



DETERMINANTS OF PROFITABILITY OF THE LEADING CEMENT COMPANIES IN INDIA

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Abstract

Profitability is ability of a company to use its resources to generate revenues in excess of its expenses. In other words, this is a company's capability of generating profits from its operations. Profit is a very important concept for any business – particularly for a start-up. Profit is the financial return or reward that firms or entrepreneurs aim to achieve to reflect the risk that they take..It is the amount of money remaining after all the expenses of running the business are paid.. In the short term, a business can lose money and still keep going by drawing on previously accumulated cash reserves. Start-up technology companies sometimes incur losses for several years and use venture capital to fund operations until they reach positive cash flow. But over the longer term, earning a profit is essential to a company's survival. In this context, it is important to analyze the profitability of cement companies because of its national importance. India is the second largest cement manufacturer in the world and it exports more than ten per cent of the total requirements of the cements in the global level. Therefore, the first two leading Indian cement companies viz., Ambuja Cements Ltd. (ACL) and Ultratech Cements Ltd. has been selected to study regarding the determinants of profitability of the companies during the period from 2010-11 to 2016-17 .In this study, only regression analysis have been used taking ROTA and ROCE as the dependent variables and Size, material cost, interest expenses, depreciation cost and total cost as the independent variables for the study.

Key Words: *Profitability, Return on Total Assets, Return on Capital Employed, Size, Material cost and total cost.*

Introduction

Indian Cement Industry is the second largest cement producer in the world after China with a total capacity of 151.2 Million Tones. Government of India has been giving immense boost to various infrastructure projects, housing facilities and road networks. The cement industry in India is currently growing at an enviable pace. In the coming years more growth in the Indian cement industry is expected to come. The Indian cement industry is dominated by 20 companies, which account for almost 70% of the total cement production in India. The companies all over India have produced 11 Million Tonnes cement during April-September 2009. It has increased to 285.83 million tonnes during the year 2016-17. As of August 2015, cement production in India accounted for around 6.7 per cent of overall global cement output. The Indian Cement industry plays a major role in the growth of the nation for that case in any country. Cement Industry was under full control and supervision of the government. However, it got great relief at a large extent after the economic reform which made its growth easier. Still government interference, especially in the pricing, is evident in India.

Profitability is the primary goal of all Cement companies. Without profitability the business will not survive in the long run. So measuring current and past profitability and projecting future profitability of the cement companies are very important. Profitability is measured with income and expenses. Income is money generated from the activities of the companies. Hence it becomes inevitable to the related parties to study about the profitability of the cement industry. In this context, the researcher has taken two leading cement companies in India viz. Ambuja Cements Ltd. and Ultratech Cements Ltd for the companies' profitability analysis.

Concept of Profitability

Profitability means ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It shows how efficiently the management can make profit by using all the resources available in the market. According to Harward & Upton, "Profitability is the 'the ability of a given investment to earn a return from its use.'" However, the term 'Profitability' is not synonymous to the term 'Efficiency'. Profitability is an index of efficiency; and is regarded as a measure of efficiency and management guide to greater efficiency. Though, profitability is an important yardstick for measuring the efficiency, the extent of profitability cannot be taken as a final proof of efficiency. Sometimes satisfactory profits can mark inefficiency and conversely, a proper degree of efficiency can be accompanied by an absence of profit. The net profit figure simply reveals a satisfactory balance between the values receive and value given. The change in operational efficiency is merely one of the factors on which profitability of an enterprise largely depends. Moreover, there are many other factors besides efficiency, which affect the profitability.



Profitability is one of four building blocks for analyzing financial statements and company performance as a whole. The other three are efficiency, solvency, and market prospects. Investors, creditors, and managers use these key concepts to analyze how well a company is doing and the future potential it could have if operations were managed properly.

The two key aspects of profitability are revenues and expenses. Revenues are the business income. This is the amount of money earned from customers by selling products or providing services. Generating income isn't free, however. Businesses must use their resources in order to produce these products and provide these services. Resources, like cash, are used to pay for expenses like employee payroll, rent, utilities, and other necessities in the production process. Profitability looks at the relationship between the revenues and expenses to see how well a company is performing and the future potential growth a company might have.

