Chapter IV
Financial Profile and Growth Performance of Cement Industry in Tamil Nadu

4.1 Preamble

The objectives of the study and reviews of literature were presented in the first and second chapter respectively. The profile of the Indian cement industry and the problems facing the Indian cement industry were presented in the third chapter.

The profitability and utilisation of assets in cement industry in Tamil Nadu forms part of the fifth chapter. The financial strength and health of cement industry in Tamil Nadu and analysis of elicited opinion of staff members of the finance department of cement industry in Tamil Nadu are presented in the sixth chapter.

In this chapter, a detailed analysis was carried out to present the capital composition, assets composition, sales, profits and growth of cement Industry in Tamil Nadu. The analysis of financial performance of cement industry in Tamil Nadu was done on parameters such as liquidity, activity, capital structure and profitability, using ratio analysis, Mottall’s Ranking Analysis, Hartley’s $F_{\text{max}}$ test and one-way ANOVA.

4.2.1 Capital Composition of cement industry in Tamil Nadu

The financial structure of the cement industry shows the capability of the company to generate the funds needed to undertake the desired expansion. The financial assessment, together with other efficiency criteria, will provide a synoptic view of the total efficiency and performance of the industry.
The success of a company depends ultimately upon its future development. Company’s future can never be analysed with accuracy without precise information related to the company’s present financial position and the past earnings records. The balance sheet provides the basic sources of information regarding the financial strength and performance of the industry. However, the balance sheet is merely a condensed and classified record of gains and losses, causing changes in the interest of many factors concerned for a period of time. It is a statement of assets and liabilities. It is frequently voluminous and detailed to the point where they are almost useless. But the available information from it can be crystallized in such a way that its implications are classified and attention is concentrated upon facts which are in the usual balance sheet and profit and loss accounts, completely hidden behind a mass of figures.

4.2 Financial position of Cement Industry in Tamil Nadu

The financial position of cement industry in Tamil Nadu have been analysed with the help of the financial facts. The facts were analysed with the help of capital composition, assets composition and operational performance of the cement industry in Tamil Nadu. Further, an attempt has also been made to analyse the growth of performance indicators of cement industry during the period of the study.

4.2.1 Capital Composition of the Cement Industry in Tamil Nadu

The capital composition of the cement industry was drawn from the pooled data of the four cement companies together. The capital of the cement industry was classified into equity, reserves and surplus, net worth, borrowed
capital and total capital employed. The capital composition of the cement industry, company-wise, was presented in the Table 4.10.

Table 4.10
Capital Composition of Cement Industry in Tamil Nadu
(Rupees in Crores)

<table>
<thead>
<tr>
<th>Year</th>
<th>Share Capital</th>
<th>Reserves &amp; Surplus</th>
<th>Net Worth</th>
<th>Borrowed Capital</th>
<th>Total Capital Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>43.58</td>
<td>348.04</td>
<td>391.62</td>
<td>437.50</td>
<td>1220.74</td>
</tr>
<tr>
<td>1994-95</td>
<td>54.51</td>
<td>597.22</td>
<td>651.73</td>
<td>469.32</td>
<td>1772.78</td>
</tr>
<tr>
<td>1995-96</td>
<td>92.40</td>
<td>796.36</td>
<td>888.76</td>
<td>763.16</td>
<td>2540.68</td>
</tr>
<tr>
<td>1996-97</td>
<td>92.40</td>
<td>967.19</td>
<td>1059.59</td>
<td>1344.92</td>
<td>3464.10</td>
</tr>
<tr>
<td>1997-98</td>
<td>92.40</td>
<td>1018.19</td>
<td>1110.59</td>
<td>1962.73</td>
<td>4183.91</td>
</tr>
<tr>
<td>1998-99</td>
<td>153.15</td>
<td>1201.44</td>
<td>1354.59</td>
<td>2269.57</td>
<td>4978.75</td>
</tr>
<tr>
<td>1999-00</td>
<td>191.55</td>
<td>1324.84</td>
<td>1516.39</td>
<td>2618.70</td>
<td>5651.48</td>
</tr>
<tr>
<td>2000-01</td>
<td>204.29</td>
<td>1427.42</td>
<td>1631.71</td>
<td>3080.78</td>
<td>6344.20</td>
</tr>
<tr>
<td>2001-02</td>
<td>204.40</td>
<td>1119.12</td>
<td>1323.52</td>
<td>3164.44</td>
<td>5811.48</td>
</tr>
<tr>
<td>2002-03</td>
<td>212.82</td>
<td>943.00</td>
<td>1155.82</td>
<td>3078.19</td>
<td>5389.83</td>
</tr>
<tr>
<td>2003-04</td>
<td>212.82</td>
<td>1924.08</td>
<td>2136.90</td>
<td>3233.04</td>
<td>7506.84</td>
</tr>
<tr>
<td>2004-05</td>
<td>212.82</td>
<td>1904.45</td>
<td>2136.90</td>
<td>3503.72</td>
<td>7738.26</td>
</tr>
<tr>
<td>2005-06</td>
<td>265.00</td>
<td>2473.87</td>
<td>2738.87</td>
<td>3115.77</td>
<td>8593.51</td>
</tr>
<tr>
<td>2006-07</td>
<td>310.50</td>
<td>3581.12</td>
<td>3891.62</td>
<td>3982.02</td>
<td>11765.26</td>
</tr>
<tr>
<td>2007-08</td>
<td>339.44</td>
<td>5475.15</td>
<td>5814.59</td>
<td>5466.68</td>
<td>17095.86</td>
</tr>
</tbody>
</table>

CAGR (%) | 14.67         | 20.17             | 19.70     | 18.34            | 19.24                  |

Source: Annual Reports of the Cement Companies

The CAGR of equity capital and reserves and surplus for the cement industry in Tamil Nadu during the period of the study was 14.07 percent and 20.17 percent respectively. The total net worth has increased by 19.70 percent during the same period. The share of reserves and surplus in net worth of the cement industry has increased from 88.87 percent in the year 1993-94 to 94.16 percent in the year 2007-08. The borrowed capital for the pooled data has increased from Rs.437.50 crores in the year 1993-94 to Rs.5466.68 crores in the year 2007-08. The percentage of borrowed capital in the total capital employed for the pooled data has declined from 35.85 percent in the year 1993-94 to 31.98 percent in the year 2007-08. The total capital employed for the pooled data during the period of the study has increased from Rs.1220.74 crores in the year 1993-94 to Rs.17095.80 crores in the year 2007-08.
It has been observed that the capital structure of cement industry in Tamil Nadu consists of more owners’ equity than borrowed capital. Moreover, borrowed capital for the cement industry during the period of the study has been considerably declined. This indicated that the companies in cement industry in Tamil Nadu were averse to raising more debt capital due to fear of landing in financial bankruptcy during the lean years of profitability, if any.

4.2.2 Assets Composition of Cement Industry in Tamil Nadu

The assets of the cement industry in Tamil Nadu were taken to reveal the assets composition. The assets were confined to current assets, quick assets, fixed assets and total assets. The assets composition of the cement industry in Tamil Nadu from the year 1993-94 to 2007-08 was shown in the Table 4.11.

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Assets</th>
<th>Quick Assets</th>
<th>Fixed Assets</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>434.15</td>
<td>272.34</td>
<td>528.75</td>
<td>1235.24</td>
</tr>
<tr>
<td>1994-95</td>
<td>484.33</td>
<td>285.14</td>
<td>756.39</td>
<td>1525.86</td>
</tr>
<tr>
<td>1995-96</td>
<td>634.14</td>
<td>376.21</td>
<td>115.75</td>
<td>1126.10</td>
</tr>
<tr>
<td>1996-97</td>
<td>759.72</td>
<td>438.85</td>
<td>1633.87</td>
<td>2832.44</td>
</tr>
<tr>
<td>1997-98</td>
<td>1103.48</td>
<td>724.17</td>
<td>1999.14</td>
<td>3826.79</td>
</tr>
<tr>
<td>1998-99</td>
<td>1268.53</td>
<td>891.90</td>
<td>2453.80</td>
<td>4614.23</td>
</tr>
<tr>
<td>1999-00</td>
<td>1637.09</td>
<td>1200.13</td>
<td>2572.97</td>
<td>5410.19</td>
</tr>
<tr>
<td>2000-01</td>
<td>2006.57</td>
<td>1530.12</td>
<td>2628.91</td>
<td>6165.60</td>
</tr>
<tr>
<td>2001-02</td>
<td>2014.88</td>
<td>1530.34</td>
<td>3018.36</td>
<td>6563.58</td>
</tr>
<tr>
<td>2002-03</td>
<td>1872.03</td>
<td>1452.79</td>
<td>2912.45</td>
<td>6237.27</td>
</tr>
<tr>
<td>2003-04</td>
<td>1938.70</td>
<td>1503.47</td>
<td>3927.80</td>
<td>7369.97</td>
</tr>
<tr>
<td>2004-05</td>
<td>2214.97</td>
<td>1590.48</td>
<td>4010.98</td>
<td>7816.43</td>
</tr>
<tr>
<td>2005-06</td>
<td>2475.63</td>
<td>1869.01</td>
<td>4183.98</td>
<td>8528.62</td>
</tr>
<tr>
<td>2006-07</td>
<td>3225.67</td>
<td>2573.12</td>
<td>5588.48</td>
<td>11387.27</td>
</tr>
<tr>
<td>2007-08</td>
<td>3450.42</td>
<td>3199.31</td>
<td>7187.75</td>
<td>13837.48</td>
</tr>
<tr>
<td>CAGR (%)</td>
<td>14.82</td>
<td>17.85</td>
<td>19.00</td>
<td>17.48</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Cement Companies

The total assets of the cement industry in Tamil Nadu have increased from Rs.1235.24 crores in the year 1993-94 to Rs.13837.48 crores in the year
2007-08. The rate of growth of total assets was 17.48 percent. The proportion of fixed assets to total assets have varied from 42.81 percent in the year 1993-94 to 51.94 percent in the year 2007-08 during the period of the study. The rate of increase in current assets and quick assets during the period of the study were 14.82 percent and 17.85 percent respectively. The proportion of quick assets to current assets has increased from 62.73 percent in the year 1993-94 to 92.72 percent in the year 2007-08. This indicated that the companies in cement industry in Tamil Nadu have made substantial investments in their total assets in order to increase the installed capacity to meet the growing demand of cement.

4.2.3 Sales and Operating Profit of Cement Industry in Tamil Nadu

The sales and operating profits of the cement industry in Tamil Nadu were extracted with the help of related financial facts. The results of the sales and operating profits were shown in Table 4.12.

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales</th>
<th>Operating Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>955.28</td>
<td>193.28</td>
</tr>
<tr>
<td>1994-95</td>
<td>1168.83</td>
<td>296.72</td>
</tr>
<tr>
<td>1995-96</td>
<td>1505.34</td>
<td>434.34</td>
</tr>
<tr>
<td>1996-97</td>
<td>1603.79</td>
<td>460.17</td>
</tr>
<tr>
<td>1997-98</td>
<td>1727.51</td>
<td>492.70</td>
</tr>
<tr>
<td>1998-99</td>
<td>2156.13</td>
<td>597.71</td>
</tr>
<tr>
<td>1999-00</td>
<td>2228.22</td>
<td>580.36</td>
</tr>
<tr>
<td>2000-01</td>
<td>2423.22</td>
<td>642.06</td>
</tr>
<tr>
<td>2001-02</td>
<td>2295.27</td>
<td>602.17</td>
</tr>
<tr>
<td>2002-03</td>
<td>2131.76</td>
<td>312.98</td>
</tr>
<tr>
<td>2003-04</td>
<td>2406.08</td>
<td>460.69</td>
</tr>
<tr>
<td>2004-05</td>
<td>2778.25</td>
<td>550.75</td>
</tr>
<tr>
<td>2005-06</td>
<td>3607.77</td>
<td>774.51</td>
</tr>
<tr>
<td>2006-07</td>
<td>5536.67</td>
<td>1954.10</td>
</tr>
<tr>
<td>2007-08</td>
<td>7453.09</td>
<td>2826.32</td>
</tr>
</tbody>
</table>

**Table 4.12**

Sales and Operating Profit of the Cement Industry in Tamil Nadu

*(Rupees in Crores)*

Source: Annual Reports of the Cement Companies
The sales have increased from Rs.955.28 crores in the year 1993-94 to Rs.7453.09 crores in the year 2007-08, resulting in a net considerable increase of Rs.6497.81 crores. The operating profits during the same period increased from Rs.193.28 crores to Rs.2826.32 crores. The sales for these periods have increased year after year, except for the years 2001-02 and 2002-03. The profits for these years have shown a fluctuating trend, the reason being sluggish in cement demand during these years. The CAGR of sales and operating profit from the years 1993-94 to 2007-08 were 14.68 percent and 19.58 percent respectively. An analysis of sales and operating profits of the cement industry in Tamil Nadu revealed that growing demand for cement has been the driving force for such increase in sales and operating profits during the period of the study.

4.3 Growth Analysis of Cement Industry in Tamil Nadu

The company-wise growth analysis of cement industry in Tamil Nadu was measured through performance variables. Even though the performance variables were many, the present study was confined these variables to net working capital, fixed assets, total capital employed, sales and net profit. The growth of performance of the cement industry were analysed through the computation of Annual Growth Rate (AGR) and Compound Annual Growth Rate (CAGR).

The annual growth rate of performance variables of the cement industry was measured as follows:

\[
\text{Annual Growth Rate} = \frac{X_{t+1} - X_t}{X_t} \times 100
\]

Whereas,

- \(X_t\) - Variables of the previous year
- \(X_{t+1}\) - Variables of the Current year
Compound growth rates of these variables were estimated to ascertain the growth performance of the cement industry in Tamil Nadu. For the purpose of analysis, time series data for the last 15 years from the year 1993-94 to 2007-08 have been used. The figures relating to net working capital, fixed assets, total capital employed, sales and net profit were complied and analysed by fitting exponential trend equation.

The type of function fitted was in the form of $y_t = ab^t$

Whereas,

$y_t$ - The Performance variables

a - Intercept

b - Parameter to be estimated

t - Years

By taking logarithms of the above equation on both sides, the exponential form was reduced to linear form with ‘$y_t$’ as dependent variable and ‘t’ as an independent variable. The transformation was given as follows:

$$y_t = \ln a + \ln b^t$$

The equation was solved with the least square method. The parameter ‘a’ and ‘b’ indicates absolute increase in net working capital, fixed assets, total capital employed and sales and net profit. In order to obtain the compound annual growth rate, it has been felt necessary to take antilog of ‘b’ and subtract one from it. The obtained value was multiplied by 100 in order to get the compound annual growth rate in percentage.

Compound Annual Growth Rate = (Antilog of b-1) × 100
4.3.1 Annual Growth Rate of Performance Variables of Cement Industry in Tamil Nadu

The annual growth rate of the performance variables of cement industry in Tamil Nadu, namely, net working capital, fixed assets, total capital employed, sales and net profit were presented, company-wise, in the Table 4.13.

