CHAPTER IX

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Cement industry in India has developed under all types of controls from the Government of India since its beginning in the early 20th century. Liberalisation set in India very gradually during 1980s and the industry came across new environment and new challenges. In 1989, the Government fully decontrolled the industry and since then it has been on its own. The 1990s brought in complete liberalization with the concept of LPG – Liberalisation, privatization and Globalisation. The thrust administered by the Government for development in housing and infrastructure has given a new lease of life to the cement industry. The focus of this study is to analyse the profitability of cement industry in India during the complete liberalization period 1991-2000.

Chapter 1 of the study deals with the introduction and the design of profitability analysis. Due to the broad based scope of profitability, the analysis has adopted the accounting profitability as the main strategy. The period of study has been selected based on the three phases of, crisis period 1990 – 91 to 1992 – 93, rapid growth period 1993 – 94 to 1995 – 96, and slow down period 1996 – 97 to 1998 – 99 with 1999 – 2000 as a turnaround period. This demarcation in the period of study was considered necessary due to the variations in the performance of the cement sector on account of the substantial policy changes during the study period, 1991 – 2000. The cement industry has not shown the expected growth that should have resulted out of the liberalization measures. This study attempts to determine the efficiency of the selected 32 companies in terms of their profitability, age, size, locational influence, liquidity, growth and financial crisis, if any in future.
The profitability of cement industry has been analysed using Ratio Analysis, Measures of Central Tendency, Correlation, Spearman Rank correlation, Growth Rates, ANOVA, Discriminant Function Analysis and Stepwise Multiple Regression. Robert C. Higgin’s, extended sustainable growth model, Edward I. Altman’s Bankruptcy model and Lambda Index Model have been used for testing the functional ability of the selected firms.

The tests of significance ‘t’ and ‘F’ have been applied to test the hypothesis. Percentage analysis has been used to study the level of proportion of variables.

A Review of Literature has been undertaken to establish the validity of the research topic – Profitability of Cement Industry in India. The compilations made by the Centre for Monitoring Indian Economy, the annual published financial reports of the companies, the stock exchange official directories, Kothari’s Industrial directory of India, the Cement News Digest—the Quarterly Journals of Cement Manufacturers’ Association and various news papers and magazines have been the basis of review for the entire period of study. Various theories pertaining to profits, profitability, sustainable growth, liquidity, bankruptcy and determinants of growth factors, propounded by various financial analysis have been reviewed for a span of four decades.

Chapter III details the historical trend of Cement Industry in India.

Profits being a crucial measure to determine profitable performance, internal determinants of a firm’s earning power has been ascertained in Chapter IV by applying a Multiple Regression Model, with EBIT as the dependant variable and eight internal data inputs as independent variables.
The EBIT has been negatively influenced by Cost of Production (-17.47 per cent) and positively influenced by the remaining variables. The major internal determinants of earnings as variables have been the retained earnings and long-term borrowings.

The Ratio Analysis has identified four major groups out of 18 ratios:

1. Margin on Sales
2. Margin on Total Assets
3. Margin on Capital Employed
4. Margin on Shareholder’s Equity.

1. Margin on Sales

\[
\frac{\text{EBDIT(NNRT)}}{\text{NS}} \quad \text{GUJ (37 per cent) and CHE (35 per cent) have been the highest scorers of Profit Margin on Sales.}
\]

KAL (-66 per cent) has scored the lowest.

AGR is at the minimum for all the companies with an industrial average of 11 per cent and negative growth of -0.4 per cent for the industry. 70 per cent of sample companies have registered a negative growth.

\[
\frac{\text{EBDIT(NNRT)}}{\text{NS}} \quad \text{GUJ (30 per cent) has the highest and JAG (-125 per cent) has the lowest operating profits to sales.}
\]

GC/NS \quad \text{GUJ (45 per cent) has the highest mean ratio and JAG (-94 per cent); the lowest. The Industrial average has been 22 per cent with a negative growth of -1.1 per cent.}

NPBI/NS \quad \text{GUJ (25 per cent) has been at the highest level of operating profit and JAG has been at the level of maximum operating}
loss. The Industrial mean has been at 1 per cent and average growth rate at – 1.6 per cent.

