net Profit

Null Hypothesis (H_0): There is no significant effect of CSR amount spent on the net profits of the selected cement companies of India.

Alternative Hypothesis (H_1): There is significant effect of CSR amount spent on the net profits of the selected cement companies of India.

Table No.4.3. Simple Linear Regression Model -2 (CSR Spent Amount and Net Profit)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
2	0.93 ^a	0.86	0.85	618.26	142.55	1	23	0.00

a. Predictors: (Constant), CSR Spent Amount (₹ Crore)

The table presents the simple linear regression model -2 for the relationship between the CSR spent amount and net profit of selected cement companies in India. The R value of 0.93 indicates a strong positive correlation between the two variables. The R-squared value of 0.86 indicates that 86% of the variation in net profit can be explained by the variation in CSR spent amount. The adjusted R-squared value of 0.85 suggests that the model has a good fit. The standard error of the estimate is 618.26, which indicates the average distance that the observed values fall from the regression line.

The F change value of 142.55 and a significant F change of 0.00 indicates that the regression model is statistically significant, which means that the CSR spent amount has a significant effect on net profit.

4.4. Linking CSR Spent Amount and Return on Capital Employed

Null Hypothesis (H_0): There is no significant effect of CSR amount spent on the return on capital employed of the selected cement companies of India.

Alternative Hypothesis (H_1): There is significant effect of CSR amount spent on the return on capital employed of the selected cement companies of India.



Table No.4.4. Simple Linear Regression Model -3 (CSR Spent Amount and Return on Capital Employed)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
3	0.04 ^a	0.002	-0.04	2.99	0.04	1	23	0.85

a. Predictors: (Constant), CSR Spent Amount (₹ Crore)

The simple linear regression model -3 shows that there is a weak positive correlation ($R = 0.04$) between the CSR spent amount and the return on capital employed (ROCE). The coefficient of determination (R^2) of 0.002 indicates that only 0.2% of the variation in ROCE can be explained by the CSR spent amount. The adjusted R^2 value of -0.04 suggests that the model is not a good fit for the data, and the addition of the CSR spent amount predictor variable has not improved the model's fit compared to a model without this variable. The standard error of the estimate of 2.99 means that the predicted ROCE values are expected to deviate from the actual ROCE values by approximately 2.99.

The F-statistic of 0.04 with a corresponding p-value of 0.85 indicates that the regression model is not significant at the 0.05 level, which means that we cannot reject the null hypothesis and conclude that there is no significant effect of CSR spent amount on the ROCE. Overall, the results suggest that there is no association between the CSR spent amount and the ROCE, and other factors may be influencing the ROCE more strongly.

4.5. Linking CSR Spent Amount and Return on Assets

Null Hypothesis (H_0): There is no significant effect of CSR amount spent on the return on assets of the selected cement companies of India.

Alternative Hypothesis (H_1): There is significant effect of CSR amount spent on the return on assets of the selected cement companies of India.

Table No.4.5. Simple Linear Regression Model -4 (CSR Spent Amount and Return on Assets)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
4	0.06 ^a	0.003	-0.04	1.75	0.07	1	23	0.79

a. Predictors: (Constant), CSR Spent Amount (₹ Crore)

The simple linear regression model -4 shows that there is a weak positive correlation ($R = 0.06$) between the CSR spent amount and the return on assets (ROA). The coefficient of determination (R^2) of 0.003 indicates that only 0.3% of the variation in ROA can be explained by the CSR spent amount. The adjusted R^2 value of -0.04 suggests that the model is not a good fit for the data, and the addition of the CSR spent amount predictor variable has not improved the model's fit compared to a model without this variable. The standard error of the estimate of 1.75 means that the predicted ROA values are expected to deviate from the actual ROA values by approximately 1.75.

The F-statistic of 0.07 with a corresponding p-value of 0.79 indicates that the regression model is not significant at the 0.05 level, which means that we cannot reject the null hypothesis and conclude that there is no significant effect of CSR spent amount on the ROA. Overall, the results suggest that there is no association between the CSR spent amount and the ROA, and other factors may be influencing the ROA more strongly.

4.6. Linking CSR Spent Amount and EPS

Null Hypothesis (H_0): There is no significant effect of CSR amount spent on the EPS of the selected cement companies of India.

Alternative Hypothesis (H_1): There is significant effect of CSR amount spent on the EPS of the selected cement companies of India.



Table No.4.6. Simple Linear Regression Model -5 (CSR Spent Amount and EPS)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics			
					F Change	df1	df2	Sig. F Change
5	0.12 ^a	0.014	-0.03	195.15	0.32	1	23	0.58

a. Predictors: (Constant), CSR Spent Amount (₹ Crore)

The simple linear regression model summary in table no.4.6. indicates that there is a weak positive correlation (R = 0.12) between the CSR spent amount and the earnings per share (EPS) of the selected cement companies of India. The coefficient of determination (R²) of 0.014 suggests that only a very small portion (approximately 1.4%) of the variation in EPS can be explained by the CSR spent amount. The adjusted R² value of -0.03 indicates that the model is not a good fit for the data, and the addition of the CSR spent amount predictor variable has not improved the model's fit compared to a model without this variable. The standard error of the estimate of 195.15 means that the predicted EPS values are expected to deviate from the actual EPS values by approximately 195.15.

The F-statistic of 0.32 with a corresponding p-value of 0.58 suggests that the regression model is not significant at the 0.05 level, which means that we fail to reject the null hypothesis and conclude that there is no significant effect of CSR spent amount on the EPS of the selected cement companies of India. Overall, the results suggest that there is no clear relationship between the CSR spent amount and the EPS, and other factors may be driving the variation in EPS.

5. SUMMARY

To summarize, the simple linear regression models indicate varying levels of association between the CSR spent amount and different profitability metrics for selected cement companies in India. The analysis shows a moderate positive correlation between CSR spent amount and total revenue, with CSR spent amount significantly affecting the revenue. Additionally, there is a strong positive correlation between CSR spent amount and net profit, with the model being statistically significant, indicating that increasing CSR spent amount can lead to an increase in net profit. However, no significant relationship exists between CSR spent amount and ROCE or ROA, indicating that other factors may have a stronger influence on these metrics. The analysis also indicates a weak positive correlation between CSR spent amount and EPS, but the regression model is not significant, suggesting that other factors are the primary drivers of variation in EPS. Overall, the findings suggest that while CSR spent amount may impact certain financial metrics for selected cement companies in India, other factors may have a more significant influence, and it is necessary to consider multiple variables when analysing financial performance.

6. LIMITATIONS OF THE STUDY

Though the present study adds to current literature on CSR, it has some limitations which need discussion.

- ❁ Only 5 cement companies listed on BSE, were included in the sample. Therefore, due to the non-inclusion of other cement companies, the results of the final study cannot be generalized.
- ❁ This study comprised of only one independent variable and five dependent variables, hence it can be said to be limited by selection of number of variables.
- ❁ Proper care has been 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. Hence, the future research is recommended to overcome these short comings to present a better picture.

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NOTES

1. *Bombay Stock Exchange = BSE*
2. *Earnings Per Share = EPS*
3. *Ambuja Cements Ltd. and ACC Ltd. follows the calendar year, UltraTech Cement Ltd., Shree Cements Ltd., and The Ramco Cements Ltd., follows the financial year April 1 to March 31).*