**Table 4.13**
Annual Growth Rates of Performance Indicators of Cement Industry in Tamil Nadu
*(in Percentage)*

<table>
<thead>
<tr>
<th>Particulars</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Assets</td>
<td>23.43</td>
<td>76.53</td>
<td>23.13</td>
<td>141.87</td>
<td>22.74</td>
</tr>
<tr>
<td>Total Capital Employed</td>
<td>21.94</td>
<td>22.41</td>
<td>22.01</td>
<td>24.85</td>
<td>21.69</td>
</tr>
<tr>
<td>Sales</td>
<td>21.53</td>
<td>19.83</td>
<td>69.08</td>
<td>9.32</td>
<td>20.77</td>
</tr>
<tr>
<td>Net Profit</td>
<td>#</td>
<td>93.92</td>
<td>#</td>
<td>49.33</td>
<td>#</td>
</tr>
</tbody>
</table>

# AGR could not be computed since the data contains non-positive values

**Source:** Annual Reports of the Cement Companies

The annual growth rate in net working capital was noticed higher as 96.14 percent in MCL, followed by DCL. The annual growth rate of net working capital was 22.97 percent for the cement industry in Tamil Nadu due to the prudent use of working capital in the industry. Regarding the growth rate of fixed assets, the MCL stood first (141.87 percent), followed by DCL (76.53 percent), CCCL (23.43 percent) and ICL (23.13 percent). This indicated that MCL has made substantial investments in fixed asset in order to increase its installed capacity and ICL has failed in this count. The annual growth rate of total capital employed in the cement industry was 21.69 percent. MCL occupied the first place in the growth of total capital employed. It was inferred that MCL effectively used the capital employed than the other companies in cement industry in Tamil Nadu. The growth in sales was reported as 69.08 percent in ICL, 21.53 percent in CCCL, 19.83 percent in DCL and 9.32 percent in MCL. This showed that ICL has adopted aggressive
marketing strategies and MCL was poor in adopting effective marketing strategies. The annual growth rate of net profit was 93.92 percent in DCL and 49.33 percent in MCL. It has been inferred that MCL and DCL have been making net profits continuously as compared to others because of effective cost control measures, whereas ICL and DCL were not making net profits continuously due to higher cost of production. It was visible that CCCL and ICL were lagging behind DCL and MCL in utilising the working capital effectively.

4.3.2 Compound Growth Rate of Performance Variables of Cement Industry in Tamil Nadu

The compound growth rate of performance variables of cement industry in Tamil Nadu, namely, net working capital, fixed assets, total capital employed, sales and net profit were presented, company-wise, in the Table 4.14.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Working Capital</td>
<td>3.98</td>
<td>14.05</td>
<td>15.55</td>
<td>17.03</td>
<td>14.79</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>16.71</td>
<td>21.32</td>
<td>18.55</td>
<td>19.15</td>
<td>19.00</td>
</tr>
<tr>
<td>Total Capital Employed</td>
<td>17.37</td>
<td>20.42</td>
<td>18.29</td>
<td>19.67</td>
<td>18.98</td>
</tr>
<tr>
<td>Sales</td>
<td>15.00</td>
<td>17.06</td>
<td>13.37</td>
<td>15.25</td>
<td>14.68</td>
</tr>
<tr>
<td>Net profit</td>
<td>20.42</td>
<td>21.66</td>
<td>36.18</td>
<td>22.37</td>
<td>25.52</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

It was evident from the above table that the compound growth rate of net working capital was higher in MCL (17.03 percent), followed by ICL (15.5 percent), DCL (14.05 percent) and CCCL (3.98 percent). Further, DCL has commended the higher compound growth rate in fixed assets (21.32 percent), total capital employed (20.42 percent) and sales (17.06 percent) as compared to the other companies during the period of the study. The compound growth
rate in net profit was higher in ICL (36.18 percent) during the period of the study. It was inferred from the above analysis that working management of MCL was good. DCL was good at growth rate in fixed assets, efficiency in capital employed and effective sales policies. ICL has commended the higher growth in net profit due to effective cost control measures.

4.4 Analysis of Financial Performance

Financial analysis is a process of evaluating the relationship between various components in order to obtain a better understanding of a company’s position and performance\(^1\). It is the process of identifying the financial strength and weakness of a company by properly establishing the relationship between the items in the balance Sheet and the profit and loss account\(^2\). For analyzing the financial data and interpreting them in a systematic manner, tools, such as comparative financial statements, common size statements, trend analysis, average analysis, ratio analysis and funds flow statements are commonly used. In this section, the financial performance was analyzed with the help of ratio analysis.

4.4.1 Financial Performance of Cement Industry Tamil Nadu

Financial performance is an important factor which influences the finance of an organization. The finance of an organisation, in turn, is influenced by certain factors. Broadly speaking, the costs, revenues and the resultant margins will decide the financial performance. Financial performance is usually judged in terms of profits i.e., the net margin between revenues and costs.

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Ratio analysis is one of the most commonly used tools to evaluate the various aspects of the financial performance of a company. Ratio analysis is a widely used tool of financial analysis. It expresses numerical or quantitative relationship between two items or variables. However, financial ratios, being unique in nature, throw a light on only one aspect at a time and do not reveal the complete picture of the performance.

Ratio analysis is a kind of statistical yardstick which measure the efficiency of a company in relation to the others in the same field. Thus, ratio analysis makes the related information comparable. To the management, ratio analysis is an invaluable guide in the discharge of its basic function of planning, coordination, communication and control. Ratio analysis helps to evaluate the liquidity, activity, solvency and profitability of the companies. Such analysis helps in spotting the reasons behind better or poor performance and in finding out significant deviations from any average or relativity applicable standards.\(^3\)

In order to analyse the financial performance of cement industry in Tamil Nadu, the following financial ratios were computed and analysed with respect to liquidity, activity, capital structure and profitability.

- **Liquidity or Working Capital Performance Ratios**
  - a) Current ratio
  - b) Quick ratio

- **Activity Ratios**
  - a) Inventory turnover ratio
  - b) Age of inventory
  - c) Debtors turnover ratio

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d) Age of debtors

e) Working capital turnover ratio

f) Total assets turnover ratio

g) Fixed assets turnover ratio

➢ Capital Structure Ratios

a) Debt-equity ratio

b) Assets to equity ratio

c) Return on equity

d) Total debts to total assets ratio

➢ Profitability Ratios

a) Net profit margin

b) Return on capital employed

c) Return on total assets.

4.4.2 Analysis of Liquidity or Working Capital Performance

Liquidity or working capital is that proportion of a company’s funds which is employed in short-term operations. Working capital refers to the financial resources being invested in current assets, i.e. investment in raw materials, stock of finished goods, debtors, receivables, cash in hand and cash at bank. This investment in current assets is called the gross working capital. The difference between current assets and current liabilities is called the net working capital.

Working capital management is an integral part of the financial management of an enterprise. The progress of the business depends, to a large extent, on the proper use of working capital. The working capital portion is often considered as an index of the financial health of a particular firm.

The firm can never achieve good operating results if the working capital of a firm is inadequate and not properly managed. Therefore, the working capital should be sufficient enough to enable a firm to conduct its
actions smoothly without any financial stringency in meeting the emergencies, as well as, unpredicted losses and financial disasters. On the other hand, excessive working capital may be unfavourable as in the case of inadequacy of working capital because idle funds earn nothing and often lead to investment in undesirable projects and equipments. In fact, excessive working capital ultimately may lead to carelessness about costs and, therefore, to inefficiency in operations. Hence, proper management of the working capital is most essential in order to ensure that the amount invested in working capital is neither too large nor too small.

Various studies have conducted to explain the importance of working capital management by adopting case study approach. For instance, Indrasena Reddy et.al (1996)\(^4\) has studied the efficiency of working capital management in the public sector undertaking. Mukhopadhyal (2001)\(^5\) has used the operating cycle method to compute the working capital. Muhammed Rafiquil Islam (2000)\(^6\) has focused on the need of proper management of working capital in paper mills in Bangladesh.

Surendra S.Yadav et.al (2001)\(^7\) has conducted a study on the Working Capital Management of Oil Company in India. This study has identified that the object of working capital management is to manage the firm’s current assets and current liabilities, in such a way, that a satisfactory level of working


capital is maintained. He identified that working capital management policies have a great effect on firm’s liquidity and profitability. The company’s liquidity is measured with the help of current assets and current liabilities. The importance of adequate liquidity to meet current / short-term obligations as and when they become due for payment can hardly be overstressed. In fact, liquidity is pre-requisite in the short-term solvency or liquidity of a firm. But liquidity implies from the viewpoint of utilization of the funds of the firms that funds are idle or they earn very little. Hence, maintenance of adequate liquidity without imparting profitability is the foremost requirement of sound and efficient working capital management. Maintenance of adequate liquidity will also depend on the firm’s access to sources of funds with ease which can be tapped in times of need. The two liquidity ratios which were used to compute and analyse the liquidity position of the industry under the study were current ratio and quick ratio.

4.4.2.1 Current Ratio

The current ratio of a company measures its short-term solvency, i.e. the ability of a firm to meet its short-term obligations. As a measure of liquidity, it indicates the rupee value of current assets available for each rupee of current liability / obligation. The higher the current ratio, the greater is the safety of funds for short-term creditors. The following formula was used to calculate current ratio of companies in cement industry in Tamil Nadu.

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

A very high current ratio may be indicative of slack management practices as it might signal excessive inventories for the current requirements
and poor credit management in terms of extended accounts receivables. At the same time, the firm may not be utilising full use of its current borrowing capacity. Although there is no hard and fast rule, conventionally a current ratio of 2:1 is considered satisfactory\(^8\). The current ratio of the cement industry in Tamil Nadu was presented, company-wise, in the Table 4.15.

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>2.80</td>
<td>2.19</td>
<td>2.89</td>
<td>1.94</td>
<td>2.46</td>
</tr>
<tr>
<td>1994-95</td>
<td>2.15</td>
<td>2.08</td>
<td>2.37</td>
<td>1.89</td>
<td>2.12</td>
</tr>
<tr>
<td>1995-96</td>
<td>1.95</td>
<td>3.00</td>
<td>2.14</td>
<td>2.09</td>
<td>2.30</td>
</tr>
<tr>
<td>1996-97</td>
<td>1.75</td>
<td>3.06</td>
<td>2.25</td>
<td>1.98</td>
<td>2.26</td>
</tr>
<tr>
<td>1997-98</td>
<td>1.45</td>
<td>2.99</td>
<td>3.60</td>
<td>2.53</td>
<td>2.64</td>
</tr>
<tr>
<td>1998-99</td>
<td>1.49</td>
<td>3.37</td>
<td>2.96</td>
<td>2.26</td>
<td>2.52</td>
</tr>
<tr>
<td>1999-00</td>
<td>1.63</td>
<td>3.20</td>
<td>3.66</td>
<td>2.29</td>
<td>2.70</td>
</tr>
<tr>
<td>2000-01</td>
<td>2.00</td>
<td>3.28</td>
<td>3.91</td>
<td>2.05</td>
<td>2.81</td>
</tr>
<tr>
<td>2001-02</td>
<td>2.19</td>
<td>3.16</td>
<td>4.53</td>
<td>1.85</td>
<td>2.93</td>
</tr>
<tr>
<td>2002-03</td>
<td>1.76</td>
<td>2.94</td>
<td>2.91</td>
<td>1.85</td>
<td>2.37</td>
</tr>
<tr>
<td>2003-04</td>
<td>1.64</td>
<td>2.89</td>
<td>5.39</td>
<td>1.65</td>
<td>2.89</td>
</tr>
<tr>
<td>2004-05</td>
<td>2.07</td>
<td>2.38</td>
<td>4.26</td>
<td>1.90</td>
<td>2.65</td>
</tr>
<tr>
<td>2005-06</td>
<td>1.67</td>
<td>1.93</td>
<td>3.91</td>
<td>1.43</td>
<td>2.24</td>
</tr>
<tr>
<td>2006-07</td>
<td>1.26</td>
<td>1.35</td>
<td>3.96</td>
<td>1.56</td>
<td>2.03</td>
</tr>
<tr>
<td>2007-08</td>
<td>1.13</td>
<td>1.68</td>
<td>2.19</td>
<td>1.94</td>
<td>1.74</td>
</tr>
</tbody>
</table>

\[ \bar{X} = 1.80 \]

\[ \text{Source: Annual Reports of the Cement Companies} \]

The Current ratio of ICL was better than all other companies throughout the period of study. It was also higher than the pooled average current ratio. The current ratio of ICL has increased from 2.89 times in the year 1993-94 to 3.96 times in the year 2006-07 and then fell down to 2.19 times in the year 2007-08. It was 5.39 times in the year 2003-04 which was considered very high as compared to all the other years under the study. The average current ratio of DCL was 2.63 times which was considered higher

---

than the pooled current ratio. The current ratio was lower than the standard current ratio in DCL between the years 2005-06 and 2007-08. It was high as 3.37 times in DCL in the year 1998-99.

The average current ratio of MCL and CCCL were less than that of pooled average current ratio and were also fallen below the standard current ratio. The higher current ratio reported in MCL and CCCL were 2.29 times in the year 1999-2000 and 2.80 times in the year 1993-94 respectively. The overall situation in current ratio of CCCL, DCL and ICL in the years 2005-06, 2006-07 and 2007-08 were not satisfactory because in these years the current ratio of these companies were fell below the standard current ratio of 2:1.

It indicated that the overall situation regarding the current ratio was better in ICL and DCL and the situation was alarming in CCCL and MCL because the average current ratio of these companies were fallen below the standard current ratio. This showed that ICL and DCL were good at current assets management and CCCL and MCL needs improvement in current assets management as these companies have not adopted effective current assets management programme during the period of the study.