OCF/NS - COR (47.2 per cent) has had a wider fluctuation of operating cash flow at the maximum level with GUJ at a consistent 37.7 per cent.

GUJ and JAG have had the highest AGR at 2.1 per cent.

The Industrial mean has been at 20.9 per cent with a negative AGR of – 1.2 per cent.

PBT(NNRT)/NS - GUJ has had the highest profit margin of 19 per cent and AND has been inconsistent with a negative lowest margin.

PAT(NNRT)/NS - GUJ and AND have contributed the highest positive margin and the highest negative margin of profits after Tax and loss, respectively. The Industrial average has been – 23 per cent.

(ii) Margin on Total Assets

EBDIT/TA - CHE and PRI have the highest margin of profits to Total Assets at 27 per cent and AND has the lowest margin at – 2.0 per cent. The Industrial average is at 12 per cent with a declining growth.

OCF/TA - COR (28 per cent) has the highest operating cash flow and AND, has the lowest at – 3.6 per cent. The industrial average has been 11.4 per cent.

EBIT(NNRT)/TTA - CHE and PRI have 27 per cent as their average contribution to Total Tangible Assets when the industrial average has been only 12 per cent. AND’s contribution has been the least. The general annual growth rate has been negative.
PAT(NNRT)/TTA - MAD (10 per cent) has had the maximum return after tax. AND has had the maximum loss (-31 per cent). The Industry’s average performance and average growth rate (-1.0 per cent) has been negative.

EBIT/TA - When the Industrial average has been 7 per cent, PRI has recorded (22 per cent) and AND (-9 per cent), as the highest and the lowest in their contribution to Total Sales respectively. The average growth rate has been negative for the Industry (-1.2 per cent) and the firms.

(iii) Margin on Capital Employed

EBIT(NNRT)/CE - Despite the Industrial mean having a negative contribution (-4.0 per cent) to capital employed and negative growth of -2.0 per cent, COR has enjoyed a positive margin and, AND has suffered maximum losses.

RCF/CE - The retained Cash flow to capital employed has been hit hard even for the industry with (-31.0 per cent) and an AGR of -2.2 per cent. CHE has the highest margin of 20 per cent and AND has the highest negative margin.

NPBI/CE - Net profit before Interest to capital Employed has been positive for the Industry as a whole with the industrial average at 18 per cent and the average growth of -3.2 per cent.

(iv) Margin on Shareholder’s Equity

PAT(NNRT/SHE) - CHE has maximized the return to shareholders (39 per cent) along with MAD (28 per cent), when the Industry’s ratio has
been -45 per cent. The shareholders of KAL have been the worst hit. The overall growth has been -1.6 per cent.

OCF/SHE - SCK has the maximum operating Cash Flow and SUV the least, when the industrial average has been 36.1 per cent with an average growth rate of 1.0 per cent.

RE/SHE - JAG has retained maximum earnings for the shareholders and KAL has provided the least contribution. The industry has a 1.9 per cent average and has an AGR of 3.6 per cent.

(v) Interest Coverage Ratio

The Interest Coverage Ratio determines the advantage the company derives from its financial leverage. KAK has profits that cover its interest burden to the tune of 5.44 times, and KAL has a negative coverage of -0.42 times, showing its inability to cover its financial burden.

The firms have been marked as more profitable and less profitable/loss firms using the composite profitability index, which has been identified by applying the Spearman Rank correlation to select the least correlated or negatively correlated ratios. Based on a theoretical scoring and the median as a cut-off point, 16 firms have been identified as more profitable out of the 32 sample companies. The balance of 16 firms fall within the framework of less profitable/loss firms.

MDS has the highest Composite Profitability Index and JAG has the lowest.

MDS, CHE and GUJ are ranked as the top 3 firms, scoring 1001, 996 and 951 respectively out of a total weightage of 1300 scores.

CCI, KAL and JAG scoring 380, 365 and 364 respectively are at the bottom constituting the bottom three companies.
The classification of firms into more profitable and less profitable/loss firms, has been determined employing the Discriminant Function Analysis using Mahalanobis Minimum D squared method.