Review of Literature

A number of studies and academic research works related to the working capital management and profitability of various industries are available. These studies and academic research works have been thoroughly reviewed and the kernels of them are very useful to carry out the research work perfectly. Some of them are presented as follows.

Ganesan¹ observed the determinant of profitability of Public Sector Banks in India by an empirical estimation of profit function model which showed that interest cost, interest income, other income and deposits per bank, credit to total assets, proportion of priority sector advances and interest income loss were the significant determinants of profits and profitability of Indian Public Sector Banks. Also, the average establishment cost positively contributed to the profitability but adversely affected the net profit of the Indian Public Sector Banks.

Ahmed and Khababa² evaluated the financial performance (profitability) of commercial banks in Saudi Arabia. The authors employed a regression model to test the effect of business risk, concentration and market size on the profitability of the bank measured in terms of return on assets (ROA) and return on equity (ROE), and earnings per share (EPS). The authors used both time series and pooled time series data for their analyses. The empirical results generated from the three models showed that business risk and the bank size were the main variables which determined banks' profitability.

Vijayakumar and Venkatachalan (2003)³ indicated in their study a moderate trend in the financial position and the utilization of working capital, variations in working capital size should be avoided attempts should also be made to use funds more effectively, by keeping an optimum level of working capital. Because, keeping more current assets cause a reduction in profitability. Hence, efforts should be made to ensure a positive trend in the estimation and maintenance of the working capital.

Asha Sharma and R.B. Sharma (2011)⁴ attempted to identify and study the movement of key financial parameters and their relationship with profitability of textile industry. It is an attempt to and the study whether the key identified parameters move in a synchronous way going up and coming down with basic profitability parameters. All three comparably profit-making companies have been taken as the sample for the study for the period of 2006 to 2010.

Objectives of the study

The main objectives of the study are

1. To evaluate the profitability related to total assets of selected cement companies.
2. To analyze the profitability related total capital employed of the selected cement companies.

¹Ganesan, P. "Determinants of Profits and Profitability of Public Sector Banks in India: A Profit Function Approach." *Journal of Financial Management and Analysis* 14 (1) (2001): 27-37

²Ahmed, A. and N. Khababa. "Performance of the Banking Sector in Saudi Arabia." *Journal of Financial Management and Analysis* Volume 12, Issue 2, (1999): 30-36

³Vijayakumar & Venkatachalam (2003), "Working Capital Management", A Case Study of Tamil Nadu Sugar Corporation, *Finance India*, (2003), pp.95-110.

⁴Asha Sharma and R.B. Sharma "Study on A Comparison Financial Performance in Textile Industry", *International Journal on Business Management Economics and Information Technology*, Vol-3, No.1, January-June 2011 pp.175-180.



Research methodology

Data and sample selection

There are twenty leading cement companies in India, of which, the ACL and UCL have been selected for the study on the basis of their year of establishment. These two companies were started in 1986. They have completed over 30 years of operations. Hence it is considered to compare their profitability since last seven year i.e. from 2010-11 to 2016-17. The secondary Data for the study have been collected from CMIE, New Delhi and Money control .com.

Measurement of Variables

Keeping the two profitability measures viz, ROTA and ROCE in mind, the following variables on the 'a priori' ground are identified as determinants of Profitability in the present study. In this regard, SIZE, MC, IE, DE, TC have been used as independent variables. On the other hand, Return on Total Assets (ROTA) and ROCE (ROCE) are taken as dependent variables alternatively. The measurement of these variables is presented as follows.

1. ROTA

The return on total assets (ROTA) is a ratio that measures a company's Net Profit against its total net assets. The ratio is considered to be an indicator of how effectively a company is using its assets to generate earnings before contractual obligations must be paid. This ratio is calculated by dividing the Net Profit by Total Assets.

2. ROCE

Return on capital employed or ROCE is a profitability ratio that measures how efficiently a company can generate profits from its capital employed by comparing EBIT to total capital employed. In other words, return on capital employed shows investors how much amount of profits for each rupee of capital employed generates. This ratio is calculated by dividing the EBIT by Total Assets.