4.4.2.2 Quick Ratio

The quick ratio reflects the quality of current assets. This ratio excludes inventory from the current assets since its nature is slow moving. The term quick assets refers to current assets which can be converted into cash immediately or at short notice without diminution in value and includes cash and bank balances, sundry debtors, loans and advances and other current assets which includes interest accrued on bank deposits. Generally speaking, the quick ratio of 1:1 is considered satisfactory as firm can easily meet all current
The quick ratio is a more rigorous and penetrating test of the liquidity position of a firm. The quick ratio of the cement industry in Tamil Nadu for the period from the years 1993-94 to 2007-08 were presented, company-wise, in the Table 4.16 using the following formula:

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>1.27</td>
<td>1.74</td>
<td>1.69</td>
<td>1.12</td>
<td>1.46</td>
</tr>
<tr>
<td>1994-95</td>
<td>0.93</td>
<td>1.41</td>
<td>1.36</td>
<td>1.13</td>
<td>1.21</td>
</tr>
<tr>
<td>1995-96</td>
<td>0.90</td>
<td>1.88</td>
<td>1.27</td>
<td>1.29</td>
<td>1.34</td>
</tr>
<tr>
<td>1996-97</td>
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<td>1.26</td>
<td>1.27</td>
<td>1.29</td>
</tr>
<tr>
<td>1997-98</td>
<td>0.67</td>
<td>1.55</td>
<td>2.53</td>
<td>1.78</td>
<td>1.63</td>
</tr>
<tr>
<td>1998-99</td>
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<td>1.55</td>
<td>2.32</td>
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<td>1.54</td>
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<td>1999-00</td>
<td>0.74</td>
<td>1.29</td>
<td>3.05</td>
<td>1.50</td>
<td>1.65</td>
</tr>
<tr>
<td>2000-01</td>
<td>1.07</td>
<td>1.18</td>
<td>3.37</td>
<td>1.49</td>
<td>1.78</td>
</tr>
<tr>
<td>2001-02</td>
<td>1.21</td>
<td>1.05</td>
<td>3.91</td>
<td>1.32</td>
<td>1.87</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.83</td>
<td>1.05</td>
<td>2.57</td>
<td>1.30</td>
<td>1.44</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.78</td>
<td>1.16</td>
<td>4.73</td>
<td>1.30</td>
<td>1.99</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.82</td>
<td>1.13</td>
<td>3.63</td>
<td>1.11</td>
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<td>3.36</td>
<td>0.99</td>
<td>1.55</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.81</td>
<td>0.96</td>
<td>3.38</td>
<td>1.23</td>
<td>1.60</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.67</td>
<td>0.94</td>
<td>1.83</td>
<td>1.34</td>
<td>1.20</td>
</tr>
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<td>(\bar{X})</td>
<td>0.86</td>
<td>1.33</td>
<td>2.68</td>
<td>1.32</td>
<td>1.55</td>
</tr>
</tbody>
</table>

**Table 4.16**

Quick Ratio of Cement Industry in Tamil Nadu

((in times))

Source: Annual Reports of the Cement Companies

The average quick ratio of the cement industry in Tamil Nadu for the period from 1993-94 to 2007-08 was 1.55 times which was higher than the standard quick ratio. The average quick ratio of ICL was higher than the pooled average quick ratio. This ratio of ICL has increased from the years 1993-94 to 2006-07 and fell down in the year 2007-08. The average quick ratio of DCL and MCL were less than the pooled average quick ratio. It was

---

1.74 times in the year 1993-94 and 0.94 in the year 2007-08 in DCL. Similarly, it was 1.12 times in the year 1993-94 and 1.34 times in the year 2007-08 in MCL. In CCCL, the average quick ratio was less than pooled average quick ratio and also less than the standard quick ratio. The quick ratio in CCCL was 1.27 times in the year 1993-94 and fell down to 0.67 times in the year 2007-08, except in the year 2000-01 and 2001-02, it was 1.07 times and 1.21 times respectively. The analysis of quick ratio has revealed that ICL, MCL and DCL have commanded a good liquidity position, whereas CCCL was lagging behind in quick assets management due to poor credit collection policies and inability in getting lengthy period for account payables.

### 4.4.3 Variations in Liquidity Ratios of Cement Industry in Tamil Nadu

To examine the short-term solvency of cement industry in Tamil Nadu, the researcher has analysed the current ratio and quick ratio of the companies in cement industry in Tamil Nadu. The variations of these ratios among the cement companies for the period under the study were analysed, by applying one-way ANOVA. The following hypothesis was framed to test the variation in liquidity ratios.

**H₀: There is no significant variation in liquidity ratios of cement industry**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio</td>
<td>Between Groups</td>
<td>24.112</td>
<td>3</td>
<td>8.037</td>
<td>20.104**</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>22.389</td>
<td>56</td>
<td>0.400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>46.500</td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>Between Groups</td>
<td>28.032</td>
<td>3</td>
<td>9.344</td>
<td>28.512**</td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>18.352</td>
<td>56</td>
<td>0.328</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>46.384</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at 1 percent level  
Source: Annual Reports of the Cement Companies
The ANOVA results indicated that F values of liquidity ratios, such as current ratio and quick ratio were 20.104 and 28.512 respectively. The table value at 1 percent level of significance was 4.15. The calculated F value was more than the table value at 1 percent level of significance. Hence, the null hypothesis \( H_0 \) was rejected. So, it was inferred that there was a significant variation in liquidity ratios among the companies in cement industry in Tamil Nadu.

4.5 Analysis of Activity Ratios

Activity ratios, also referred to as turnover ratios or asset management ratios, measure how efficiently the assets are being used by the firm. The important turnover ratios are inventory turnover ratio, debtors turnover ratio, working capital turnover ratio, total assets turnover ratio and fixed assets turnover ratio.

4.5.1 Inventory Turnover Ratio

The inventory turnover ratio throws a light on the inventory policy pursued by any firm and the reasonableness of the same. The higher the ratio, the more efficiently the inventory said to be managed and vice versa. This ratio also helps to determine whether materials and stores are over-purchased, production control is defective and finished goods are slow moving. A high inventory turnover ratio reflects the average time taken between investments in a particular type of inventory and its recovery is shorter and the greater is the profitability of the concern. A low inventory turnover ratio reflects poor business, excessive investments in inventory, mismanagement of inventory etc. The inventory turnover ratio of the cement industry in Tamil Nadu was given, company-wise, in the Table 4.18 using the following formula.
Inventory Turnover Ratio = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}

Table 4.18
Inventory Turnover Ratio of Cement Industry in Tamil Nadu
(in times)

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>4.27</td>
<td>4.88</td>
<td>4.50</td>
<td>6.45</td>
<td>5.03</td>
</tr>
<tr>
<td>1994-95</td>
<td>4.81</td>
<td>4.01</td>
<td>4.65</td>
<td>5.83</td>
<td>4.83</td>
</tr>
<tr>
<td>1995-96</td>
<td>4.86</td>
<td>2.81</td>
<td>4.89</td>
<td>5.26</td>
<td>4.46</td>
</tr>
<tr>
<td>1996-97</td>
<td>3.89</td>
<td>2.77</td>
<td>3.94</td>
<td>5.70</td>
<td>4.08</td>
</tr>
<tr>
<td>1997-98</td>
<td>4.95</td>
<td>2.30</td>
<td>3.49</td>
<td>6.50</td>
<td>4.31</td>
</tr>
<tr>
<td>1998-99</td>
<td>4.73</td>
<td>2.17</td>
<td>5.56</td>
<td>8.56</td>
<td>5.26</td>
</tr>
<tr>
<td>1999-00</td>
<td>4.76</td>
<td>1.94</td>
<td>5.71</td>
<td>5.93</td>
<td>4.59</td>
</tr>
<tr>
<td>2000-01</td>
<td>3.85</td>
<td>1.77</td>
<td>5.71</td>
<td>7.71</td>
<td>4.76</td>
</tr>
<tr>
<td>2001-02</td>
<td>3.74</td>
<td>1.79</td>
<td>4.84</td>
<td>9.17</td>
<td>4.89</td>
</tr>
<tr>
<td>2002-03</td>
<td>5.13</td>
<td>2.36</td>
<td>7.02</td>
<td>7.70</td>
<td>5.55</td>
</tr>
<tr>
<td>2003-04</td>
<td>4.54</td>
<td>1.94</td>
<td>6.59</td>
<td>10.96</td>
<td>6.01</td>
</tr>
<tr>
<td>2004-05</td>
<td>3.58</td>
<td>2.04</td>
<td>5.35</td>
<td>4.70</td>
<td>3.92</td>
</tr>
<tr>
<td>2005-06</td>
<td>3.85</td>
<td>2.27</td>
<td>6.61</td>
<td>8.21</td>
<td>5.24</td>
</tr>
<tr>
<td>2006-07</td>
<td>6.43</td>
<td>3.20</td>
<td>6.68</td>
<td>8.06</td>
<td>6.09</td>
</tr>
<tr>
<td>2007-08</td>
<td>3.62</td>
<td>1.93</td>
<td>5.91</td>
<td>5.36</td>
<td>4.21</td>
</tr>
<tr>
<td>$\bar{X}$</td>
<td>4.47</td>
<td>2.55</td>
<td>5.43</td>
<td>7.07</td>
<td>4.88</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

The inventory turnover ratio for the pooled data of cement industry in Tamil Nadu has fluctuated significantly from the year 1993-94 to 2007-08. It was high in the year 2003-04 and low in the year 2007-08. Among the four companies, MCL had higher inventory turnover ratio during the period of the study. This showed that the company was very efficient in converting the finished goods into sales very often as compared to other. The average inventory turnover ratio of MCL and ICL were 7.07 times and 5.43 times respectively. The average inventory turnover ratio of CCCL and DCL fell below the overall average inventory turnover ratio. DCL was subjected to more fluctuations regarding the inventory turnover ratio. This indicated that in DCL, there was no coordination between production and sales policies.
4.5.2 Age of Inventory

The age of inventory represents the number of days taken by a company to convert the inventory into finished goods or cash on account of sales. It is calculated by the number of days in a year divided by the inventory turnover ratio. A higher age of inventory requires more working capital and also more cost of capital for the inventory period. The higher cost of capital will affect the profitability of the company. The lower age of inventory will lead to easy movement of goods and flow of money. It discloses the efficiency of operating cycle also. The age of the inventory was calculated for the cement industry in Tamil Nadu by using the following formula.

\[
\text{Age of Inventory} = \frac{\text{Number of Days in a Year}}{\text{Average Inventory}}
\]

The resulted age of inventory was presented, company-wise, in the Table 4.19.

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>85</td>
<td>75</td>
<td>81</td>
<td>57</td>
<td>75</td>
</tr>
<tr>
<td>1994-95</td>
<td>76</td>
<td>91</td>
<td>78</td>
<td>63</td>
<td>77</td>
</tr>
<tr>
<td>1995-96</td>
<td>75</td>
<td>130</td>
<td>75</td>
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<td>88</td>
</tr>
<tr>
<td>1996-97</td>
<td>94</td>
<td>132</td>
<td>93</td>
<td>64</td>
<td>96</td>
</tr>
<tr>
<td>1997-98</td>
<td>74</td>
<td>159</td>
<td>105</td>
<td>56</td>
<td>99</td>
</tr>
<tr>
<td>1998-99</td>
<td>77</td>
<td>168</td>
<td>66</td>
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<td>95</td>
<td>206</td>
<td>64</td>
<td>47</td>
<td>103</td>
</tr>
<tr>
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<td>75</td>
<td>40</td>
<td>104</td>
</tr>
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<td>47</td>
<td>81</td>
</tr>
<tr>
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<td>81</td>
<td>189</td>
<td>56</td>
<td>33</td>
<td>90</td>
</tr>
<tr>
<td>2004-05</td>
<td>102</td>
<td>179</td>
<td>68</td>
<td>78</td>
<td>107</td>
</tr>
<tr>
<td>2005-06</td>
<td>95</td>
<td>161</td>
<td>55</td>
<td>44</td>
<td>89</td>
</tr>
<tr>
<td>2006-07</td>
<td>57</td>
<td>114</td>
<td>55</td>
<td>45</td>
<td>68</td>
</tr>
<tr>
<td>2007-08</td>
<td>101</td>
<td>190</td>
<td>62</td>
<td>68</td>
<td>105</td>
</tr>
</tbody>
</table>

| \( \bar{X} \) | 84 | 156 | 70 | 54 | 91 |

Source: Annual Reports of the Cement Companies
The average age of inventory in MCL was 54 days which was comparatively low followed by ICL in which it was 70 days. This revealed that the inventory management of MCL was comparatively good. The age of inventory was comparatively higher in DCL and CCCL with 156 days and 84 days respectively which indicated that DCL and CCCL was struggling to move inventory faster due to poor production and marketing strategies. The average age of inventory for the pooled data has increased from 75 days in the year 1993-94 and 105 days in the year 2007-08. The inventory management was better in ICL as the age of inventory has declined from 81 days in the year 1993-94 to 62 days in the year 2007-08. In DCL, the age of inventory has significantly fluctuated from the year 1993-94 to 2007-08 due to inconsistent policy of inventory management.

4.5.3 Debtors Turnover Ratio

Debtors turnover ratio is also a tool to aid in the analysis of the efficiency of liquidity management. It measures the quality of debtors i.e. the rapidity or slowness of their collectability. The higher ratio reveals that the quality of debtors is good. It implies the prompt payments by debtors. This ratio also shows the efficiency of the credit and collection policies of the company. The lower ratio indicates a very liberal, inefficient credit and collection policy. The debtors turnover ratio shows the relationship between credit sales and debtors of the company. It would have been ideal to take credit sales in the numerator. But due to non-availability of that data, total sales figures have been used. The following formula was used to calculate debtors turnover ratio.

\[
\text{Debtors Turnover Ratio} = \frac{\text{Net Annual Sales}}{\text{Debtors}}
\]
The debtors turnover ratio of the cement industry in Tamil Nadu during the period of the study were shown, company-wise, in the Table 4.20.

**Table 4.20**  
**Debtors Turnover Ratio of Cement Industry in Tamil Nadu**  
* (in times)  

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>12.54</td>
<td>7.88</td>
<td>7.01</td>
<td>39.42</td>
<td>16.71</td>
</tr>
<tr>
<td>1994-95</td>
<td>22.68</td>
<td>10.47</td>
<td>1.52</td>
<td>49.38</td>
<td>21.01</td>
</tr>
<tr>
<td>1995-96</td>
<td>33.39</td>
<td>14.23</td>
<td>22.00</td>
<td>51.56</td>
<td>30.30</td>
</tr>
<tr>
<td>1996-97</td>
<td>34.62</td>
<td>12.68</td>
<td>18.50</td>
<td>46.60</td>
<td>28.10</td>
</tr>
<tr>
<td>1997-98</td>
<td>29.85</td>
<td>11.60</td>
<td>15.32</td>
<td>17.54</td>
<td>18.58</td>
</tr>
<tr>
<td>2000-01</td>
<td>14.19</td>
<td>10.61</td>
<td>7.27</td>
<td>12.01</td>
<td>11.02</td>
</tr>
<tr>
<td>2001-02</td>
<td>9.60</td>
<td>12.90</td>
<td>4.27</td>
<td>14.48</td>
<td>10.31</td>
</tr>
<tr>
<td>2002-03</td>
<td>13.41</td>
<td>16.55</td>
<td>6.83</td>
<td>11.08</td>
<td>11.97</td>
</tr>
<tr>
<td>2003-04</td>
<td>21.58</td>
<td>14.11</td>
<td>7.00</td>
<td>16.30</td>
<td>14.75</td>
</tr>
<tr>
<td>2004-05</td>
<td>22.43</td>
<td>8.69</td>
<td>6.34</td>
<td>16.32</td>
<td>13.45</td>
</tr>
<tr>
<td>2005-06</td>
<td>27.84</td>
<td>9.56</td>
<td>6.41</td>
<td>20.45</td>
<td>16.07</td>
</tr>
<tr>
<td>2006-07</td>
<td>42.69</td>
<td>11.97</td>
<td>8.67</td>
<td>24.08</td>
<td>21.85</td>
</tr>
<tr>
<td>2007-08</td>
<td>62.55</td>
<td>13.97</td>
<td>9.79</td>
<td>32.64</td>
<td>29.74</td>
</tr>
</tbody>
</table>

\[ \bar{X} = 26.79 \quad 11.81 \quad 9.46 \quad 25.25 \quad 18.33 \]

Source: Annual Reports of the Cement Companies

The debtors turnover ratio for the pooled data has increased from 16.71 times in the year 1993-94 to 29.74 times in the year 2007-08. The ratio was subjected to a maximum and minimum of 62.55 times and 4.27 times during the period of the study. The average debtor turnover ratio was better in CCCL, followed by MCL, DCL and ICL. This showed that the credit collection policy of CCCL and MCL were better than DCL and ICL. In CCCL, this ratio was 12.54 times in the year 1993-94 and 62.55 times in the year 2007-08. In DCL, it was 7.88 times in the year 1993-94 and 13.97 times in the year 2007-08. In ICL, it was 7.01 times in the year 1993-94 and 9.79 times in the year 2007-08. In MCL, it was 39.42 times in the year 1993-94 and fell down over the years and it was 32.64 times in the year 2007-08. The credit collection policy of
DCL and ICL were very poor as these companies were not following credit collection policy properly during the period of the study.