The four profitability ratios identified as the key discriminators are:

(i) \( \text{PAT(NNRT)}/\text{TTA} \)

(ii) \( \text{EBDIT(NNRT)}/\text{NS} \)

(iii) \( \text{EBDIT(NNRT)}/\text{TA} \) and

(iv) \( \text{PAT(NNRT)}/\text{TPS11E} \)

All the sixteen, more profitable firms have positive performance in all the four key discriminators and the other sixteen have negative performances.

The use of key discriminators have supported the negative performance and inconsistent growth of the Cement Industry as a whole.

The mean values of all the discriminating ratios of more profitable firms have been significantly above the industrial average.

Among the less profitable/loss firms, 10 firms have performed below the Industrial average with respect to \( \text{EBDIT(NNRT)}/\text{NS} \), 8 firms have shown unsatisfactory performance in \( \text{EBDIT(NNRT)}/\text{TA} \), 11 firms have recorded their mean values far below the Industrial average in \( \text{PAT(NNRT)}/\text{TTA} \) and all the firms of the less profitable/loss group have shown a negative value in \( \text{PAT(NNRT)}/\text{TPS11E} \).

The key discriminating ratios in the top 3 and bottom 3 companies reveal the following.
MDS (10 per cent), CHE (9 per cent) and GUJ (8 per cent) have earned moderate profits after tax on the Total Tangible Assets, when the Industrial performance registered had been -2 per cent. These three companies have had the ability to withstand the rigours of unfavourable economic and market conditions.

GUJ (37 per cent), CHE (35 per cent) and MDS (31 per cent) have had a positive return to Net Sales, well above the Industrial averages of 11 per cent.

CHE has performed 2.25 times (27 per cent) better than the whole Industry. MDS (24 per cent) performance has been twice the Industrial average performance and GUJ has been at 18 per cent return with 1.5 times the Industrial mean. The Industry has recorded an average return of 12 per cent on Total Assets.

The Industry’s average of profits made available to the shareholders has been registered at -45 per cent. The top three performers have earned higher than the Industrial average at 30 per cent by CHE, 28 per cent by MDS and the performance of the bottom three companies disclose the following.

The profits after taxes for the Industry has been negative at -2.0 per cent. The bottom three firms have performed even lower than the Industrial average at -25 per cent by JAG, -20 per cent by CCI and -9 per cent by KAI.
EBDIT(NNRT)/NS — The Industrial average has been positive at 11.0 per cent, but KAL has had a negative performance at -66 per cent, JAG at -31 per cent and CC1 at -8 per cent, recording their inability to cover even depreciation and financial charges.

EBDIT(NNRT)/TA — The return on Total Assets have been negative for JAG and CC1 due to inefficient asset management, even though the positive industrial mean has been at 12 per cent. KAL however has marginally contributed positively.

PAT/TPSHE — The Industrial average has not increased the shareholders' wealth. The shareholders' wealth has been found negative in JAG, CC1 and KAL.

Under Chapter V, the profitability in the Cement Industry has been analysed in the second objective based on the variables –

(i) age, size, region and profitability of the group firms

(ii) temporal and inter temporal growth and

(iii) convergence of overall profitability.

The variable-wise analysis conducted, show these results.

Age-wise Analysis:

The returns on capital employed of the old firms have been very good.

The moderately old firms have fared well in the areas of operating cash flows.

The new firms have performed profitably, in all the turnover ratios
Size-wise Analysis:

The small sized firms have shown good operating cash flows.

Medium sized firms have provided good returns to the shareholders’ funds (after tax).

Economies of large scale have motivated the large sized firms to enjoy high profitability.

Region-wise analysis:

Profitable performance has been recorded, more by the south-based firms than the north-based firms.

The Return on Total Assets, being a central measure to ascertain overall profitability, has been applied to determine the compound growth of overall profitability for the two periods.

Period I has fluctuating overall profitability with 15 per cent for the industry

Period II has declining profitability at 7 per cent for the industry

The overall profitability of the industry has been 12 per cent during the whole period.

Under age-wise classification, the overall profitability for the whole period has declined.

The compound growth rate has been negative for the old firms and has been lower than the industrial average.