3. SIZE (Net Sales):

 Size is here expressed as Net Sales

4. Material Cost (MC):

 Material cost is the cost of materials used to manufacture cement. It excludes all indirect materials, such as cleaning supplies used in the production process. Material Cost is considered as the determinant of profitability of the selected cement companies

5. Depreciation Cost (DC)

Depreciation cost is the reduction of recorded cost of a fixed asset in a systematic manner until the value of the asset becomes zero or negligible. Depreciation allows a portion of the cost of a fixed asset to the revenue generated by the fixed asset. This is mandatory under the matching principle as revenues are recorded with their associated expenses in the accounting period when the asset is in use. This helps in getting a complete picture of the revenue generation transaction. Depreciation cost is also one of the factors determining Profitability of the selected companies.

6. Interest Expenses (IE)

Interest Expenses refers interest on capital and interest on borrowed funds. The interest expenses is considered as an important determinant of the Profitability of the selected companies.

7. Total Cost (TC)

The Total Cost refers the sum of material cost, employee cost, Miscellaneous Expenses, Power and fuel cost, Depreciation Expenses and Interest expenses. The total is measured as the determinant of the Profitability of the selected companies.

Specification of Variables

1. The coefficient of MC, DC, IE and TC is expected to be negative. It implies that the increase in the above cost variables would decrease the ROTA/ ROCE and vice versa.
2. The coefficient of size in terms of sales is expected to be positive. It implies that the increase in size would increase the ROTA/ ROCE and vice versa.

Results and Discussion

Regression Models for ROTA

The Regression Models for ROTA have been framed by using five independent variables viz., MC, DC, IE, TC and Size. Four models are framed by changing and deleting these five independent variables one by one.



$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

$$ROTA = a + b_1 \text{ SIZE} + b_2 \text{ MC} + b_3 \text{ IE} + b_4 \text{ DC} + b_5 \text{ TC}$$

$$ROTA = a + b_1 \text{ SIZE} + b_2 \text{ MC} + b_3 \text{ IE} + b_4 \text{ TC}$$

$$ROCE = a + b_1 \text{ SIZE} + b_2 \text{ MC} + b_3 \text{ IE} + b_4 \text{ DC} + b_5 \text{ TC}$$

$$ROCE = a + b_1 \text{ SIZE} + b_2 \text{ MC} + b_3 \text{ IE} + b_4 \text{ TC}$$

- Y - ROTA/ ROCE
X₁ - Size
X₂ - Material Cost (MC)
X₃ - Interest Expenses (IE)
X₄ - Depreciation cost (DE)
X - Total cost (TC)

b₁, b₂, b₃, b₄, b₅, b₆, b₇ - Regression co-efficient of the independent variable a - Intercept

Model 1-ROTA

The ROTA Model -1 has been constructed by using five variables viz, SIZE, MC, IE, DC and TC, as under.

$$ROTA = a + b_1 \text{ SIZE} + b_2 \text{ MC} + b_3 \text{ IE} + b_4 \text{ DC} + b_5 \text{ TC}$$

The estimated regression results of the ROTA Model -1 for the selected cement companies during the period 2010/11 – 2016/17 are presented in Table 1.

It is perceived from the Table that the estimated working capital function is good under ROTA in ACL and UCL since the explanatory power of the equation measured by R² and F appear to be good. The value of R² varies from 0.99 to 0.98. That is about 98 % to 99 % of the variations in ROTA of the selected cement companies are explained by the variables in that equation. The regression as a whole is highly significant at 1 per cent level in both the firms under study.

Table 1 Return on Total Assets– Model 1 (2010-11 to 2016-17)
ROTA = a + b₁ SIZE + b₂ MC + b₃ IE + b₄ DC + b₅ TC

ROTA	Company	Constant	Co – efficient of					R ²	F Ratio	D.W
			SIZE	MC	IE	DC	TC			
	ACL	.794 (.573)	3.359 (.184)	1.702 (.038)**	-.902 (.533)	-6.205 (.002)*	-2.744 (.222)	.993	28.290	2.199
	UCL	2.223 (.269)	3.887 (.010)**	-1.436 (.387)	-1.219 (.037)**	-.294 (.818)	-1.811 (.021)**	.984	12.088	3.154