4.5.4 Age of Debtors

The age of debtors is a test of speed with which debtors are converted into cash. The debtors turnover ratio is inversely related to the age of debtors. The higher age of debtors indicates lengthy collection period which are due to very liberal and inefficient credit policy. The higher age of debtors incurs high cost of capital, more risk, more requirements of working capital and reduction in profit. The following formula was used to calculate the age of debtors.

\[
\text{Age of Debtors} = \frac{\text{Number of Days in a Year}}{\text{Debtors Turnover Ratio}}
\]

The age of debtors of the cement industry in Tamil Nadu during the period of the study were shown, company-wise, in the Table 4.21.

Table 4.21
Age of Debtors of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
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<td>6</td>
<td>60</td>
<td>32</td>
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<tr>
<td>1995-96</td>
<td>62</td>
<td>24</td>
<td>11</td>
<td>49</td>
<td>37</td>
</tr>
<tr>
<td>1996-97</td>
<td>61</td>
<td>18</td>
<td>9</td>
<td>41</td>
<td>32</td>
</tr>
<tr>
<td>1997-98</td>
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<td>7</td>
<td>13</td>
<td>22</td>
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<tr>
<td>1998-99</td>
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<td>4</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
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<td>2</td>
<td>10</td>
<td>18</td>
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<td>10</td>
</tr>
<tr>
<td>2002-03</td>
<td>18</td>
<td>16</td>
<td>3</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>2003-04</td>
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<td>14</td>
<td>3</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>2004-05</td>
<td>19</td>
<td>7</td>
<td>2</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>2005-06</td>
<td>21</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>2006-07</td>
<td>21</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>2007-08</td>
<td>25</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

\[
\bar{X} = 36 \quad 13 \quad 4 \quad 20 \quad 18
\]

Source: Annual Reports of the Cement Companies
The average collection period for the pooled data for the cement industry in Tamil Nadu has declined from 32 days to 9 days during the period of the study. It indicated that the credit collection policy of the cement industry in Tamil Nadu has been significantly improved. The average collection period in ICL was better, followed by DCL, MCL and CCCL. The age of debtors has fluctuated in CCCL from 40 days in the year 1993-94 to 25 days in the year 2007-08. The age of debtors in ICL fell down significantly during the period of the study. In MCL, it was 60 days in the year 1993-94 and 6 days in the year 2007-08. In DCL, it was 21 days in the year 1993-94 and 3 days in the year 2007-08. The average collection period of ICL was noticed as 4 days, whereas it was higher in CCCL as 36 days during the period of the study.

4.5.5 Working Capital Turnover Ratio

The working capital turnover ratio indicates the efficiency of the firm in utilizing the working capital in business. It is the relationship between the cost of goods sold and the net working capital. This ratio reflects the extent to which a business unit is operating with a small or large amount working capital in relation to its cost of goods sold. A higher ratio indicates more efficient use of working capital in business and vice versa. In the present study, the working capital turnover ratio showed the relationship between the cost of goods sold and net working capital of the cement industry in Tamil Nadu. The following formula was used to calculate the working capital turnover ratio.

\[
\text{Working Capital Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Net Working Capital}}
\]
The calculated working capital turnover ratio of Cement Industry in Tamil Nadu during the period of the study was presented, company-wise, in the Table 4.22.

Table 4.22
Working Capital Turnover Ratio of Cement Industry in Tamil Nadu
(in times)

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>4.41</td>
<td>2.19</td>
<td>3.47</td>
<td>6.70</td>
<td>4.19</td>
</tr>
<tr>
<td>1994-95</td>
<td>6.47</td>
<td>3.13</td>
<td>3.96</td>
<td>6.70</td>
<td>5.07</td>
</tr>
<tr>
<td>1995-96</td>
<td>7.13</td>
<td>2.17</td>
<td>4.50</td>
<td>5.56</td>
<td>4.84</td>
</tr>
<tr>
<td>1996-97</td>
<td>6.69</td>
<td>1.98</td>
<td>3.78</td>
<td>5.56</td>
<td>4.50</td>
</tr>
<tr>
<td>1997-98</td>
<td>10.12</td>
<td>2.04</td>
<td>1.69</td>
<td>3.77</td>
<td>4.41</td>
</tr>
<tr>
<td>1998-99</td>
<td>9.20</td>
<td>1.96</td>
<td>2.11</td>
<td>5.50</td>
<td>4.69</td>
</tr>
<tr>
<td>1999-00</td>
<td>8.16</td>
<td>1.95</td>
<td>1.46</td>
<td>4.41</td>
<td>4.00</td>
</tr>
<tr>
<td>2000-01</td>
<td>4.22</td>
<td>1.93</td>
<td>1.20</td>
<td>4.99</td>
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</tr>
<tr>
<td>2001-02</td>
<td>3.37</td>
<td>2.05</td>
<td>0.93</td>
<td>6.72</td>
<td>3.27</td>
</tr>
<tr>
<td>2002-03</td>
<td>6.39</td>
<td>2.61</td>
<td>0.99</td>
<td>5.81</td>
<td>3.95</td>
</tr>
<tr>
<td>2003-04</td>
<td>7.28</td>
<td>2.07</td>
<td>0.95</td>
<td>7.21</td>
<td>4.38</td>
</tr>
<tr>
<td>2004-05</td>
<td>5.03</td>
<td>2.11</td>
<td>1.11</td>
<td>4.95</td>
<td>3.30</td>
</tr>
<tr>
<td>2005-06</td>
<td>6.73</td>
<td>2.60</td>
<td>1.37</td>
<td>10.26</td>
<td>5.24</td>
</tr>
<tr>
<td>2006-07</td>
<td>16.14</td>
<td>5.61</td>
<td>1.76</td>
<td>7.14</td>
<td>7.67</td>
</tr>
<tr>
<td>2007-08</td>
<td>20.00</td>
<td>3.24</td>
<td>2.61</td>
<td>5.32</td>
<td>7.79</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

The average working capital turnover ratio of the cement industry in Tamil Nadu was found increasing from 4.19 times in the year 1993-94 to 7.79 times in the year 2007-08. It indicated that the inefficiency of the cement industry with regard to the working capital management. This was due to underestimation of the requirement of working capital for the industry. This ratio has ranged from 0.93 times to 20 times during the period of the study which revealed a higher inconsistency regarding the working capital management among the companies in cement industry. In CCCL, it was 4.41 times in the year 1993-94 and 20 times in the year 2007-08. In MCL, it was 6.70 times in the year 1993-94 and 5.32 times in the year 2007-08. In DCL, it was 3.19 times in the year 1993-94 and 3.24 times in the year 2007-08. When comparing the four cement companies, CCCL has performed better regarding
this ratio but this ratio was subjected to high fluctuations in CCCL during the period of the study. CCCL has followed efficient working capital management with respect to sales because of adequate working capital, whereas in DCL, the working capital management with respect to turnover was poor due to poor management of current assets and current liabilities.

4.5.6 Total Assets Turnover Ratio

Total assets turnover ratio is used to measure the efficiency with which assets are employed. In economical sense, it shows the resulted output of the operation for the given level of capital. The following formula was used to calculate the total assets turnover ratio.

\[
\text{Total Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Total Assets}}
\]

The total assets turnover ratio of cement industry in Tamil Nadu was calculated and presented, company-wise, in the Table 4.23.

Table 4.23
Total Assets Turnover Ratio of Cement Industry in Tamil Nadu
(in Times)

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>1.53</td>
<td>0.83</td>
<td>1.13</td>
<td>1.37</td>
<td>1.22</td>
</tr>
<tr>
<td>1994-95</td>
<td>1.47</td>
<td>0.77</td>
<td>1.05</td>
<td>1.12</td>
<td>1.10</td>
</tr>
<tr>
<td>1995-96</td>
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<td>0.78</td>
<td>0.93</td>
<td>0.94</td>
<td>0.91</td>
</tr>
<tr>
<td>1996-97</td>
<td>0.77</td>
<td>0.64</td>
<td>0.72</td>
<td>0.59</td>
<td>0.68</td>
</tr>
<tr>
<td>1997-98</td>
<td>0.67</td>
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<td>0.61</td>
<td>0.60</td>
</tr>
<tr>
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<td>0.62</td>
</tr>
<tr>
<td>1999-00</td>
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<td>0.64</td>
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<td>0.59</td>
</tr>
<tr>
<td>2000-01</td>
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<td>0.54</td>
</tr>
<tr>
<td>2001-02</td>
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</tr>
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<td>2002-03</td>
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<td>0.63</td>
<td>0.47</td>
<td>0.65</td>
<td>0.61</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.92</td>
<td>0.59</td>
<td>0.34</td>
<td>0.77</td>
<td>0.66</td>
</tr>
<tr>
<td>2004-05</td>
<td>1.00</td>
<td>0.53</td>
<td>0.37</td>
<td>0.72</td>
<td>0.66</td>
</tr>
<tr>
<td>2005-06</td>
<td>1.03</td>
<td>0.55</td>
<td>0.50</td>
<td>1.02</td>
<td>0.78</td>
</tr>
<tr>
<td>2006-07</td>
<td>1.47</td>
<td>0.56</td>
<td>0.54</td>
<td>1.18</td>
<td>0.94</td>
</tr>
<tr>
<td>2007-08</td>
<td>1.12</td>
<td>0.54</td>
<td>0.54</td>
<td>0.78</td>
<td>0.76</td>
</tr>
</tbody>
</table>

\[ \bar{X} = 0.92 \quad 0.64 \quad 0.61 \quad 0.82 \quad 0.75 \]

Source: Annual Reports of the Cement Companies
The table indicated that the overall result of this ratio was 1.22 times in the year 1993-94 and 0.76 times in the year 2007-08. Taking all the companies together, the average ratio was 0.75 times which stood less than 1. In CCCL, it fluctuated significantly during period of study. In DCL, this ratio was less than 1 in all the years of the study. The average ratio of total assets turnover was 0.92 times in CCCL, followed by 0.82 times in MCL, 0.64 times in DCL and 0.61 times in ICL. In ICL, this ratio was more than 1 in the years 1993-94 and 1994-95 and less than 1 in the rest of the years under the study.

It was inferred that the total assets during the period of the study were considerably increased, whereas the turnover during the same period has considerably reduced, resulting in inverse relationship between the total assets and turnover. This indicated that the cement industry in Tamil Nadu have utilized their total assets very poorly during the period of the study.

4.5.7 Fixed Assets Turnover Ratio

This ratio measures the efficiency with which fixed assets are employed. A high ratio indicates a high degree of efficiency in fixed assets utilization and a low ratio reflects the inefficient utilisation of the fixed assets. The numerator of this ratio is the cost of goods sold for the period and the denominator is the balance in the net fixed assets accounts at the end of the year. The following formula was used to calculate the fixed assets turnover ratio.

\[
\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Fixed Assets}}
\]

The fixed assets turnover ratio of cement industry in Tamil Nadu was calculated and presented, company-wise, in the table 4.24.
### Table 4.24
Fixed Assets Turnover Ratio of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
<th>Pooled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
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<td>1.59</td>
<td>1.57</td>
<td>1.47</td>
<td>1.64</td>
</tr>
<tr>
<td>1994-95</td>
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<td>0.94</td>
<td>1.50</td>
<td>1.02</td>
<td>1.24</td>
</tr>
<tr>
<td>1995-96</td>
<td>0.90</td>
<td>0.96</td>
<td>1.25</td>
<td>0.85</td>
<td>0.99</td>
</tr>
<tr>
<td>1996-97</td>
<td>0.71</td>
<td>1.07</td>
<td>0.89</td>
<td>0.56</td>
<td>0.81</td>
</tr>
<tr>
<td>1997-98</td>
<td>0.61</td>
<td>0.81</td>
<td>0.82</td>
<td>0.63</td>
<td>0.72</td>
</tr>
<tr>
<td>1998-99</td>
<td>0.58</td>
<td>0.91</td>
<td>0.79</td>
<td>0.68</td>
<td>0.74</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.61</td>
<td>0.97</td>
<td>0.83</td>
<td>0.59</td>
<td>0.75</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.73</td>
<td>1.07</td>
<td>0.89</td>
<td>0.59</td>
<td>0.82</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.41</td>
<td>0.76</td>
<td>0.78</td>
<td>0.61</td>
<td>0.64</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.60</td>
<td>0.90</td>
<td>0.95</td>
<td>0.56</td>
<td>0.75</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.66</td>
<td>0.89</td>
<td>0.47</td>
<td>0.63</td>
<td>0.66</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.81</td>
<td>1.01</td>
<td>0.49</td>
<td>0.63</td>
<td>0.74</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.80</td>
<td>0.69</td>
<td>0.68</td>
<td>0.84</td>
<td>0.75</td>
</tr>
<tr>
<td>2006-07</td>
<td>1.04</td>
<td>0.51</td>
<td>0.59</td>
<td>0.96</td>
<td>0.78</td>
</tr>
<tr>
<td>2007-08</td>
<td>1.22</td>
<td>0.71</td>
<td>0.60</td>
<td>0.68</td>
<td>0.80</td>
</tr>
</tbody>
</table>

**Source:** Annual Reports of the Cement Companies

From the table 4.15, it was seen that the average ratio of this ratio of the companies under the study have varied from 0.75 times (MCL) to 0.92 times (DCL). Regarding the pooled data, the average of this ratio was 0.86 times. In DCL, this ratio was 1.59 times in the year 1993-94 and 0.71 times in the year 2007-08. In CCCL, it was 1.94 times in the year 1993-94 and 1.22 times in the year 2007-08. In ICL, this ratio was 1.57 times in the year 1993-94 and 0.60 times in the year 2007-08. In MCL, it was 1.47 times in the year 1993-94 and 0.68 times in the year 2007-08. In MCL, this ratio was more than 1 in the years 1993-94, 1994-95 and less than 1 in the remaining years under the study. Regarding this ratio, DCL was better as compared to the other companies under the study.
It was revealed from the above analysis that DCL was better in utilising its fixed assets optimally and MCL was comparatively poor in utilising its fixed assets.

4.6 Measure of Overall Liquidity (Mottall’s Ranking Analysis)

An effort has been made to assess the overall liquidity of the cement industry under the study more precisely. The Mottall’s ranking has been used to arrive at more comprehensive measures of liquidity, in which two ratios, namely, current ratio and quick ratio, have been combined in a points score. High values of the above said ratios were ranked from first to fourth, whereas the first rank indicated greater liquidity of the company. The ranking process was made for each year for the above said two ratios under the period of study. Finally, the ultimate rank of the company was calculated year-wise. The statement of ranking of the cement industry in Tamil Nadu according to its liquidity position during the period of the study was shown, company-wise, in the Table 4.25.

<table>
<thead>
<tr>
<th>Name of the Company</th>
<th>Weighted Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>3.70</td>
<td>IV</td>
</tr>
<tr>
<td>DCL</td>
<td>2.17</td>
<td>II</td>
</tr>
<tr>
<td>ICL</td>
<td>1.33</td>
<td>I</td>
</tr>
<tr>
<td>MCL</td>
<td>2.80</td>
<td>III</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

From Table 4.16, it was evident that Mottall’s comprehensive test showed that the liquidity management was very efficient in ICL, followed by DCL, MCL and CCCL.