The moderately old firms have the highest profitability rate for the whole period, with positive compound growth rate for period I, and negative growth for period II and the whole period.
The profitability of new firms have been better than the old age group, during period 1. However, the growth rate has been -1.16 per cent. Period II has registered a negative growth rate, well below the industrial growth rate.

The overall profitability of large sized firms has been higher than the industrial average for the entire period, though the growth rate has been negative.

The medium sized firms have a lower rate of overall profitability than the industrial average. Period I has recorded 0.03 per cent as growth rate. Period II has registered -3.91 per cent.

Small sized firms have low profitability rate in period I and a higher rate in period II as compared to the industrial rate. The growth has been at 0.42 per cent in period I and 3.59 per cent in period II.

The performance of southern group has been better at 17 per cent, when compared to the northern group (13 per cent) during period I, when the overall profitability for the period has been 15 per cent. The growth rate has been at 0.55 per cent. In period II, the south based firms have a higher overall profitability but their growth has been negative at -3.66 per cent and the north based firms have -1.74 per cent, though the overall profitability has been higher.

The more profitable group has had twice the profitability rate of the less profitable/loss group. However, the growth rate is found to be negative in both the groups, which has been more for more profitable group (-0.48 per cent) than the growth rate of less profitable/loss group (-0.33 per cent).

A birds’ eye view of the Top performers and poor performers in overall profitability:
Under the age-wise analysis, the top performers are ACC, MDS, and GUJ and the least scorers are KAL, CCI, and JAG in old, moderately old and new categories respectively. In the size-wise analysis the top performers are DEC, CHE, and MDS and the least scorers are JAG, KAL, and CCI in small, medium, and large categories respectively. In region-wise analysis the top performers are GUJ and MDS and the least scorers are JAG and AND in North and South regions respectively. MDS is found to be the top scorer in the profitable group and JAG the least scorer.

The test of convergence has been conducted for the Top three and the Bottom three firms to decipher their relative performance vis-à-vis, the industrial average performance. The test proves that -

Convergence trend has been fluctuating for the top three (MDS, CHE, GUJ) and the bottom three (JAG, KAL, and CCI) firms.

The range of overall profitability of the top three and the bottom three firms is very large.

The hypothesis, that the profitability of a firm does not depend on age, size, and region has been accepted.

The major determinant of the sound financial health of a firm is the excess return on net worth over the expected compensation for business risk and finance risk earned by the firm for the shareholders. The high quality of earning of a firm depends on its ability to absorb business risks and financial risks, through rational asset management, effective cost management and optimal financial leverage. Under chapter VI, quality of earnings has been computed for two categories of firms -

Category I - firms having positive earnings and positive net worth throughout the study period.
Category II firms having positive earnings and positive net worth during certain years of the study only. Quality of Earnings is computed only for those years.

CHE, IND, MAD and SHR (Category I firms) and OCC, PRI and SAR (Category II firms) have excess return on net worth due to efficient asset management, profit/cost management and leverage management.

ACC, MAN and PAN have quality of earnings due to good asset management, in spite of ineffective cost management.

DAI, DEC, GUJ, JAI, KAK and NCL have had good cost management, that has contributed to quality of earnings. Their asset management has not been satisfactory.

The application of Pooled Multiple Regression Analysis, to test if cost management, asset management and leverage management have significantly influenced the quality of earnings, has proved that the quality of earnings depends on cost management, asset management and leverage management.

As a second part of the chapter VI, a study has been conducted with an objective to ascertain the relationship between the liquidity measures and profitability and liquidity measures and quality of earnings. Both the traditional and alternative measures of liquidity have been considered.

KAK, GUI, DAL and DEC of more profitable group have maintained their current ratio more than 2:1. COR has maintained the least ratio. NAR, MAN and BIR of less profitable/loss group have maintained the highest ratio between the range of 1.27 to 1.38.
A high liquid ratio has been maintained by KAK and GUJ and the least value is shown by COR, of the more profitable group. MAN and JAG of the less profitable/loss group have shown the highest (0.794) and the lowest (0.218), with a greater variation.

The highest absolute liquid ratio has been in GUJ (1.065) and the lowest in COR (0.012) of the more profitable group. NAR and PAN have witnessed the highest and the lowest values.