Note: Figures in parenthesis are computed ‘P’ value

Significant Level: * 1 Percent, ** 5 Percent,

Source: Centre for Monitoring Indian Economy (CMIE), New Delhi, India

It is clear from Table 1 that the coefficient of Size in UCL is known to be positive under the measures of ROTA in these two companies and these are statistically significant at 5% level under study. It implies that SIZE in UCL impacts the ROTA. Hence the hypothesis that ROTA is an increasing function of SIZE is proved under this study. But the co efficient of MC in ACL is found to be positive and significant at 5% level. It means if the MC increases, ROTA increases. It is absolutely against the theoretical expectation. Therefore the hypothesis that ROTA is a decreasing function of MC is not proved. In addition, the co-efficient of DC in ACL and the co efficient of IE and TC in UCL are found to be of negative and significant at 5% level. It shows that the change of DC in ACL and IE, TC in UCL would tend to affect the ROTA of the respective companies. Hence the hypothesis that ROTA is a decreasing function of DC, IE and TC is proved under this study.



To sum up, according to the ROTA Model 1, DC in ACL and SIZE, IE and TC in UCL are found to be the determinants of ROTA under study.

Model 2-ROTA

The ROTA Model - has been constructed by using five variables viz, SIZE, MC, IE and TC, as under.

$$ROTA = a + b_1 SIZE + b_2 MC + b_3 IE + b_4 TC$$

The estimated regression results of the ROTA Model -1 for the selected cement companies during the period 2010/11 – 2016/17 are presented in Table 2

It is perceived from the Table that the estimated working capital function is good under ROTA in ACL and UCL since the explanatory power of the equation measured by R² and F appear to be good. The value of R² varies from 0.98 to 0.72. That is about 72 % to 98 % of the variations in ROTA of the selected cement companies are explained by the variables in that equation. The regression as a whole is highly significant at 1 per cent level in both the firms under study.

Table 2 Return On Total Assets– Model 2 (2010-11 TO 2016-17)
ROTA = a + b₁ SIZE + b₂ MC + b₃ IE + b₄ TC

ROTA	Company	Constant	Co – efficient of				R ²	F Ratio	D.W
			SIZE	MC	IE	TC			
	ACL	-.312 (.785)	1.462 (.021)**	.853 (.483)	-.443 (.701)	- 1.438 (.287)	.723	1.303	1.898
	UCL	4.146 (.054)	5.325 (.034)**	- 2.798 (.108)	- 2.304 (.148)	- 2.516 (.128)	.982	27.785	2.852

Note: Figures in parenthesis are computed ‘P’ value

Significant Level: * 1 Percent, ** 5 Percent,

Source: Centre for Monitoring Indian Economy (CMIE), New Delhi, India

It is observed from the Table 2 that the coefficient of Size in ACL and UCL is known to be positive under the measures of ROTA in these two companies and these are statistically significant at 5% level under study. It infers if SIZE increases, the ROTA will also increase and vice versa. Hence the hypothesis that ROTA is an increasing function of SIZE is proved under the study.

To sum up, consistent with this model, only SIZE is the determinant of ROTA in these two selected companies under study.

Model 1- ROCE

The ROCE Model -1 has been constructed by using five variables viz, SIZE, MC, IE, DC and TC, as under.

$$ROCE = a + b_1 SIZE + b_2 MC + b_3 IE + b_4 DC + b_5 TC$$

The estimated regression results of the ROCE Model -1 for the selected cement companies during the period 2010/11 – 2016/17 are presented in Table 3.

It is perceived from the Table that the estimated working capital function is good under ROCE in ACL and UCL since the explanatory power of the equation measured by R² and F appear to be good. The value of R² varies from 0.99 to 0.75. That is about 75 % to 99 % of the variations in ROCE of the selected cement companies are explained by the variables in that equation. The regression as a whole is highly significant at 1 per cent level in both the firms under study.



Table 3 Return On Capital Employed – Model 1 (2010-11 To 2016-17)
ROCE = a + b₁ SIZE + b₂ MC + b₃ IE + b₄ DC + b₅ TC

ROCE	Company	Constant	Co – efficient of					R ²	F Ratio	D.W
			SIZE	MC	IE	DC	TC			
	ACL	1.266 (.426)	32.837 (.019)**	4.669 (.134)	17.188 (.037)**	-23.827 (.027)**	-32.764 (.019)**	.998	46.833	2.199
	UCL	32.980 (.019)**	47.174 (.013)**	-24.089 (.026)**	-12.796 (.050)	-1.611 (.354)	-16.777 (.038)**	.756	16.201	2.154