An effort had been made to assess the overall level of activity management of the companies under the study more precisely by applying the
Mottall’s ranking. This ranking technique had been used to arrive at more comprehensive measure of operational performance in terms of the activities of the cement industry in Tamil Nadu, company-wise, during the period of the study. The activities of operational performance were measured with the help of turnover ratios, such as debtors turnover ratio, fixed assets turnover ratio, total assets turnover ratio, inventory turnover ratio and working capital turnover ratio. These ratios have been combined in a points score. The high values of the above said ratios were ranked from first to fourth, where the first rank indicated the greater operational performance of the company. The ranking process were made, for each year, for the above said turnover ratios under the period of study. Finally, the ultimate rank of the company was calculated year-wise. The statement of ranking of Cement Industry in Tamil Nadu, according to its level of inventory turnover during the period of the study, was shown, company-wise, in the Table 4.26.

### Table 4.26
**Ranking of Inventory Turnover Ratio of Cement Industry in Tamil Nadu**

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1994-95</td>
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<tr>
<td>1995-96</td>
<td>3</td>
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<tr>
<td>1997-98</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1998-99</td>
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<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
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</tr>
<tr>
<td>2000-01</td>
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<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2001-02</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2002-03</td>
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<tr>
<td>2003-04</td>
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<td>2004-05</td>
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<td>2005-06</td>
<td>3</td>
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<td>1</td>
</tr>
<tr>
<td>2006-07</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2007-08</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

| $\bar{X}$ | 2.93 | 3.87 | 2.07 | 1.13 |

**Source:** Annual Reports of the Cement Companies
From the Table 4.26 it was inferred that, in most of the years, the inventory turnover ratio was best in MCL. In the year 2007-08, ICL was placed as first, followed by MCL, CCCL and DCL. Regarding the mean ranking of this ratio, MCL has placed first in inventory management followed by ICL.

The ranking on the debtors turnover ratio of cement industry in Tamil Nadu during the period of the study were presented, company-wise, in Table 4.27.

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
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<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>1994-95</td>
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<tr>
<td>2007-08</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ \bar{X} \] 1.47 3.07 3.73 1.73

Source: Annual Reports of the Cement Companies

From the table 4.27, it was inferred that MCL occupied the first place in debtors turnover ratio since its average ranking of debtors turnover ratio was 1.73, followed by CCCL with 1.47. In DCL, the average ranking of debtors turnover ratio was 3.07 which occupied a third place and ICL occupied the
fourth place with the ratio of 3.73. In MCL, CCCL and DCL, ranking have varied from first to third and in ICL, ranking has varied from third to fourth.

The ranking on working capital has been applied to assess the efficiency of the cement companies in the utilization of working capital in business. The ranking of working capital turnover ratio of cement industry in Tamil Nadu, from the year 1993-94 to 2007-08 were shown, company-wise, in the Table 4.28.

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
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<td>2007-08</td>
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<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Table 4.28**

Ranking of Working Capital Turnover Ratio of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
<td>1</td>
</tr>
<tr>
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</tr>
<tr>
<td>2005-06</td>
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<td>2006-07</td>
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<td>4</td>
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<tr>
<td>2007-08</td>
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<td>3</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Source:** Annual Reports of the Cement Companies

Regarding the mean ranking of working capital turnover ratio among the four cement companies, CCCL has performed better since its average rank during the period of the study was 1.40, followed by MCL with 1.60. The ICL has performed poor throughout the period of the study regarding working capital turnover ratio.
The company-wise ranking on total assets turnover ratio for the cement companies during the period of the study was calculated to analyse the comparative efficiency of the cement industry in Tamil Nadu regarding the total assets management with respect to sales. The resulted rankings were given, company-wise, in the Table 4.29.

Table 4.29
Ranking of Total Assets Turnover Ratio of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
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<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1994-95</td>
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<tr>
<td>1996-97</td>
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</tr>
<tr>
<td>1997-98</td>
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<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1998-99</td>
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<td>2.5</td>
<td>4</td>
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</tr>
<tr>
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<tr>
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<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

The above table showed the level of sales towards the total assets. The rank of total assets turnover ratio was more or less consistent in CCCL because it was ranked mostly as 1 during the period of the study. CCCL has performed better in terms this ranking as compared to all other cement companies under the study.

The company-wise ranking of fixed asset turnover ratio of Cement Industry in Tamil Nadu was presented in the Table 4.30.
Table 4.30

Ranking of Fixed Assets Turnover Ratio of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
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<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1994-95</td>
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<td>2</td>
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<td>2007-08</td>
<td>1</td>
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<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

\[ \bar{X} \]

2.50 1.93 2.37 3.20

Source: Annual Reports of the Cement Companies

From the table 4.30 it was inferred that the effective utilization of fixed assets were seen in DCL as compared to all other cement companies since its mean rank during the period of the study was 1.93. The next two cement companies were ICL and CCCL since their mean ranks were 2.37 and 2.50 respectively. The MCL was placed as last in fixed assets turnover ratio since its average ranking was 3.20 during the period of the study.

The result of Mottall’s test which exhibits the level of activity management of companies in cement industry of Tamil Nadu was given below:

Table 4.31

Average Ranking Scores of Activity Management of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Name of the Company</th>
<th>Weighted Score</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>8.23</td>
<td>IV</td>
</tr>
<tr>
<td>DCL</td>
<td>3.67</td>
<td>I</td>
</tr>
<tr>
<td>ICL</td>
<td>3.70</td>
<td>II</td>
</tr>
<tr>
<td>MCL</td>
<td>7.99</td>
<td>III</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies
The Mottall’s comprehensive test revealed that the activity management was very efficient in DCL, followed by ICL, MCL and CCCL since the average ranking scores are 3.67, 3.70, 7.99 and 8.23 respectively. From the table 4.22 it was concluded that DCL was highly efficient in the activity management during the period of the study.

The nature of activity management for pooled data was also studied with the help of Mottall’s comprehensive test in order to identify the year-wise performance of cement industry in Tamil Nadu. The statement of ranking on activity management during the period of the study was analysed and given in Table 4.32.

<table>
<thead>
<tr>
<th>Year</th>
<th>Inventory Turnover Ratio</th>
<th>Debtors Turnover Ratio</th>
<th>Working Capital Turnover Ratio</th>
<th>Total Assets Turnover Ratio</th>
<th>Fixed Assets Turnover Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1994-95</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1995-96</td>
<td>11</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1996-97</td>
<td>14</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>1997-98</td>
<td>12</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>1998-99</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>10</td>
<td>11.5</td>
</tr>
<tr>
<td>1999-00</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>2000-01</td>
<td>9</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>2001-02</td>
<td>7</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>2002-03</td>
<td>3</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>2003-04</td>
<td>2</td>
<td>10</td>
<td>8</td>
<td>8.5</td>
<td>14</td>
</tr>
<tr>
<td>2004-05</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>8.5</td>
<td>11.5</td>
</tr>
<tr>
<td>2005-06</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>2006-07</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2007-08</td>
<td>13</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

**Source:** Annual Reports of the Cement Companies

The above table showed the ranking of activity performance ratios, such as inventory turnover ratio, debtors turnover ratio, working capital turnover ratio, total assets turnover ratio and fixed assets turnover ratio.
Regarding inventory turnover ratio, the year 2006-07 was placed as first, followed by the year 2003-04, whereas, regarding the debtor turnover ratio, the year 1995-96 was the best year, followed by the year 2007-08. The years 1993-94 and 2007-08 were placed as first with regard to total assets turnover ratio and working capital turnover ratio. The year 1993-94 played the best performance, followed by the year 1994-95 with regard to the fixed assets turnover ratio. The year 2007-08 was better in respect of working capital turnover ratio and debtors turnover ratio, whereas, this year was poor in respect of the inventory turnover ratio, total assets turnover ratio and fixed assets turnover ratio.

The ultimate rank was also calculated from the ranks on several aspects of activity management during the period of the study. The calculated ultimate rank was shown in the Table 4.33.

### Table 4.33

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Ranking Score</th>
<th>Ultimate Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>5.20</td>
<td>12</td>
</tr>
<tr>
<td>1994-95</td>
<td>4.20</td>
<td>14</td>
</tr>
<tr>
<td>1995-96</td>
<td>4.80</td>
<td>13</td>
</tr>
<tr>
<td>1996-97</td>
<td>7.20</td>
<td>9</td>
</tr>
<tr>
<td>1997-98</td>
<td>10.40</td>
<td>5</td>
</tr>
<tr>
<td>1998-99</td>
<td>7.70</td>
<td>8</td>
</tr>
<tr>
<td>1999-00</td>
<td>10.80</td>
<td>4</td>
</tr>
<tr>
<td>2000-01</td>
<td>11.40</td>
<td>3</td>
</tr>
<tr>
<td>2001-02</td>
<td>13.00</td>
<td>1</td>
</tr>
<tr>
<td>2002-03</td>
<td>9.60</td>
<td>6</td>
</tr>
<tr>
<td>2003-04</td>
<td>8.50</td>
<td>7</td>
</tr>
<tr>
<td>2004-05</td>
<td>12.00</td>
<td>2</td>
</tr>
<tr>
<td>2005-06</td>
<td>6.20</td>
<td>10</td>
</tr>
<tr>
<td>2006-07</td>
<td>3.40</td>
<td>15</td>
</tr>
<tr>
<td>2007-08</td>
<td>5.60</td>
<td>11</td>
</tr>
</tbody>
</table>

*Source: Annual Reports of the Cement Companies*
From the table 4.33 it was observed that the activity performance of cement industry in Tamil Nadu was the best in the year 2001-02, followed by the years 2004-05 and 2000-01. The year 2007-08 was ranked as eleventh place. So, it was concluded that, in recent years, the level of activity was not comparatively better than the other periods of study.

Mottall’s comprehensive test ranked the various activity ratios according to company-wise performance and year-wise performance. But to find out how far the ranking is significant and whether there existed a significant difference between the various activity ratios among the four companies, the ratios were individually subjected to Kruskell Wallis one way ANOVA Test. The results were shown in the Table 4.34.

Table 4.34
Analysis of Activity Ratios of Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Company</th>
<th>Mean Rank</th>
<th>H-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory Turnover Ratio</td>
<td>CCCL</td>
<td>26.00</td>
<td>40.92*</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>9.73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>48.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>37.60</td>
<td></td>
</tr>
<tr>
<td>Debtors Turnover Ratio</td>
<td>CCCL</td>
<td>43.67</td>
<td>30.10*</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>22.47</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>41.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>14.60</td>
<td></td>
</tr>
<tr>
<td>Working Capital Turnover Ratio</td>
<td>CCCL</td>
<td>46.97</td>
<td>41.44*</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>18.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>42.63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>13.67</td>
<td></td>
</tr>
<tr>
<td>Total Assets Turnover Ratio</td>
<td>CCCL</td>
<td>39.60</td>
<td>13.35*</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>25.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>37.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>19.40</td>
<td></td>
</tr>
<tr>
<td>Fixed Assets Turnover Ratio</td>
<td>CCCL</td>
<td>29.63</td>
<td>10.24*</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>38.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>24.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>30.97</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 5 percent level

Source: Annual Reports of the Cement Companies
From the table 4.34 it was observed that all the five ratios have significantly varied among the cement companies under the study since H-values of the five ratios were significant at five percent level. This acted as the evidence for the operational performance variations among the companies in cement industry in Tamil Nadu. So, the companies can take these variations as a benchmark for controlling the performance variables.

4.7 Variations in Activity Ratios of Cement Industry in Tamil Nadu

The researcher has analysed the following activity ratios of cement companies in Tamil Nadu to study the variations between them, by applying one-way ANOVA, for the period under the study.

- Current assets to total assets turnover ratio
- Inventory turnover ratio
- Debtors turnover ratio
- Working capital turnover ratio
- Total assets turnover ratio
- Fixed assets turnover ratio

The following hypothesis was framed in this regard

\( H_0: \text{There is no significant variation in activity ratios of cement industry} \)

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>79.924</td>
<td>3</td>
<td>26.641</td>
<td>0.470 #</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1134.015</td>
<td>20</td>
<td>56.701</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1213.940</td>
<td>23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\# Not Significant at 5 percent level

**Source:** Annual Reports of the Cement Companies
The ANOVA results indicated that F value of activity ratios was 0.470 whereas the calculated of the same was 3.10. Since the calculated F value was less than the table value at 5 percent level of significance, the null hypothesis (H₀) was accepted. So, it was inferred that there was no significant variation in activity ratios among the companies in cement industry in Tamil Nadu.

4.7.1 Variations among Activity Ratios in Cement Companies

Though there was no significant variation in activity ratios of the cement industry in Tamil Nadu, the researcher was interested to know the existence of variations in each of the turnover ratios of cement companies. Hence, analysis was done with respect to each turnover ratio of cement companies. In this regard, one-way ANOVA and Tukey HSD procedure in Post Hoc tests were used.

Table – 4.36

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.397</td>
<td>3</td>
<td>0.132</td>
<td>15.235**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>0.487</td>
<td>56</td>
<td>8.691</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.884</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at 1 percent level
Source: Annual Reports of the Cement Companies

The ANOVA results indicated that F value of current assets to total assets turnover ratio was 15.235. The table value at 1 percent level of significance for the same was 4.15. Since the calculated F value was more than the table value at 1 percent level of significance, the null hypothesis (H₀) was rejected. Hence, it was inferred that there was a significant variation in current assets to total assets turnover ratio among the companies in cement industry in Tamil Nadu.
Table - 4.37

Inventory Turnover Ratio

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>161.013</td>
<td>3</td>
<td>53.671</td>
<td>39.266**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>76.544</td>
<td>56</td>
<td>1.367</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>237.556</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at 1 percent level

*Source: Annual Reports of the Cement Companies*

The ANOVA results indicated that F value of inventory turnover ratio was 39.266. The table value of the same at 1 percent level of significance was 4.15. The calculated F value was more than the table value at 1 percent level of significance. Hence, the null hypothesis (H₀) was rejected. So, it was inferred that there was a significant variation in inventory turnover ratio among the companies in cement industry in Tamil Nadu.

Table – 4.38

Debtors Turnover Ratio

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3611.783</td>
<td>3</td>
<td>1203.928</td>
<td>11.139**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6052.688</td>
<td>56</td>
<td>108.084</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9664.471</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at 1 percent level

*Source: Annual Reports of the Cement Companies*

The ANOVA results indicated that F value of debtors turnover ratio was 11.139 which was more than the table value of 4.15 at 1 percent level of significance. Since the calculated F value was more than the table value at 1 percent level of significance, the null hypothesis (H₀) was rejected. So, it was inferred that there was a significant variation in debtors turnover ratio among the companies in cement industry in Tamil Nadu.
Table - 4.39
Multiple Comparisons among Debtors Turnover Ratio

<table>
<thead>
<tr>
<th>Company</th>
<th>Company</th>
<th>Mean Difference</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>DCL</td>
<td>14.980</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>17.335</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>1.537</td>
<td>3.796</td>
</tr>
<tr>
<td>DCL</td>
<td>CCCL</td>
<td>-14.980</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>2.354</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-13.443</td>
<td>3.796</td>
</tr>
<tr>
<td>ICL</td>
<td>CCCL</td>
<td>-1.537</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>13.443</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>15.798</td>
<td>3.796</td>
</tr>
<tr>
<td>MCL</td>
<td>CCCL</td>
<td>-17.335</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>-2.354</td>
<td>3.796</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-15.798</td>
<td>3.796</td>
</tr>
</tbody>
</table>

Dependent Variable: Current Assets
*Significant at 5 percent level

Source: Annual Reports of the Cement Companies

The above table indicated that the mean differences in debtors turnover ratio of CCCL with DCL, CCCL with MCL, DCL with ICL and ICL with MCL were 14.980, 17.335, 13.443 and 15.798 respectively. These values were significant at 5 percent level for the companies in cement industry in Tamil Nadu. So, it was inferred that there was a significant variation in debtors turnover ratio of CCCL with DCL and MCL, and ICL with DCL and MCL.

