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FINANCIAL PERFORMANCE ASSESSMENT OF SELECTED INDIAN CEMENT COMPANIES USING THE DUPONT MODEL

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ABSTRACT

The Indian cement industry plays a significant role in supporting economic growth, infrastructure development, and industrial expansion. This study evaluates the profitability of five selected Indian cement companies using the DuPont analysis framework. The research examines the impact of Asset Turnover Ratio (ATR), Net Profit Margin (NPM), and Equity Multiplier (EM) on Return on Equity (ROE) through regression and correlation analysis. The findings reveal that the regression model explains 60.2% of the variation in ROE, indicating a satisfactory model fit. Asset Turnover Ratio and Net Profit Margin were found to have a statistically significant positive influence on ROE, while the Equity Multiplier showed no significant impact. Correlation analysis further confirmed a strong positive relationship between ROE and Net Profit Margin, whereas Financial Leverage exhibited a negative association with profitability. The study concludes that operational efficiency and effective asset utilization are the primary drivers of profitability in the Indian cement industry. The findings provide valuable insights for investors, managers, and policymakers in improving financial performance and ensuring sustainable growth.

KEYWORDS: DuPont Analysis; Profitability; Return on Equity (ROE); Net Profit Margin; Indian Cement Industry.

INTRODUCTION

Cement industry in India serves as a cornerstone of economic, social and infrastructural development. It is widely recognized as one of the fundamental sectors supporting economic growth and infrastructure. The growth of various industries, that is real estate, transportation, power generation, and manufacturing have significantly depend upon this industry. Its plays a vital role in economic and social development, which includes Rapid urban expansion, government investments in infrastructure, affordable housing initiatives, and smart city projects in India, (Laxmiputra, 2026). The industry also plays a very important role in generating employment opportunities. It creates direct employment for engineers, technicians, managers, and labourers, while in other hand it creates indirect employment

through mining, logistics, distribution, and construction-related activities. Further, the establishment of cement plants in rural and semi-urban regions contributes to local economic development by enhancing income levels and supporting ancillary industries (Rani, 2018).

As infrastructure expansion is closely linked with economic progress, the performance of the cement industry is often regarded as a measure of a nation's development in India (Pandey, 2017). The cement industry has emerged as a key contributor to national development by providing essential materials required for large-scale infrastructure projects and urbanization. Indian cement companies have increasingly adopted advanced manufacturing technologies to improve productivity, reduce energy consumption, and enhance product quality. Many firms are investing in sustainable production practices such as waste heat recovery systems, alternative fuels, blended cement production, and carbon emission reduction technologies. These initiatives not only improve operational efficiency but also promote environmental sustainability (Ray et al., 2023).

The cement industry additionally contributes to foreign exchange earnings through exports and enhances the country's industrial competitiveness. India has become one of the world's leading cement producers due to the availability of abundant limestone reserves, skilled manpower, and growing domestic demand. The industry's ability to meet domestic requirements while maintaining export potential demonstrates its strategic importance to the national economy (Laxmiputra, 2026).

In the above scenario of economic and social importance of cement companies, analyzing profitability helps assess the financial performance of cement companies through measures such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin, and Earnings per Share (EPS). For the purpose the study selected the following five companies to assess the profitability analysis by using DuPont analysis approach.

Sl. No	Selected Cement Companies for the study	Market capitalization of companies (In Cr)	ROE of the current year (In %)
01	ACC Limited	25139	10.39
02	Ambuja Cements Limited	105257	7.96
03	JK Lakshmi Cements Limited	7384	10.6
04	JSW Cement Limited	18180	-11.54
05	Ultratech Cement Limited	338683	10.56

(Source: nseindia.com)

The DuPont analysis approach used in the paper help investors, creditors, and management in

evaluating operational efficiency and making informed financial decisions. Profitability analysis also enables companies to identify strengths and weaknesses, improve cost management, and enhance competitiveness. Hence, studying the profitability of cement companies provides valuable insights into both corporate performance and the overall health of the industry as whole, making it an important area of financial and economic research.

RELATED WORKS

The cement industry plays a vital role in economic growth and infrastructure development, particularly in emerging economies around the world, Hardana et al. (2023). Due to its significance, researchers have extensively examined the factors influencing profitability, financial performance, and sustainability within the industry. Existing studies suggest that both firm-specific and macroeconomic factors significantly affect the financial performance of cement companies. Rezina et al. (2020)

Firm size and economic growth positively contribute to profitability, whereas leverage and inflation have a negative impact on financial performance. Similarly, Khan and Khokhar

(2015) emphasized the importance of financial ratio analysis in assessing cement companies' performance. Their findings showed that the debt-equity ratio, inventory turnover ratio, and creditors' velocity significantly influence net profit margins, indicating that efficient financial management can enhance profitability and operational effectiveness.