Note: Figures in parenthesis are computed ‘P’ value

Significant Level: * 1 Percent, ** 5 Percent,

Source: Centre for Monitoring Indian Economy (CMIE), New Delhi, India

It is perceived from the Table 3 that the coefficient of Size in ACL and UCL is known to be positive under the measures of ROCE in these two companies and these are statistically significant at 5% level under study. It infers if SIZE increases, the ROCE will also increase and vice versa. Hence the hypothesis that ROCE is an increasing function of SIZE is proved under this study. But the co efficient of IE in ACL is found to be positive and significant at 5% level. It means if the IE increases, ROCE increases. It is absolutely against the theoretical expectation. Therefore the hypothesis that ROCE is a decreasing function of IE is not proved.

Moreover, the co-efficient of TC and DC in ACL and the co efficient of MC and TC in UCL are found to be of negative and significant at 5% level. It shows that the change of TC and DC in ACL and MC and TC in UCL would tend to affect the ROCE of the respective companies. Hence the hypothesis that ROCE is a decreasing function of MC, DC and TC is proved under this study.

To abridge, as per the ROCE model 1, SIZE, DC and TC in ACL and SIZE and TC in UCL are the determinants of ROCE under the study.

Model 2- ROCE

The ROCE Model -2 has been constructed by using four variables viz, SIZE, MC, IE and TC, as under.

$$\text{ROCE} = a + b_1 \text{SIZE} + b_2 \text{MC} + b_3 \text{IE} + b_4 \text{TC}$$

The estimated regression results of the ROCE Model -1 for the selected cement companies during the period 2010/11 – 2016/17 are presented in Table 4.

It is perceived from the Table that the estimated working capital function is good under ROCE in ACL and UCL since the explanatory power of the equation measured by R² and F appear to be good. The value of R² varies from 0.84 to 0.67. That is about 67 % to 84 % of the variations in ROCE of the selected cement companies are explained by the variables in that equation. The regression as a whole is highly significant at 1 per cent level in both the firms under study.

Table 4 return On Capital Employed – Model 2(2010-11 To 2016-17)
ROCE = a + b₁ SIZE + b₂ MC + b₃ IE + b₄ TC

ROCE	Company	Constant	Co – efficient of				R ²	F Ratio	D.W
			SIZE	MC	IE	TC			
	ACL	-.428 (.710)	2.778 (.009)*	.747 (.533)	.794 (.011)**	-2.947 (.098)	.848	2.784	1.961
	UCL	36.165 (.001)*	35.858 (.001)*	-23.843 (.002)*	-12.524 (.006)*	-13.189 (.006)*	.676	13.130	2.598

Note: Figures in parenthesis are computed ‘P’ value

Significant Level: * 1 Percent, ** 5 Percent,

Source: Centre for Monitoring Indian Economy (CMIE), New Delhi, India



It is evident from the above Table that the coefficient of Size in ACL and UCL is found to be positive under the measure of ROCE in these two companies and these are statistically significant at 5% level under study. It infers if SIZE increases, the ROCE will also increase and vice versa. Hence the hypothesis that ROCE is an increasing function of SIZE is proved under this study.

But the coefficient of IE in ACL is found to be positive and significant at 5% level. It means if the IE increases, ROCE increases. It is absolutely against the theoretical expectation. Therefore the hypothesis that ROCE is a decreasing function of IE is not proved.

Moreover, the co-efficient of MC, IE and DC in UCL is found to be of negative and significant at 5% level. It shows that the change of MC, IE and DC in UCL would tend to affect the ROCE of the respective companies. Hence the hypothesis that ROCE is a decreasing function of MC, IE, and TC is proved under the study. In short, according to the Model 2 of ROCE, the SIZE in ACL and MC, IE and TC in UCL are found to be the determinants of ROCE under study.

Conclusion

According to the ROTA Model 1, DC in ACL and SIZE, IE and TC in UCL are found to be the determinants of ROTA under study. Moreover, in consistent with the model 2, only SIZE is the determinant of ROTA in these two selected companies under study. Also, the SIZE, DC and TC in ACL and SIZE and TC in UCL are the determinants of ROCE under the study whereas according to the Model 2 of ROCE, the SIZE in ACL and MC, IE and TC in UCL are found to be the determinants of ROCE under study.

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