Table - 4.40
Working Capital Turnover Ratio

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>370.610</td>
<td>3</td>
<td>123.537</td>
<td>19.760**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>350.108</td>
<td>56</td>
<td>6.252</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>720.719</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Significant at 1 percent level

Source: Annual Reports of the Cement Companies

The ANOVA results indicated that F value of working capital turnover ratio was 19.760. Its table value was 4.15 at 1 percent level of significance. The calculated value was more than the table value at 1 percent level of significance. Hence, the null hypothesis (H₀) was rejected. So, it was inferred...
that there was a significant variation in working capital turnover ratio among the companies in cement industry in Tamil Nadu.

**Table - 4.41**

<table>
<thead>
<tr>
<th>Company</th>
<th>Company</th>
<th>Mean Difference</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>DCL</td>
<td>5.580*</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>5.963*</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>2.049</td>
<td>.913</td>
</tr>
<tr>
<td>DCL</td>
<td>CCCL</td>
<td>-5.580*</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>0.383</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-3.530*</td>
<td>.913</td>
</tr>
<tr>
<td>ICL</td>
<td>CCCL</td>
<td>-2.049</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>3.530*</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>3.914*</td>
<td>.913</td>
</tr>
<tr>
<td>MCL</td>
<td>CCCL</td>
<td>-5.963*</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>-0.383</td>
<td>.913</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-3.914</td>
<td>.913</td>
</tr>
</tbody>
</table>

*Significant at 5 percent level
Dependent Variable: Current Assets

**Source:** Annual Reports of the Cement Companies

The above table indicated that the mean difference in working capital turnover ratio of CCCL with DCL, CCCL with MCL, DCL with ICL and ICL with MCL were 5.580, 5.963, 3.590 and 3.914 respectively. These values were significant at 5 percent level for the companies in cement industry in Tamil Nadu. So, it was inferred that there was a significant variation in working capital turnover ratio of CCCL with DCL and MCL, and ICL with DCL and MCL.

**Table – 4.42**

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.994</td>
<td>3</td>
<td>0.331</td>
<td>5.112**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>3.629</td>
<td>56</td>
<td>6.480</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.623</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at 1 percent level
Source:** Annual Reports of the Cement Companies

The ANOVA results indicated that F value of total assets turnover ratio was 5.112 whereas the calculated of the same at 1 percent level of significance
was 4.15. Since the calculated F value was more than the table value at 1 percent level of significance, the null hypothesis (H₀) was rejected. Hence, it was inferred that there was a significant variation in total assets turnover ratio among the companies in cement industry in Tamil Nadu.

Table - 4.43

Multiple Comparisons among Total Assets Turnover Ratio

<table>
<thead>
<tr>
<th>Company</th>
<th>Company</th>
<th>Mean Difference</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>DCL</td>
<td>0.283*</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>0.312*</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>0.104</td>
<td>9.295</td>
</tr>
<tr>
<td>DCL</td>
<td>CCCL</td>
<td>-0.283*</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>2.933</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-0.178</td>
<td>9.295</td>
</tr>
<tr>
<td>ICL</td>
<td>CCCL</td>
<td>-0.104</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>0.178</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>MCL</td>
<td>0.208</td>
<td>9.295</td>
</tr>
<tr>
<td>MCL</td>
<td>CCCL</td>
<td>-0.312*</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>DCL</td>
<td>-2.933</td>
<td>9.295</td>
</tr>
<tr>
<td></td>
<td>ICL</td>
<td>-0.208</td>
<td>9.295</td>
</tr>
</tbody>
</table>

* Significant at 5 percent level
Dependent Variable: Current Assets

**Source:** Annual Reports of the Cement Companies

The above table indicated that the mean difference in total assets turnover ratio of CCCL with DCL and CCCL with MCL were 0.283 and 0.312 respectively. These values were significant at 5 percent level for the companies in cement industry in Tamil Nadu. So, it was concluded that there was a significant variation existed in total assets turnover ratio of CCCL with DCL and MCL.

Table - 4.44

Fixed Assets Turnover Ratio

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.228</td>
<td>3</td>
<td>7.599</td>
<td>0.773*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5.504</td>
<td>56</td>
<td>9.829</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5.732</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not Significant

**Source:** Annual Reports of the Cement Companies
The ANOVA results indicated that F value of fixed assets turnover ratio was 0.773. The table value at 5 percent level of significance for the same was 2.77. Since the calculated F value was less than the table value at 5 percent level of significance, the null hypothesis \((H_0)\) was accepted. So, it was inferred that there was no significant variation in fixed assets turnover ratio among the companies in cement industry in Tamil Nadu.

4.8 Analysis of Capital Structure Ratios

Capital structure is the mix of financial instruments, such as debt and equity that are used to finance the assets of the company. Capital structure decision assumes vital importance in corporate financial management due to their influence on both return and risk of shareholders. The close nexus between optimum / judicious use of debt and the market value of the firm is well recognized in literature. An excessive use of debt may endanger the very survival of corporate firm. A conservative policy may deprive the corporate firm of its advantages in terms of magnifying the rate of return on its equity owners.

In the last two decades, a number of theories have been developed to explain the variations in the debt-equity ratio among the firms. There were two extreme thought on optimal capital structure. One school of thought, propounded by Modigliani and Miller (1958)\(^{10}\), contented that the capital structure decisions were irrelevant to the valuation of the firm under certain assumptions. The other school associated with Ezra Solomon and Pringle J.J. (1978)\(^{11}\) held the view that the capital structure decisions were relevant


decisions and that optimal capital structure could help the firm to reduce its the overall cost of capital and thereby increasing the value of the firm. The crucial problem faced by the firms, while raising funds is whether to raise debt or equity. There has been an inconclusive debate on the use of association between financing decision and the valuation of firm. Both theories of capital structure decisions and empirical studies conducted so far have given contradictory results.

The study on capital structure and capital structure management indicates the debt-equity finance in the firm which helps to analyse the financial performance of the firm. If the capital structure is optimally managed, the financial performance of the firm is good and vice versa.

The study of capital structure and its determinants were based on some reviews. Chudon (1965)\textsuperscript{12} observed that there is direct evidence on the companies with high proportion of fixed assets tending to raise more long-term debts. Baxter (1967)\textsuperscript{13} has concluded that the financial leverage of the firm depends on the variations of its net operating earnings.

Bray (1967)\textsuperscript{14} has reported that risky firms are more likely to have lower debt-equity ratio. Gupta (1969)\textsuperscript{15} has proposed that debt-equity ratio was positively related to the growth and negatively related to size. Myers

(1984)\textsuperscript{16} has suggested that firms prefer retained earnings to debt and prefer debt to new equity. Barelay and Smith (1995)\textsuperscript{17} have indicated that firm's optional debt is a decreasing function of the vitality in its earnings. Feri and Jones (1979)\textsuperscript{18}, Marsh (1982)\textsuperscript{19}, Pandey (1985)\textsuperscript{20}, Mathew (1991)\textsuperscript{21} and many other scholars have brought out the different determinants of capital structure.

Capitalization ratio is also known as financial leverage or gearing ratio. It provides information about the Source of capital to the company. The leverage is used to indicate the impact of debt financing on the earnings of the company or earnings of the equity share holders. If the income generated by investment in assets is greater than the cost of debt, the equity holders will stand to benefit from debt financing.

The leverage ratio reflects the capacity of a business concern to assure long-term creditors as to the periodic payment of interest during the period of the loan, as well as, repayment of principal amount on maturity. The capitalization ratios discussed in present study were debt-equity ratio, assets to equity ratio and total assets ratio.

\begin{footnotesize}
\begin{enumerate}
\end{enumerate}
\end{footnotesize}
4.8.1 Debt-Equity Ratio

The debt-equity ratio indicates the relationship between the debt and equity capital of the company. The lesser ratio indicates the lesser leverage and also lesser financial risk for the company. It reveals the equity base of the company. The increase in debt-equity ratio increases the financial leverage and financial risk for the company. The capital structure of the company is properly managed in order to trade off between risk and return for the equity shareholders. In the present study, the debt capital has indicated the long-term debts, while the equity represents the net worth of the cement industry in Tamil Nadu. The following formula was used to calculate debt-equity ratio:

$$\text{Debt Equity Ratio} = \frac{\text{Long-term Debts}}{\text{Equity}}$$

The debt-equity ratio of cement industry in Tamil Nadu was presented, company-wise, in the Table 4.45.

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>1.03</td>
<td>0.63</td>
<td>1.55</td>
<td>0.93</td>
</tr>
<tr>
<td>1994-95</td>
<td>0.90</td>
<td>0.81</td>
<td>0.57</td>
<td>0.92</td>
</tr>
<tr>
<td>1995-96</td>
<td>1.41</td>
<td>0.75</td>
<td>0.79</td>
<td>0.87</td>
</tr>
<tr>
<td>1996-97</td>
<td>1.71</td>
<td>1.19</td>
<td>1.10</td>
<td>1.45</td>
</tr>
<tr>
<td>1997-98</td>
<td>1.98</td>
<td>1.16</td>
<td>2.11</td>
<td>1.56</td>
</tr>
<tr>
<td>1998-99</td>
<td>1.78</td>
<td>1.10</td>
<td>2.04</td>
<td>1.28</td>
</tr>
<tr>
<td>1999-00</td>
<td>1.60</td>
<td>1.12</td>
<td>2.03</td>
<td>1.50</td>
</tr>
<tr>
<td>2000-01</td>
<td>1.75</td>
<td>1.02</td>
<td>2.24</td>
<td>1.79</td>
</tr>
<tr>
<td>2001-02</td>
<td>3.54</td>
<td>0.81</td>
<td>2.89</td>
<td>2.78</td>
</tr>
<tr>
<td>2002-03</td>
<td>2.52</td>
<td>0.81</td>
<td>4.25</td>
<td>2.62</td>
</tr>
<tr>
<td>2003-04</td>
<td>2.17</td>
<td>0.81</td>
<td>1.50</td>
<td>2.10</td>
</tr>
<tr>
<td>2004-05</td>
<td>2.22</td>
<td>1.39</td>
<td>1.56</td>
<td>2.06</td>
</tr>
<tr>
<td>2005-06</td>
<td>1.75</td>
<td>1.60</td>
<td>0.88</td>
<td>1.53</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.88</td>
<td>1.35</td>
<td>0.93</td>
<td>1.02</td>
</tr>
<tr>
<td>2007-08</td>
<td>1.11</td>
<td>1.38</td>
<td>0.55</td>
<td>1.71</td>
</tr>
</tbody>
</table>

$\overline{X}$ 1.76 1.06 1.67 1.61

**Source:** Annual Reports of the Cement Companies
Table 4.45 exhibited that the equity base of DCL was better as compared to debt capital rather than other companies under the study. In DCL, the debt-equity ratio was found increasing from 0.63 times in the year 1993-94 to 1.06 times in the year 2007-08. The higher debt equity ratio was noticed in CCCL since the average of the ratio was 1.76 times. In CCCL, the ratio was ranging from 1.08 times in the year 1993-94 to 1.76 times in the year 2007-08. In ICL, this ratio was 1.55 times in the year 1993-94 and has declined to 0.55 times in the year 2007-08. In MCL, this ratio was 0.93 times in the year 1993-94, fluctuated in the years of study and finally ended at 1.71 times in the year 2007-08. The analysis revealed that CCCL faced more financial risks than the other companies during the period of the study.

4.8.2 Variations in Debt-Equity Ratio of Cement Industry in Tamil Nadu

The researcher was interested to know the variations of debt-equity ratio existed among the companies in cement industry. Hence, to study the variations of debt-equity ratio, one-way ANOVA was used. The following hypothesis was framed in this regard.

\[ H_0: \text{There is no significant variation in Debt-equity ratio of cement industry} \]

**Table 4.46**

Variations in Debt-Equity Ratio

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>d.f</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3611.783</td>
<td>3</td>
<td>1203.928</td>
<td>11.139**</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6052.688</td>
<td>20</td>
<td>108.084</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9664.471</td>
<td>23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at 1 percent level**

Source: Annual Reports of the Cement Companies
The ANOVA results indicated that F value of debt-equity ratio was 11.139 whereas its table value at 1 percent level of significance was 4.94. Since the calculated F value was more than the table value at 1 percent level of significance, the null hypothesis ($H_0$) was rejected. So, it was inferred that there was a significant variation in debt-equity ratio among the companies in cement industry in Tamil Nadu.

### 4.8.3 Assets to Equity Ratio

This ratio determines the proportion of the assets of the firm financed by its owners. A company, with high ratio of assets to equity, finance a high proportion of its assets with equity and therefore lowly levered and vice-versa. If the ratio is 100 percent, the company is totally financed by its owners. This ratio was calculated for the cement industry in Tamil Nadu with the help of the following formula:

$$\frac{\text{Total Assets}}{\text{Total Shareholders' Equity}}$$

The total assets consist of the sum of fixed assets and current assets. The total shareholders’ equity consisted of share capital, reserves and surplus and retained earnings.

The calculated ratio of assets to equity of the cement industry in Tamil Nadu from the years 1993-94 to 2007-08 were shown, company-wise, in the Table 4.47.
Table 4.47
Assets to Equity Ratio

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>2.03</td>
<td>1.63</td>
<td>2.53</td>
<td>1.93</td>
</tr>
<tr>
<td>1994-95</td>
<td>1.90</td>
<td>1.81</td>
<td>1.56</td>
<td>1.92</td>
</tr>
<tr>
<td>1995-96</td>
<td>2.41</td>
<td>1.75</td>
<td>1.76</td>
<td>1.87</td>
</tr>
<tr>
<td>1996-97</td>
<td>2.71</td>
<td>2.19</td>
<td>2.05</td>
<td>2.45</td>
</tr>
<tr>
<td>1997-98</td>
<td>2.98</td>
<td>2.16</td>
<td>3.11</td>
<td>2.56</td>
</tr>
<tr>
<td>1998-99</td>
<td>2.78</td>
<td>2.09</td>
<td>2.96</td>
<td>2.28</td>
</tr>
<tr>
<td>1999-00</td>
<td>2.60</td>
<td>2.11</td>
<td>2.96</td>
<td>2.50</td>
</tr>
<tr>
<td>2000-01</td>
<td>2.75</td>
<td>2.02</td>
<td>3.19</td>
<td>2.79</td>
</tr>
<tr>
<td>2001-02</td>
<td>4.46</td>
<td>1.80</td>
<td>3.59</td>
<td>3.77</td>
</tr>
<tr>
<td>2002-03</td>
<td>3.04</td>
<td>1.80</td>
<td>4.33</td>
<td>3.60</td>
</tr>
<tr>
<td>2003-04</td>
<td>2.67</td>
<td>1.79</td>
<td>2.18</td>
<td>3.08</td>
</tr>
<tr>
<td>2004-05</td>
<td>2.89</td>
<td>2.38</td>
<td>2.43</td>
<td>3.05</td>
</tr>
<tr>
<td>2005-06</td>
<td>2.71</td>
<td>2.41</td>
<td>1.77</td>
<td>2.51</td>
</tr>
<tr>
<td>2006-07</td>
<td>1.87</td>
<td>2.34</td>
<td>1.90</td>
<td>2.00</td>
</tr>
<tr>
<td>2007-08</td>
<td>2.11</td>
<td>2.35</td>
<td>1.54</td>
<td>2.70</td>
</tr>
</tbody>
</table>

\[ \bar{X} \quad 2.66 \quad 2.04 \quad 2.52 \quad 2.60 \]

Source: Annual Reports of the Cement Companies

The owners’ contribution in CCCL was found increasing from 2.03 times in the year 1993-94 to 2.11 times in the year 2007-08, whereas in DCL, the owners’ contribution has varied from 1.63 times in the year 1993-94 to 2.35 times in the year 2007-08. In ICL, the shareholders’ contribution to total assets was found declining from 2.53 times in the year 1993-94 to 1.54 times in the year 2007-08, whereas it was found increasing from 1.93 times in the year 1993-94 to 2.70 times in the year 2007-08 in MCL. The analysis have revealed that the contribution made by shareholders was found gradually increasing in cement industry in Tamil Nadu during the period of the study.

