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Variance analysis of cost structure in selected cement companies in India

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Abstract
Cement industry plays critical role in infrastructural development in all economies irrespective of its state of development. The present study aims to find out how critical role the different cost components play in its overall cost structure which ultimately decides the profitability. The prime objective of the present paper is to study the cost structure of selected cement companies in India to find out the variations in share of different components of total cost within the companies over a period and across the companies as well. The paper finds wider difference among the policies of different companies and generalizes that the cost structure of the companies under study varies to greater extent. This establishes the scope for formulating strategies about cost structure for increasing profitability.

Keywords: variance analysis, cost structure, cement companies

1. Introduction
Cement industry is considered to be the back bone of infrastructural development in all economies irrespective of its state of development. The industry, being a manufacturing one, is capital intense and highly based on availability of raw material and labour. This only characteristic of cement industry emphasizes the critical role of raw material, labour and other overheads in its overall profitability. The present study aims to find out how critical role these cost components play in its overall cost structure which ultimately decides the profitability. It has also been attempted to test whether the cost structure, i.e. share of different cost components in total cost, varies substantially over a period and / or across the companies.

2. Structure of Cost in Cement Companies under Study
The data of total cost in various cement companies under study were rearranged and classified under the following heads:

- **Raw material consumed:** Raw material consumed consists of the amount spent on various types of raw materials and components consumed while manufacturing. It also includes the amount spent on octroi, carriage inwards etc.
- **Salaries and wages:** The amount paid to employees by way of salaries, wages, bonus, gratuities and contribution towards the provident funds, family pension scheme, gratuity funds have been classified as Salaries and wages in the present study.
- **Excise Duty:** The Excise duty charged at the time of production by the Government has been classified as Excise Duty.
- **Other Factory Overheads:** The amount spent on inventory control, royalties, technical assistance, power and fuel, consumable stores, rent, rates, repairs and depreciation on factory building and all other expenses relating to manufacturing process have been grouped as other Factory Overheads.
- **Office, Selling & Distribution Overheads:** The expenses relating to office and general administration of companies like the director's fees, auditor's remuneration, legal expenses, rent, rates, taxes, and depreciation of office building and equipment have been grouped as office overheads. The amount spent during the course of sales, increasing the sales and delivery of goods sold have been termed as selling and distribution overheads.

3. Research Objective
The prime objective of the present paper is to study the cost structure of selected cement companies in India to find out the variations in share of different components of total cost within the companies over a period and across the companies as well. This aims to find and establish the scope for formulating strategies with regard to cost structure for increasing profitability.

4. Methodology
Five companies having substantial production capacity were selected for the purpose of study ensuring equal geographical representation. Period of seven years, i.e. 2005-06 to 2011-12 was taken to analyse the cost structure and variations therein. 'F' test was applied to test the following null hypotheses:

$H0_1$: The share of different components of cost in cement manufacturing companies does not vary substantially over the study period.

$H0_2$: The share of different components of cost in cement manufacturing companies does not vary substantially across the companies.

The table value of 'F' at V_1=6 and V_2=25 is 2.51 and table value of 'F' at V_1=4 and V_2=24 is 2.78. The computed value of 'F' using two-way Anova was compared with its table value to test the hypotheses and derive conclusion in this regard.

5. Findings
In the present study, the total cost has been taken equal to 100 every year and the ratio of every item of total cost has been calculated. Finally, an attempt has been made to study the trend of percentage of these individual items to draw conclusions

about the direction and extent of change in these items over the years.

Raw material consumed

Raw material is an important constituent of cost as most of the industries spend practically 50 percent to 70 percent of their budgeted funds unit. Highlighting the important of materials, the committee on public undertakings in its fortieth report on material management in public undertaking emphasized that the increasing pace of industrialization in India has in its wake highlighted a number of management problems, an important one of which is cost control and cost reduction.

Table 1: Raw Material Consumed to Total Cost in Cement Companies

Company	YEAR						
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
J.K.Cement	10.07	11.71	12.38	14.14	16.87	15.37	16.59
Madras Cement	14.55	15.32	15.16	16.90	16.43	18.40	17.01
Shree Cement	14.03	13.78	10.33	10.37	10.23	9.77	9.98
The India Cement	11.68	12.21	11.88	11.83	13.73	13.61	15.25
Ultratech Cement	8.15	9.22	10.84	11.53	15.57	13.66	13.49

The percentage of raw material consumed to the total cost in selected Cement Companies for the years from 2005-06 to 2011-12 have been calculated and depicted in Table - 1. The percentage of raw material consumed by cement companies over the years of study reveal that the components of material in total cost have increased constantly. However, Shree cement has been able to keep it substantially lower as compared to other companies. It is a location advantage of the company which helps in getting cheaper raw materials for production.