Among the more profitable groups, the Inventory Turnover Ratio has been the highest in DEC (6.34 times) above the industrial mean of 4.18 times. DAL has shown the lowest turnover (2.79 times). SCK (8.68 times), and JAG (1.93 times) of the less profitable/loss group have recorded the highest and the lowest turnover.

The debtor’s velocity has been 11.69 times for the industry while GUJ and MAD of more profitable have shown well above the industrial average (40.24 times and 36.38 times respectively). The lowest ratio has been in JAI (1.65 times) and NCL (5.91 times) BAM and JAG of the less profitable/loss group have shown the highest and the lowest ratio respectively.

The creditors turnover, indicating the extent of dependance on trade credit for financing the current assets, is higher in KAK (5.94 times) and ACC (5.56 times) of the more profitable group and is lower in COR (1.13 times). KAL and PAN of less profitable/loss group have revealed a high ratio and AND has shown a very low ratio.
The working capital of turnover ratio for the cement industry is calculated based on gross current assets as the industry is capital intensive. The industrial average has been 2.8 times CHE (2.99 times) has been the topper and JAI the least performer among the more profitable group. BIR and JAG of the less profitable/loss group have shown the lowest value.

The industry has registered an average of – 4.923 as its leverage of long term borrowings to net working capital.

Under Chapter VII the fourth objective of the study has been to test the degree of consistency of a firm's growth objectives and financial policies. As the sustainable growth of a firm enhances shareholder value, Robert C-Higgin's sustainable growth model has been applied to assess the growth of the firms, in relation to the sustainable growth rate (SGR).

Computation analysis of SGR determines the difference between the actual sales growth rate (ASG) and SGR. A slow growth firm has its ASG lower than the SGR. A rapid growth firm has its ASG more than the SGR.

CHE, MAD, SHR have ASG < SGR and hence are slow growth Firms. DAL, DEC, GUJ, IND, JAI, and KAK are rapid growth firms as their ASG > SGR.

GUJ, JAI, SHR (North based large sized) and CHE, DAL, IND and MAD (South based with varying age and size) have increased their total assets to increase their growth potential.

CHE has had the maximum growth in equity and DAL has had the minimum growth in debt.

The financial leverage at optimal level enjoy value creation. The actual growth of debts has been the maximum for GUJ at 41.96 per cent on an average and minimum for DAL at 10.08 per cent.
MDS has had the maximum retained earnings at 88.14 per cent and DEC has had minimum accumulated profits at 56.61 per cent on an average.

The rapid growth firms have enjoyed a moderate profit margin of 10 to 15 per cent, far above the industrial average of 3.7 per cent.

When the retention ratio of the industry has been –3.13 per cent, DEC, GUJ, IND and KAK have maintained a good dividend payout ratio.

The rapid growth firms have had moderate leverage.

The asset turnover ratio has had a declining trend due to under utilization of assets.

Among the slow growth firms, CHE and MDS have had moderate profits above the industrial average but with a low dividend payout ratio. Their leverages have been below the industrial average.

MDS has a higher level of equity than CHE and it has maintained a high interest coverage ratio.

The relationship of SGR (as a dependent variable) with asset turnover ratio, leverage ratio, profit margin and retention ratio (as independent variables) has been established with the application of multiple correlation. The hypothesis that sustainable growth depends on asset utilization, financial leverage, profit margin and re-investment capacity has been proved.

To enable a firm to reflect its cash position, Cash Flow sustainable growth rate (CFSFR) is computed for the firms to assess the company's growth and cash position.

The relationship between the SGR and CFSFR has been ascertained by finding out the effect of changes in the variables, viz., operating profit, cash conversion cycle and sales growth on SGR, CFSFR, Cash Balance in the Balance sheet and Debt-equity ratio. The findings made are:
The sales growth rate changes (ASG) have influenced the SGR, more than the CFSFR. At no point of time, ASG has been equal to CFSFR for any firm. When ASG has been higher than CFSFR, the cash balance has reduced even among the rapid growth firms.

When ASG has been lower than CFSFR, the balance in cash had increased in some years for most of the firms. When ASG has been lower than SGR, the debt-equity ratio has decreased in general and the ratio has increased when ASG has been higher than SGR. When the cash conversion cycle has been longer, the CFSFR has been lower. SGR has not been affected by the changes in the cash conversion cycle.