It was concluded that the assets of CCCL was funded mostly by shareholders’ as the company was averse to risk-taking, whereas in DCL, the assets were funded comparatively by creditors as the company was subjected to risk-taking.
4.8.4 Return on Equity

Return on Equity measures the profitability of ownership funds invested in the business or the return that shareholders earn at the book value of their investment in the company. It is an indication of the company’s profitability because it shows how well the company is doing with the investment contributed by its owners. It is calculated by the net income to average total equity.

\[
\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Total Equity}}
\]

The relationship between return on equity and return on assets can be understood in terms of the company’s relationship with its creditors and shareholders. The creditors and shareholders’ provide the capital needed for the business. In return, they expect to be rewarded with their company’s profits. Average total equity is the sum of the total shareholder’s equity at the beginning and at the end of the period of study.

The calculated ratio of return on equity of the cement industry in Tamil Nadu from the years 1993-94 to 2007-08 were shown, company-wise, in the Table 4.48.

The return on equity in MCL was 22 percent in the year 1993-94 and increased to 43 percent in the year 2007-08. In CCCL, the return was 27 percent in the year 1993-94 and declined to 10 percent in the year 2000-01, resulted in negative returns in the years 2001-02, 2002-03 and finally ended with the return of 42 percent in the year 2007-08. In DCL, the return was 12 percent in the year 1993-94 and it reached to 21 percent in the year 2007-08. In ICL, the average return on equity ratio was 30 percent and the return has fluctuated very rapidly during the period of the study.
Table 4.48
Return on Equity Ratio of Cement Industry in Tamil Nadu
(in times)

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>0.27</td>
<td>0.12</td>
<td>0.04</td>
<td>0.22</td>
</tr>
<tr>
<td>1994-95</td>
<td>0.37</td>
<td>0.23</td>
<td>0.14</td>
<td>0.38</td>
</tr>
<tr>
<td>1995-96</td>
<td>0.39</td>
<td>0.22</td>
<td>0.19</td>
<td>0.41</td>
</tr>
<tr>
<td>1996-97</td>
<td>0.21</td>
<td>0.16</td>
<td>0.17</td>
<td>0.27</td>
</tr>
<tr>
<td>1997-98</td>
<td>0.11</td>
<td>0.13</td>
<td>0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>1998-99</td>
<td>0.09</td>
<td>0.08</td>
<td>0.08</td>
<td>0.12</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.06</td>
<td>0.08</td>
<td>0.05</td>
<td>0.10</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.10</td>
<td>0.09</td>
<td>0.06</td>
<td>0.12</td>
</tr>
<tr>
<td>2001-02</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.19</td>
<td>0.10</td>
</tr>
<tr>
<td>2002-03</td>
<td>-0.06</td>
<td>0.03</td>
<td>-0.48</td>
<td>0.05</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.11</td>
<td>0.04</td>
<td>-0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.19</td>
<td>0.08</td>
<td>-0.05</td>
<td>0.17</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.23</td>
<td>0.09</td>
<td>0.02</td>
<td>0.20</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.44</td>
<td>0.18</td>
<td>0.21</td>
<td>0.46</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.42</td>
<td>0.21</td>
<td>0.20</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Source: Annual Reports of the Cement Companies

It was seen from the above table that MCL and CCCL have utilised the shareholders’ funds very effectively than DCL. In ICL, the utilisation of shareholders' funds was very poor due to the investment made by the company in less viable business opportunities.

4.8.5 Total Debts to Total Assets Ratio

It shows the percentage of the company’s assets financed by debt. The higher the percentage, the greater is the risk and the company will be unable to meet its obligations as and when due. The following formula was used to calculate the total debts to total assets ratio.

\[
\text{Total Debts to Total Assets Ratio} = \frac{\text{Total Debts}}{\text{Total Assets}}
\]
The calculated total debts to total assets ratio of Cement Industry in Tamil Nadu from 1993-94 to 2007-08 were shown, company-wise, in the Table 4.49.

Table 4.49
Total Debts to Total Assets Ratio of the Cement Industry in Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>CCCL</th>
<th>DCL</th>
<th>ICL</th>
<th>MCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>0.51</td>
<td>0.39</td>
<td>0.61</td>
<td>0.48</td>
</tr>
<tr>
<td>1994-95</td>
<td>0.47</td>
<td>0.45</td>
<td>0.37</td>
<td>0.48</td>
</tr>
<tr>
<td>1995-96</td>
<td>0.58</td>
<td>0.43</td>
<td>0.45</td>
<td>0.47</td>
</tr>
<tr>
<td>1996-97</td>
<td>0.63</td>
<td>0.54</td>
<td>0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>1997-98</td>
<td>0.66</td>
<td>0.54</td>
<td>0.68</td>
<td>0.61</td>
</tr>
<tr>
<td>1998-99</td>
<td>0.64</td>
<td>0.53</td>
<td>0.69</td>
<td>0.56</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.62</td>
<td>0.53</td>
<td>0.69</td>
<td>0.60</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.64</td>
<td>0.51</td>
<td>0.70</td>
<td>0.64</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.79</td>
<td>0.45</td>
<td>0.80</td>
<td>0.74</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.83</td>
<td>0.45</td>
<td>0.98</td>
<td>0.73</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.81</td>
<td>0.45</td>
<td>0.69</td>
<td>0.68</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.77</td>
<td>0.58</td>
<td>0.64</td>
<td>0.68</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.64</td>
<td>0.66</td>
<td>0.50</td>
<td>0.61</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.47</td>
<td>0.58</td>
<td>0.49</td>
<td>0.51</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.53</td>
<td>0.59</td>
<td>0.35</td>
<td>0.64</td>
</tr>
</tbody>
</table>

\[ \bar{X} = 0.64 \quad 0.51 \quad 0.61 \quad 0.60 \]

Source: Annual Reports of the Cement Companies

From the above table, it was evident that the total assets of the cement companies were contributed by the creditors of the company. In CCCL, this ratio has ranged from 51 percent in the year 1993-94 to 53 percent in the year 2007-08. In DCL, it has ranged from 39 percent in the year 1993-94 to 59 percent in the year 2007-08. In ICL, it has ranged from 61 percent in the year 1993-94 and has declined to 35 percent in the year 2007-08. In MCL, the ratio of total debts to total assets was 48 percent in the year 1993-94 and increased to 64 percent in the year 2007-08. The average ratio was more in the case of CCCL, followed by ICL, MCL and DCL respectively.
4.9 Analysis of Profitability

Profit is the net income accruing to the owner of a business, after all the costs have accounted for. The prime aim of any business organization is to make profit. It measures the effectiveness and soundness of a business and is a final test of performance.

The profitability ratios are intended to measure the operating efficiency of an enterprise. Sales and profits are inter-linked. Increased sales yield higher profits. Hence, one of the ways to ascertain the operational efficiency is to express the profit in terms of sales. The optimum utilization of the available resources leads to increase in profits. An inter-firm comparison in the industry helps in determining the firm’s profit, fairly and accurately, in relation to others in the same trade. The important ratios used in the analysis of profitability in this study were gross profit ratio, net profit ratio and return on investment.

The profit can be compared with the sales, total capital employed, total assets and net worth of the company. The ratio between the profits and sales is named as net profit margin. The return on capital employed represents the relationship between the net profit and the total capital employed. The ratio between the net profit and the total assets represent return on net worth. In the present study, the above said four ratios were calculated to evaluate the performance of the company and to compare the operational performance of one company with another in cement industry in Tamil Nadu.

The profitability ratios were calculated with the help of the following formulae:
Net Profit Margin = \frac{Net\ Profit\ After\ Interest\ and\ Tax}{Net\ Sales} \times 100

\text{Return\ on\ Capital\ Employed} = \frac{Net\ Profit\ Before\ Interest\ and\ Tax}{Total\ Capital\ Employed} \times 100

\text{Return\ on\ Total\ Assets} = \frac{Net\ Profit\ Before\ Interest\ and\ Tax}{Total\ Assets} \times 100

\text{Return\ on\ Net\ Worth} = \frac{Net\ Profit\ After\ Interest\ and\ Tax}{Net\ worth} \times 100

4.9.1 Profitability Ratios in CCCL

The profitability of the CCCL was evaluated with the help of four profitability ratios, such as net profit margin, return on capital employed, return on total assets and return on net worth of the company. The above said ratios were calculated from the years 1993-94 to 2007-08 and shown in the Table 4.50.

Table 4.50
Profitability Ratios of CCCL
(In Percentage)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Profit Margin</th>
<th>Return on Capital Employed</th>
<th>Return on Total Assets</th>
<th>Return on Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>8.83</td>
<td>38.13</td>
<td>13.47</td>
<td>29.58</td>
</tr>
<tr>
<td>1994-95</td>
<td>13.24</td>
<td>38.45</td>
<td>19.41</td>
<td>36.79</td>
</tr>
<tr>
<td>1995-96</td>
<td>15.91</td>
<td>31.81</td>
<td>15.99</td>
<td>38.51</td>
</tr>
<tr>
<td>1996-97</td>
<td>10.29</td>
<td>25.70</td>
<td>7.90</td>
<td>21.45</td>
</tr>
<tr>
<td>1997-98</td>
<td>5.62</td>
<td>19.73</td>
<td>3.75</td>
<td>11.16</td>
</tr>
<tr>
<td>1998-99</td>
<td>5.00</td>
<td>18.87</td>
<td>3.12</td>
<td>8.67</td>
</tr>
<tr>
<td>1999-00</td>
<td>3.23</td>
<td>20.55</td>
<td>2.12</td>
<td>5.50</td>
</tr>
<tr>
<td>2000-01</td>
<td>8.60</td>
<td>12.12</td>
<td>3.61</td>
<td>-9.95</td>
</tr>
<tr>
<td>2001-02</td>
<td>-5.74</td>
<td>11.08</td>
<td>-2.54</td>
<td>-11.33</td>
</tr>
<tr>
<td>2002-03</td>
<td>-2.71</td>
<td>13.23</td>
<td>-1.89</td>
<td>-5.75</td>
</tr>
<tr>
<td>2003-04</td>
<td>4.30</td>
<td>23.29</td>
<td>3.94</td>
<td>10.50</td>
</tr>
<tr>
<td>2005-06</td>
<td>8.25</td>
<td>25.28</td>
<td>8.46</td>
<td>22.96</td>
</tr>
<tr>
<td>2006-07</td>
<td>15.82</td>
<td>48.85</td>
<td>23.32</td>
<td>43.58</td>
</tr>
<tr>
<td>2007-08</td>
<td>17.61</td>
<td>42.06</td>
<td>19.80</td>
<td>41.73</td>
</tr>
</tbody>
</table>

\bar{x} = 7.65 \quad 26.10 \quad 8.47 \quad 17.49

Source: Annual Reports of CCCL
The net profit margin of CCCL was 8.83 percent in the year 1993-94 and 17.61 in the year 2007-08. The company has reported losses for the years 2001-02 and 2002-03. The net profit margin for the years 2006-07 and 2007-08 has shown a considerable increase in profits as compared to earlier years under the study. The average net profit margin of the company during the period of the study was 7.65 percent. The return on capital employed of the company was found increasing from 38.13 percent in the year 1993-94 to 42.06 percent in the year 2007-08. The average return on capital employed during the period of the study was 26.10 percent. The return on total assets of the company was found increasing from 13.47 percent in the year 1993-94 to 19.80 percent in the year 2007-08, except the negative returns reported in the years 2001-02 and 2002-03. The average return on total assets was 8.47 percent. The return on net worth has increased from 29.58 percent in 1993-94 to 41.73 percent in the year 2007-08, except it has reported the negative returns from the years 2001-02 to 2002-03. The average return on net worth during the period of the study was 17.49 percent. Comparing the four profitability ratios, CCCL was better in return on capital employed, followed by return on net worth and return on total assets. This indicated that CCCL have adopted conservative policy with regard to utilisation of capital.

4.9.2 Profitability Ratios of DCL

The profitability of DCL was analysed with the help of four financial ratios. In the profitability ratios, the net profit was compared with the sales, capital employed, total assets and net worth of the company. The financial statement of the company from the years 1993-94 to 2007-08 revealed the profit performance of the company. The calculated profitability ratios of the company from the years 1993-94 to 2007-08 were shown in the Table 4.51.
<table>
<thead>
<tr>
<th>Year</th>
<th>Net Profit Margin</th>
<th>Return on Capital Employed</th>
<th>Return on Total Assets</th>
<th>Return on Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-95</td>
<td>16.14</td>
<td>23.20</td>
<td>12.44</td>
<td>22.53</td>
</tr>
<tr>
<td>1995-96</td>
<td>16.10</td>
<td>27.76</td>
<td>12.64</td>
<td>22.09</td>
</tr>
<tr>
<td>1996-97</td>
<td>11.47</td>
<td>19.03</td>
<td>7.30</td>
<td>15.96</td>
</tr>
<tr>
<td>1997-98</td>
<td>10.02</td>
<td>17.10</td>
<td>5.90</td>
<td>12.71</td>
</tr>
<tr>
<td>1998-99</td>
<td>6.27</td>
<td>15.79</td>
<td>3.87</td>
<td>8.09</td>
</tr>
<tr>
<td>1999-00</td>
<td>6.11</td>
<td>15.00</td>
<td>3.94</td>
<td>8.32</td>
</tr>
<tr>
<td>2000-01</td>
<td>6.80</td>
<td>16.89</td>
<td>4.71</td>
<td>9.50</td>
</tr>
<tr>
<td>2001-02</td>
<td>6.68</td>
<td>14.07</td>
<td>4.05</td>
<td>7.30</td>
</tr>
<tr>
<td>2002-03</td>
<td>2.32</td>
<td>12.15</td>
<td>1.46</td>
<td>2.63</td>
</tr>
<tr>
<td>2003-04</td>
<td>3.79</td>
<td>12.58</td>
<td>2.23</td>
<td>3.99</td>
</tr>
<tr>
<td>2005-06</td>
<td>6.81</td>
<td>15.52</td>
<td>3.77</td>
<td>9.09</td>
</tr>
<tr>
<td>2006-07</td>
<td>14.05</td>
<td>23.02</td>
<td>7.84</td>
<td>18.32</td>
</tr>
<tr>
<td>2007-08</td>
<td>16.32</td>
<td>23.51</td>
<td>8.89</td>
<td>20.89</td>
</tr>
</tbody>
</table>

$\bar{X}$ 9.24 17.46 6.01 12.14

Source: Annual Reports of DCL

The average net profit margin of the company was 9.24 percent with a net profit margin of 9.15 percent in the year 1993-94 and 16.32 percent in the year 2007-08. In the years 2002-03 and 2003-04, the net profit margin was very poor. The return on capital employed has ranged from 17.17 percent in the year 1993-94 to 23.51 percent in the year 2007-08 with the average return of 17.46 percent. The return on total assets was higher in the years 1994-95 and 1995-96 but showed a significant fluctuating decrease in the rest of the years and reached to 8.89 percent in the year 2007-08. Its average return was 6.01 percent. A return on the net worth was 12.42 percent in the year 1993-94 and 20.89 percent in the year 2007-08 with a mean of 12.14 percent under the period of study. The position of profitability ratios was comparatively better in
DCL. This analysis has revealed that DCL has adopted prudent financial management, in order to have better profitability ratios.