Salaries and Wages

Salaries and wages element of cost is also important as it constitutes a sizeable part of the total cost. Labour force is the back bone of any enterprise and the remuneration paid to them is classified as salaries and wages. Besides this, the labour force or the workmen's force is the active participant during production while raw material is passive participant and, thus, it is rather difficult to apply the control measures over the cost incurred on them.

Table 2: Salaries and wages to Total Cost in Cement Companies

Company	Year						
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
J.K. Cement	4.56	4.54	5.63	5.98	6.56	5.67	5.71
Madras Cement	4.42	4.31	4.65	4.80	5.61	6.91	6.66
Shree Cement	5.12	4.87	3.60	4.38	5.01	5.21	5.51
The India Cement	4.99	5.14	7.14	6.34	6.93	6.68	8.53
Ultratech Cement	2.65	2.75	3.55	3.71	4.08	5.07	4.79

To analyse the role of salaries and wages in the cost structure, an attempt has been made to calculate its percentage to the total cost. If the ratio is high the profitability will be low and vice-versa. The salaries and wages have varied substantially. It has recorded variation in both i.e. over the year and among the companies. Further, it had a constantly increasing trend except the last year of the study in two companies i.e. Madras cement and Ultratech cement.

Excise Duty

Excise duty is imposed by the Central Government at the source of production. This expense is termed as administered expense because this is beyond the control of the company and depends entirely upon the policies of the government. An increase in excise duty may indicate the Government's intention to discourage the production in an industry while the cut in the rates of excise duty is treated as an incentive for the industry. The role of excise duty in the formation of the total cost has been analysed by calculating the percentage of excise duty to the total cost in the Table - 3.

Table 3: Excise Duty to Total Cost in Cement Companies

Company	Year						
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
J.K. Cement	18.75	16.54	17.99	15.52	11.79	11.87	11.81
Madras Cement	17.51	17.94	19.48	16.44	12.45	0	0
Shree Cement	0	0	16.21	16.10	12.07	11.18	11.70
The India Cement	0	0	19.27	15.33	11.46	12.42	0
Ultratech Cement	13.94	13.46	16.09	13.25	11.06	12.54	13.08

The excise duty has been an important of total cost in cement companies. It has shown a falling trend on an average. The share of excise data has fallen substantially in all the companies except Ultratech cement where an ignorable decline has been recorded.

Other Factory Overheads

Factory overhead is an element of factory cost under which all items which cannot be grouped as any one of prime cost is classified. In other words, it may be defined as total factory cost minus prime cost. The word 'Overhead's used often and it

is defined as a generic name for costs of materials and services not directly adding to or readily identifiable with the products or serviced constituting the main object of an operation. Factory overhead is collective in nature and common in incidence. The cost so incurred is not readily identifiable with any specific segment of business, unit or operation. Factory overheads include items like indirect material, indirect labour, indirect expenses, factory rent, insurance and depreciation of factory building, power bill, water, rates and repairs, renewals and depreciation of factory plant and machinery. Since salaries and wages of workers and excise duty have been analysed separately, the remaining factory overheads have, here, been termed as other factory overheads. The percentage of other factory overhead to the total cost cement companies have been depicted in Table - 4.

Table 4: Other Factory Overheads to Total Cost in Cement Companies

Company	Year						
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
J.K. Cement	40.02	39.38	34.23	36.74	32.91	37.77	4.73
Madras Cement	28.2	27.87	28.42	30.67	29.41	39.32	37.80
Shree Cement	37.87	28.92	27.31	38.05	31.2	37.07	25.85
The India Cement	49.98	48.11	28.78	33.32	31.74	30.6	34.6
Ultratech Cement	42.13	39.93	38.07	41.59	36.07	35.53	47.52

Note: Only cash expenses have been considered in other factory overhead while non-cash expenses such as depreciation has been ignored.

The ratio of factory overheads to total costs in cement companies under study has shown an erratic behavior at all. J.K. cement has registered a sharp decline whereas Madras cement witnessed a substantial increase there in Shree cement and The India cement observed a significant fall of almost 25 per cent. While Ultratech cement registered a marginal increase in share of factory overheads in the total cost.

Office, Selling and Distribution Overheads

Office overheads includes all indirect materials, indirect wages and indirect expense incurred in the administration of an undertaking such as printing and stationery, rent rates and taxes, repairs, payment to auditors, office salaries, directors' fee and miscellaneous expense. Most of the office overheads are fixed in nature and arise because of the policy. Selling overheads are that part of total overheads which are incurred to create and stimulate demand and securing order. Distribution overheads are incurred in sequence of operation which begins with making the product available for dispatch and ends with available it to the vendors making. Selling overheads are incurred for promoting sales and they have no direct relationship with production cost since selling cost may vary widely depending on the channel of distribution adopted, sales promotion policy, availability of finance, extent of competition etc.