Chapter VIII has attempted to identify the real factors that account for the differences in the firm's performance and the possibility of the firm facing financial distress. The fifth objective of the study has adopted Edward I Altman's Multiple Discriminant Analysis to identify the causes of deteriorating performance of the firms and to take suitable measures to avert sickness and inefficiency. Altman has developed a single index 'Z' score after allocating weightage to five strategic ratios selected from the list of 22 financial ratios. According to Altman a firm with a 'Z' score of 1.81 or less has a high probability to become bankrupt. The 'Z' score of 1.81 to 3.0 places the firms in grey area and 'Z' score above 2.99 makes the firm immune to bankruptcy.

An analysis has been done for more profitable and less profitable/loss firms.

MDS, GUJ, ACC and SHR in the order of listing have high 'Z' score under more profitable group.
NAR’s ‘Z’ score has been fluctuating. PAN’s ‘Z’ score has been good all through the years. MAN’s ‘Z’ score has been within the acceptable limits. HEM, SUV, GSI, SCK, AND, KAL and JAG have had low ‘Z’ scores pushing them towards financial distress. SDV in the less profitable/loss group has secured a high ‘Z’ score of 11.17.

The factors that have influenced ‘Z’ scoring have been NWC/TA($X_1$), cumulative retained earnings/TA($X_2$), EBIT/TA($X_3$) Market value of equity/book value of total debts($X_4$) and Sales/TA($X_5$), in the weightage of $1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$, which is a ‘Z’ score.

The degree of uncertainty of future cash flows, can drive even the profitable firms vulnerable as these firms may also face the threat of technical insolvency due to poor cash flows. The uncertainty of future cash flows is indexed as Lambda are the uncertainty factor “LI”, as introduced by Emery G.W. and later modified by George W. Gallinger. There has been no cut off value suggested for Lambda index. The analysis is based on whether the Lambda is high or low. Higher the Lambda, lower will be the probability of liquidity crunch/illiquidity faced by the firm.

Under more profitable firms DAL, IND, JAI and MDS have no probability of technical insolvency. GUJ has a risk of insufficiency and NCL’s cash position is also at stake. SAU has a low degree of liquidity, threatening a technical insolvency.

Among the less profitable/loss firms, most of them have a lot of variation in their future cash flows predicting a technical insolvency, thereby sickness/distress in future.
SUGGESTIONS

The study has provided scope to determine the loopholes that exists in every financial performance analysis of the firm. Profitability paves way to detect the defects in the working strategies of the firm. The basic objective of every firm has been to maximize the value for the shareholders through high intrinsic value of the firm. There are a few suggestions that could be implemented by the firms to attain the objectives. The areas of improvement that can be concentrated into the substratum of the firms are:

The loss making firms having a negative growth either for the entire period or for the part of the period can apply composite profitability index, model on quality of earnings, sustainable growth, Altman’s model and Lambda index to decipher the areas of weakness and take remedial measures.

The quality of earnings should be enhanced in the more profitable firms by optimizing their return through optimal asset management and cost management. The composite profitability index suggested in this study can be tested on the firms' profitability to determine its market position. The liquidity index when given weightage is capable of determining a trade off between profitability and liquidity thereby constituting a competitive edge in the market.

The firm should avoid underutilization of assets by optimal capacity utilization of assets at ideal capacity levels. The cost reduction programmes adopted can provide for effective cost reduction leading to a stable market share. The effective leverage management can gear up the debt equity ratio to attain maximum value creation for the shareholders.
The firm should aim for a targeted sustainable growth for a stable stay in the market. To achieve this end, strategies should be evolved to mobilize funds from the market to finance the additional capacity. The levered position should result in accelerated growth in sales through expanded production capacity resulting immediate cost reduction, high margin of profit, high interest coverage from profits and ultimately increased in the reinvestment capacity.

The leverage obtained from short term asset management, profit management at low cost level, effective asset management that increases production capacity and optimal retained earnings adding to increase in equity wealth will all contribute to the increased market value of the share.

Scope for Further Research

The same tools and methodology can be adopted for any industry in the lines of production. The scope also includes ascertainment of leverage management from the shareholders' point of view.