4.9.3 Profitability Ratios of ICL

The profitability of the ICL was evaluated with the help of four profitability ratios, such as net profit margin, return on capital employed, return on total assets and return on net worth of the company. The above said ratio were calculated from the years 1993-94 to 2007-08 and shown in the Table 4.52.

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Profit Margin</th>
<th>Return on Capital Employed</th>
<th>Return on Total Assets</th>
<th>Return on Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>1.41</td>
<td>19.72</td>
<td>1.59</td>
<td>4.03</td>
</tr>
<tr>
<td>1994-95</td>
<td>8.63</td>
<td>21.42</td>
<td>9.05</td>
<td>14.11</td>
</tr>
<tr>
<td>1995-96</td>
<td>11.54</td>
<td>20.83</td>
<td>10.70</td>
<td>18.88</td>
</tr>
<tr>
<td>1996-97</td>
<td>11.23</td>
<td>17.42</td>
<td>8.14</td>
<td>16.72</td>
</tr>
<tr>
<td>1998-99</td>
<td>4.46</td>
<td>15.24</td>
<td>2.55</td>
<td>7.53</td>
</tr>
<tr>
<td>1999-00</td>
<td>3.59</td>
<td>12.36</td>
<td>1.82</td>
<td>5.40</td>
</tr>
<tr>
<td>2000-01</td>
<td>3.83</td>
<td>12.60</td>
<td>1.87</td>
<td>5.97</td>
</tr>
<tr>
<td>2001-02</td>
<td>-11.75</td>
<td>12.81</td>
<td>-5.37</td>
<td>-19.31</td>
</tr>
<tr>
<td>2002-03</td>
<td>-23.64</td>
<td>1.81</td>
<td>-11.11</td>
<td>-48.08</td>
</tr>
<tr>
<td>2003-04</td>
<td>-11.40</td>
<td>4.40</td>
<td>-3.91</td>
<td>-8.52</td>
</tr>
<tr>
<td>2004-05</td>
<td>-5.43</td>
<td>6.99</td>
<td>-2.04</td>
<td>-4.95</td>
</tr>
<tr>
<td>2005-06</td>
<td>2.35</td>
<td>9.02</td>
<td>1.18</td>
<td>2.08</td>
</tr>
<tr>
<td>2006-07</td>
<td>20.96</td>
<td>17.72</td>
<td>11.25</td>
<td>21.40</td>
</tr>
<tr>
<td>2007-08</td>
<td>22.07</td>
<td>21.19</td>
<td>13.15</td>
<td>20.23</td>
</tr>
</tbody>
</table>

| $\bar{X}$ | 2.99 | 13.77 | 2.83 | 3.11 |

Source: Annual Reports of ICL

The net profit margin of ICL was 1.41 percent in the year 1993-94 and 22.07 in the year 2007-08. The company has reported losses from the year 2001-02 to 2004-05. The net profit margin for the years 2006-07 and 2007-08
has shown a considerable increase in profits as compared to earlier years under the study. The average net profit margin of the company during the period of the study was 29.9 percent. The return on capital employed of the company was found increasing from 19.72 percent in the year 1993-94 to 21.19 percent in the year 2007-08. The company was very poor on return on capital employed in the years 2002-03, 2003-04, 2004-05 and 2005-06. The average return on capital employed of the company during the period of the study was 13.77 percent. The return on total assets of the company was found increasing from 1.59 percent in the year 1993-94 to 13.15 percent in the year 2007-08, except the negative returns were reported from the year 2001-02 to 2004-05. The average return on total assets was 2.83 percent. The return on net worth has increased from 4.03 percent in the year 1993-94 to 20.23 percent in the year 2007-08, except it reported the negative returns from the years 2001-02 to 2004-05. The average return on net worth during the period of the study was 3.11 percent. Comparing the four profitability ratios, ICL was better in return on capital employed, followed by return on net worth. This indicated that ICL has used capital effectively and failed in utilising total assets to their maximum potential.

4.9.4 Profitability Ratios in MCL

The profitability of the MCL was evaluated with the help of four profitability ratios, such as net profit margin, return on capital employed, return on total assets and return on net worth. The above said ratios were calculated from the years 1993-94 to 2007-08 and shown in the Table 4.53.
Table 4.53  
Profitability Ratios of MCL

(In Percentage)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Profit Margin</th>
<th>Return on Capital Employed</th>
<th>Return on Total Assets</th>
<th>Return on Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-95</td>
<td>17.70</td>
<td>34.94</td>
<td>19.80</td>
<td>38.10</td>
</tr>
<tr>
<td>1995-96</td>
<td>23.32</td>
<td>33.33</td>
<td>22.02</td>
<td>41.29</td>
</tr>
<tr>
<td>1996-97</td>
<td>18.58</td>
<td>19.75</td>
<td>10.87</td>
<td>26.69</td>
</tr>
<tr>
<td>1997-98</td>
<td>6.67</td>
<td>19.57</td>
<td>4.04</td>
<td>10.36</td>
</tr>
<tr>
<td>1998-99</td>
<td>7.47</td>
<td>20.47</td>
<td>5.05</td>
<td>11.50</td>
</tr>
<tr>
<td>1999-00</td>
<td>7.35</td>
<td>16.51</td>
<td>4.11</td>
<td>10.25</td>
</tr>
<tr>
<td>2000-01</td>
<td>7.58</td>
<td>15.56</td>
<td>4.14</td>
<td>11.55</td>
</tr>
<tr>
<td>2001-02</td>
<td>3.63</td>
<td>18.12</td>
<td>2.57</td>
<td>9.68</td>
</tr>
<tr>
<td>2002-03</td>
<td>2.17</td>
<td>15.99</td>
<td>1.40</td>
<td>5.03</td>
</tr>
<tr>
<td>2003-04</td>
<td>4.81</td>
<td>18.72</td>
<td>3.72</td>
<td>11.44</td>
</tr>
<tr>
<td>2004-05</td>
<td>7.73</td>
<td>15.72</td>
<td>5.60</td>
<td>17.06</td>
</tr>
<tr>
<td>2005-06</td>
<td>7.88</td>
<td>21.96</td>
<td>8.05</td>
<td>9.90</td>
</tr>
<tr>
<td>2006-07</td>
<td>19.57</td>
<td>42.26</td>
<td>23.07</td>
<td>46.22</td>
</tr>
<tr>
<td>2007-08</td>
<td>20.27</td>
<td>29.60</td>
<td>15.83</td>
<td>42.73</td>
</tr>
<tr>
<td>X</td>
<td>10.87</td>
<td>23.61</td>
<td>9.44</td>
<td>20.91</td>
</tr>
</tbody>
</table>

Source: Annual Reports of MCL

The net profit margin of the company has varied from 8.25 percent in the year 1993-94 and 20.27 percent in the year 2007-08, whereas its average ratio was 10.87 percent. The company reported the lowest net profit margin of 2.17 percent in the year 2002-03. In the last two years of the study, the company has reported a considerable increase in the net profit margin. The return on capital employed has ranged from 11.33 percent in the year 1993-94 to 15.83 percent in the year 2007-08, whereas its average return percentage was 23.61. The return on capital employed of the company has fluctuated during the period of the study. The return on total assets was 11.33 percent in the year 1993-94 and 15.83 percent in the year 2007-08. In the year 2002-03, the company has reported a poor return on total assets as compared to other
years under the study. The average return on total assets was 9.44 percent. The
return on net worth has shown a fluctuating trend in all the years under the
study from 21.83 percent in the year 1993-94 to 42.73 percent in the year
2007-08 with the mean percentage of 20.91. Comparatively, the profitability
ratios of MCL were better. MCL was better in effective utilisation of capital
and in optimum utilisation of its total assets.

4.9.5 Homogeneity in Measurement of Profit Performance

Hartley’s F-max Test for Homogeneity of variance was used to
determine whether any variation in the results of four areas of profit
performance, such as Net profit margin, return on capital employed, return on
assets and return on net worth, existed or not. This test can be applied using
the following formula.

\[
F\text{-max}\ [C (n-1)] = \frac{S^2_{\text{max}}}{S^2_{\text{min}}}
\]

Where,

\[H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4\]

\[H_a: \text{At least one variable of the four areas of profit performance differs}\]

\[S^2_{\text{max}} = \text{Largest sample variance}\]

\[S^2_{\text{min}} = \text{Smallest sample variance}\]

\[(n-1) = \text{Number of period (15 years) in the test less one}\]

\[C = \text{Number of groups (4 types of profit variables) in the test}\]

\[\alpha = \text{Level of Significance 0.05.}\]

The following hypothesis was framed to test homogeneity of profit
performance.

\[H_0: \text{There is no difference in variances in profit performance of}\]

\[\text{cement industry.}\]
The level of significance at 0.05 has been applied in the test. From the result, it could be concluded that if the computed $F_{\text{max}}$ Value is less than the upper tail critical value of Hartley’s $F_{\text{max}}$ distribution, $H_0$ should not be rejected and conclusion can be drawn that there is no evidence of difference in the variances of the profit performance existed among the four groups. Otherwise, the $H_0$ should be rejected or $H_a$ should be accepted and conclusion can be drawn that there is evidence of difference in the variances of the profit performance among the four groups. The results of Hartley’s $F_{\text{max}}$ best homogeneity of variance for cement industry in Tamil Nadu from 1993-94 to 2007-08 were presented, company-wise, in the Table 4.54.

**Table 4.54**

**Hartley’s $F_{\text{max}}$ Test for Homogeneity of Variance in Profit Performance from 1993-94 to 2007-08**

<table>
<thead>
<tr>
<th>Company</th>
<th>Particulars</th>
<th>Net Profit Margin</th>
<th>Return on Capital Employed</th>
<th>Return on Assets</th>
<th>Return on Net Worth</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCCL</td>
<td>X</td>
<td>7.65</td>
<td>26.10</td>
<td>8.47</td>
<td>18.79</td>
<td>$F_{\text{max}} (4,14)$</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>6.42</td>
<td>11.06</td>
<td>7.82</td>
<td>17.77</td>
<td>41.15 = 7.67*</td>
</tr>
<tr>
<td></td>
<td>$S^2$</td>
<td>41.15</td>
<td>122.37</td>
<td>61.20</td>
<td>315.73</td>
<td></td>
</tr>
<tr>
<td>DCL</td>
<td>X</td>
<td>9.24</td>
<td>17.46</td>
<td>6.00</td>
<td>12.14</td>
<td>$F_{\text{max}} (4,14)$</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>4.44</td>
<td>4.86</td>
<td>3.29</td>
<td>6.22</td>
<td>38.63/ 10.81 = 3.57*</td>
</tr>
<tr>
<td></td>
<td>$S^2$</td>
<td>19.68</td>
<td>23.61</td>
<td>10.81</td>
<td>38.63</td>
<td></td>
</tr>
<tr>
<td>ICL</td>
<td>X</td>
<td>2.99</td>
<td>13.77</td>
<td>2.83</td>
<td>3.11</td>
<td>$F_{\text{max}} (4,14)$</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>139.11</td>
<td>5.97</td>
<td>6.55</td>
<td>17.52</td>
<td>307 / 11.79 = 26.04*</td>
</tr>
<tr>
<td></td>
<td>$S^2$</td>
<td>11.79</td>
<td>35.62</td>
<td>42.92</td>
<td>307.00</td>
<td></td>
</tr>
<tr>
<td>MCL</td>
<td>X</td>
<td>10.87</td>
<td>23.61</td>
<td>9.44</td>
<td>20.91</td>
<td>$F_{\text{max}} (4,14)$</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>6.67</td>
<td>8.18</td>
<td>7.14</td>
<td>13.82</td>
<td>191.13/ 44.54 = 4.29*</td>
</tr>
<tr>
<td></td>
<td>$S^2$</td>
<td>44.54</td>
<td>66.95</td>
<td>50.93</td>
<td>191.13</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 5 percent level

**Source:** Annual Reports of the Cement Companies

It was evident from the table 4.54 that the null hypothesis ($H_0$) of the equality of group variances was rejected as calculated $F_{\text{max}}$ statistic values exceeded the critical value of $F$-max in companies under the cement industry in Tamil Nadu at 5 percent level of significance. Thus, it was concluded that
there was an evidence of difference in the variances in case of the companies under the cement industry in Tamil Nadu during the period of the study. It was further concluded that the analysis of four areas of profit performance indicated that the data for the cement companies which were not homogenous. Therefore, there were differences in the profit performance of companies in cement industry in Tamil Nadu.

4.10 Summary

The financial position of cement industry in Tamil Nadu have been analysed with the help of the financial statements. The CAGR of equity capital and reserves and surplus have significantly increased during the period of the study. The rate of growth of total assets in cement industry was 17.18 percent during the period of the study. The sales and the operating profits have increased from Rs.955.28 crores and Rs.193.28 crores in the year 1993-94 to Rs.7453.09 crores and Rs.2826.32 crores in the year 2007-08. Regarding the annual growth rate in net working capital and growth rate of fixed assets, MCL occupied the first place. As far as a net profit is concerned, MCL and DCL have been making net profits continuously as compared to other companies under the study. The current ratio and quick ratio of ICL were better than the other companies throughout the period of study. The inventory turnover ratio of cement industry in Tamil Nadu fluctuated significantly during the period of the study. MCL also occupied first place in inventory turnover ratio. The inventory management was better in ICL as the age of inventory gradually declined during the period of the study. The average debtor turnover ratio and working capital turnover ratio were better in CCCL. Further, the average ratio of total assets turnover was higher in CCCL. DCL has performed better as
compared to the other companies under the study as far as fixed assets turnover ratio is concerned. DCL was better in equity base in the capital structure than the other companies under the study. The higher debt-equity ratio was noticed in CCCL. The contribution made by shareholders to the capital structure was found to be gradually increased in cement industry in Tamil Nadu. In ICL, the average return on equity was fluctuated very poorly during the period of the study. CCCL occupied the first place in total debts to total assets ratio during the period of the study. CCCL and ICL were better placed with respect to return on capital employed, whereas DCL and MCL were comparatively better with regard to profitability ratios, such as net profit margin, return on capital employed, return on total assets and return on net worth.

CHAPTER-V

PROFITABILITY AND UTILISATION OF ASSETS IN CEMENT INDUSTRY IN TAMIL NADU