In the Indian context, Bhattacharyya (2025) examined the financial performance of leading cement companies and highlighted the strong relationship between profitability and key financial indicators such as liquidity, solvency, return on assets (ROA), and return on equity (ROE). The study emphasized that effective debt management and liquidity control are essential for achieving financial success. Likewise, Hoque et al. (2015) identified working capital management as a critical determinant of profitability. Their research demonstrated a significant relationship between working capital components and profitability. Capital structure has also been recognized as a major factor influencing financial performance.

Anyakwu et al. (2022) examined the effects of debt and equity financing on profitability and found that debt financing positively affects return on assets, while excessive reliance on equity financing may reduce profitability. The authors suggested that firms should maintain an optimal mix of debt and equity to maximize shareholder value and financial returns.. De et al. (2011) applied factor analysis to identify the most important financial ratios in the Indian cement industry and concluded that profitability, liquidity, solvency, and operational efficiency are the key dimensions of financial performance. The findings of literature review

demonstrated that a smaller set of representative financial ratios can effectively measure overall corporate performance. Overall, the literature indicates that profitability and financial performance in the cement industry are shaped by a combination of internal factors, including liquidity, leverage, working capital management, capital structure, and cost efficiency, as well as external factors such as economic growth and market conditions. Although numerous studies have investigated these determinants individually, limited research has examined their combined impact on the profitability of Indian cement companies. This gap provides a valuable opportunity for further research to develop a more comprehensive understanding of the factors influencing profitability in the Indian cement sector using Dupont analysis.

RESULT AND DISCUSSION

The cement industry is one of the most important sectors supporting economic growth, infrastructure development, and industrial expansion in India. The financial performance of cement companies plays a crucial role in determining their competitiveness and long-term sustainability. Profitability analysis helps investors, creditors, and management evaluate operational efficiency, cost control, and returns generated for shareholders. This study focuses on five major Indian cement companies—ACC Limited, Ambuja Cements Limited, JK Lakshmi Cements Limited, JSW Cement Limited, and Ultratech Cement Limited. Using the DuPont analysis approach, the study examines key profitability indicators and identifies the factors influencing Return on Equity (ROE) in the Indian cement industry. Based on above discussion the following hypothesis is framed.

Based on the above discussion, the following hypotheses have been tested.

H₀: Asset turnover ratio, net profit margin, and equity multiplier do not have a significant impact on return on cement companies in India

H₁: Asset turnover ratio, net profit margin, and equity multiplier have a significant impact on return on cement companies in India

Table 1. Du-Point Analysis - Regression Estimation for Return on Equity with Asset Turnover Ratio Net Profit Margin and Equity Multiplier

Multiple R	R Square	Adjusted R Square	Standard Error
0.776	0.602	0.545	0.0512
	<i>Coefficients</i>	<i>P-value</i>	
Intercept	-1.119	0.276	
Asset Turnover Ratio	0.634	0.000	
Net Profit Margin	0.416	0.021	
Equity Multiplier	0.120	0.457	

Source: Author's own computation

Table 1 presents the results of the multiple regression analysis conducted to examine the impact of ATR, NPM, and EM on the ROE of selected cement companies in India based on the DuPont framework. The model summary indicates a Multiple R value of 0.776, suggesting a strong positive relationship between the dependent variable and the independent variables. This implies that the selected financial indicators collectively have a substantial association with the profitability of the sampled cement companies. The R Square value of 0.602 indicates that approximately 60.2 percent of the variation in Return on Equity is explained by the combined effect of dependent variable. The remaining 39.8 percent of the variation in ROE is influenced by other factors that are not included in the regression model. The Adjusted R Square value of 0.545 this suggests that the regression model has a reasonably good explanatory power and is suitable for analyzing the determinants of shareholders' profitability in the Indian cement industry. The Standard Error of 0.0512 indicates that the prediction errors are relatively small and model predicts accurate results.

Table 2: Hypothesis test results

Independent Variables	P Value	Test Results
Asset Turnover Ratio	$0.000 < 0.05$	Reject H_0 and accept H_1 .
Net Profit Margin	$0.021 < 0.05$	Reject H_0 and accept H_1 .
Equity Multiplier	$0.457 > 0.05$	Fail to reject H_0 .