Table 5: Office & Selling Overheads to Total Cost in Cement Companies

Company	Year						
	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
J.K. Cement	18.12	22.07	23.87	21.64	25.73	23.38	53.63
Madras Cement	29.09	29.08	26.77	25.18	28.09	25.46	28.66
Shree Cement	21.17	16.08	17.22	21.14	21.46	17.76	31.71
The India Cement	28.50	29.36	28.08	26.68	29.67	30.27	34.54
Ultratech Cement	26.94	29.32	26.55	24.40	26.91	27.37	15.91

The trend in office and selling overheads has varied across the companies under study. At one hand, it has increased to four times in case of J.K. cement and has fallen to around half in case of Ultratech cement over the period of study. Madras cement has been able to exercise effective control over this category of overheads while other two companies i.e. Shree cement and The India cement have registered a significant increase over the study period.

6. Hypothesis Testing

The variance across the years and across the companies was computed. The computed value of 'F' using two-way Anova, summarized in Table – 6, has been compared with its table value.

Table 6: Variance Analysis of Cost Structure in Selected Cement Companies in India

Cost Component	Variation Between the Years (Value of 'F')	Variation Between the Companies (Value of 'F')
Raw Material Consumed	0.87	7.36
Salaries and Wages	0.89	7.41
Excise Duty	0.93	7.84
Other Factory Overheads	0.79	7.26
Administrative & Selling Overheads	0.85	7.37

The computed value of F has been recorded below 1 for the different components of costs over the years of the study, which is lesser than the table value of 2.51 at respective degree of freedom. Thus, the first hypothesis that the share of different components of cost in cement manufacturing companies does not vary substantially over a period of study stands accepted

and the variations in share of cost components in overall cost structure of the companies over the study period can be considered insignificant.

The computed value of F has been recorded above 2.72 for the all components of costs across the companies under study, which is greater than the table value of 2.72 at respective degree of freedom. Thus, the second hypothesis that the share of different components of cost in cement manufacturing companies does not vary substantially across the companies stands rejected and the variations cannot be considered insignificant.

7. Conclusion

The findings and results of hypotheses testing concludes that the components of the total cost, i.e., raw material consumed, salary and wages, excise duty, other factory overheads and office & selling overheads were stable across the years in all the studied companies throughout the study period. On the other hand, wide variation has evident from various analysis of the same components across the companies studied. This reveals wider difference among the policies of different companies and generalizes that the cost structure of the companies under study varies to greater extent. This establishes the scope for formulating strategies about cost structure for increasing profitability.

8. References

1. Agarwal AK and Agarwal VK. Cement lndustry in India, Commonwealth Publishers, New Delhi, 1990.
2. Banerjee B. Financial Policy and Management Accounting. The World Press Private Limited, Kolkata, 2002.
3. Beaver WH. Financial Ratios as Predictors of Failure, Empirical Research in Accounting: Selected Studies, Journal of Accounting Research. 1966; 4:71-111.
4. Bhayani SJ. Practical Financial Statement Analysis, Raj Book Enterprise, Jaipur, 2004.
5. Chandra P. Financial Management: Theory and Practice, Tata McGraw Hill, New Delhi, 1995.
6. Chowdhary SB. Analysis of Company Financial Statement, Asia Publishing House, New Delhi, 1964.
7. Foulke A. Roy. Practical Financial Statement Analysis, Tata McGraw Hill, New Delhi, 1968.
8. Lev BA. Fundamental Information Analysis, Journal of Accounting Research, Autumn. 1993, 190-215.
9. Madhubala. Cement lndustry in lndia-Policy Structure and Performance, Shipra Publications, New Delhi, 2002.
10. Motwani RK, Sharma M. A Conceptual Framework for Research on Cement Industry in India, Journal of Management Outlook. 2012; 2(2):45-50.
11. Murti G. Management Accounting, Himalaya Publication House, Bombay, 1987, 193.
12. Muthusamy A, Gowri M. Sales Trend and Cost Structure of Indian Oil Industry - An Analysis, Indian Journal of Applied Research. 2012; 2(1):15-18.
13. Muthusamy A, Karpagalakshmi S. A Study of Sales Trend and Cost Structure of Indian Fertilizer Industry. 2011; 7:2.
14. Narware PC. Working Capital and Profitability - An Empirical Analysis, the Management Accountant, Calcutta, 2004.
15. Ohlson JA. Financial Ratios and the probabilistic prediction of bankruptcy, journal of accounting research. 1980; 18:109-131.
16. Poonia MS. Analysis of Power and Fuel Cost in Aluminum Companies in India, Indian Journal of Accounting, 2004.
17. Raghbendra Jha MN, Murty, Satya Paul, Balbir S. Sahni. Cost Structure of the Indian Cement Industry, Journal of Economic Studies. 1991, 18:4.