The Asset Turnover Ratio has a positive regression coefficient of 0.634 with a p-value of 0.000, which is statistically significant at the 1 percent significance level. This finding also suggests that effective utilization of company assets significantly enhances shareholders' returns. Similarly, the Net Profit Margin has a positive coefficient of 0.416 with a p-value of 0.021, which is less than 0.05. Therefore, Net Profit Margin has a statistically significant positive effect on Return on Equity. This implies that an increase in profit margin leads to higher returns for shareholders. In contrast, the Equity Multiplier has a positive coefficient of 0.120, but its p-value of 0.457 is much greater than the 0.05 significance level. Therefore, the Equity Multiplier does not have a statistically significant impact on Return on Equity during the study period.

Table 3. Correlation among Financial Variable

		ROE	NPM	ATR	FL
Pearson Correlation	ROE	1	0.674	0.499	-0.276
	NPM	0.674	1	0.204	-0.69
	ATR	0.499	0.204	1	-0.390
	FL	-0.276	-0.369	-0.390	1
Sig. (1-tailed)	ROE	.	0.001	0.006	0.091
	NPM	0.000	.	0.163	0.035
	ATR	0.006	0.163	.	0.027
	FL	0.091	0.035	0.027	.

Source: Author's own computation

Table 2 reveals that ROE has a strong positive correlation with NPM, with a correlation coefficient of 0.674 and a p-value of 0.001. Since the significance value is less than the 0.05 level, the result supports the fundamental principle of the DuPont model, which emphasizes that profitability is a major determinant of shareholders' returns. Similarly, ROE exhibits a moderate positive correlation with ATR, with a correlation coefficient of 0.499 and a p-value of 0.006, which is statistically significant at the 5 percent level. This result indicates that companies utilizing their assets more efficiently tend to earn higher returns on equity. On the other hand, ROE has a weak negative correlation with FL, with a correlation coefficient of - 0.276 and a p-value of 0.091. Since the significance value exceeds the 5 percent level, the relationship is statistically insignificant. This finding suggests that financial leverage does not significantly influence Return on Equity among the selected cement companies during the study period.

The relationship between NPM and ATR is positive but relatively weak; the correlation between NPM and FL is negative, with a correlation coefficient of -0.369 and a p-value of 0.035. The significance value is below 0.05, indicating that the relationship is statistically significant. This implies that companies with higher financial leverage generally experience lower profit margins. Increased debt financing often results in higher interest expenses, which reduce net profits. Likewise, the relationship between ATR and FL is also negative, with a correlation coefficient of -0.390 and a p-value of 0.027. Since the significance value is below the 5 percent threshold, the relationship is statistically significant. This result suggests that companies relying heavily on financial leverage generally exhibit lower efficiency in utilizing their assets. Higher debt obligations may reduce management's flexibility in deploying resources efficiently, thereby lowering asset productivity. Conversely, firms maintaining moderate leverage levels appear to utilize their assets more effectively. Overall, the correlation matrix demonstrates that NPM and ATR are positively associated with ROE, whereas FL exhibits a negative association with the profitability indicators.

The correlation analysis provides preliminary evidence supporting the regression findings presented in the study. The positive and significant relationships between Return on Equity, Net Profit Margin, and Asset Turnover Ratio indicate that improvements in operational profitability and asset efficiency are associated with enhanced shareholder returns. Conversely, Financial Leverage demonstrates either weak or negative relationships with the profitability indicators, implying that excessive dependence on debt financing does not contribute significantly to improved financial performance.

CONCLUSION

The findings of the study reveal that the selected DuPont variables collectively explain a substantial proportion of the variation in Return on Equity, as indicated by the regression model ($R^2 = 0.602$). The results demonstrate that Asset Turnover Ratio and Net Profit Margin have a statistically significant positive impact on ROE, indicating that efficient utilization of assets and improved profit margins are the primary drivers of shareholder returns. In contrast, the Equity Multiplier does not exhibit a statistically significant influence on ROE, suggesting that higher financial leverage alone does not necessarily enhance profitability in the selected cement companies. The correlation analysis also supports these findings by showing a significant positive relationship between ROE and Net Profit Margin, while Asset Turnover Ratio exhibits a moderate positive association with profitability. Financial Leverage, however, shows a negative relationship with ROE, indicating that excessive dependence on debt financing may adversely affect shareholders' returns. These results suggest that improving operational efficiency and cost management contributes more effectively to profitability than increasing leverage. The study concludes that the DuPont analysis serves as an effective tool for evaluating the financial performance of cement companies by identifying the key factors influencing profitability. The findings emphasize that management should prioritize improving operational efficiency, maximizing asset utilization, controlling production costs, and maintaining healthy profit margins rather than relying heavily on debt financing. Investors may also use these indicators to assess the financial strength and long-term sustainability of cement companies before making investment decisions.

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