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5.1 Introduction to Financial Statements

At the end of the accounting period, every business unit prepares certain statements which narrate the entire story of financial activities carried out by that business unit, during the year. In other words they narrate the entire financial effect of all the activities. As these statements narrate the financial story, they are known as “Financial Statements”, and they are prepared by the experts, as per the norms applicable for that business unit. Financial Statements refer to at least two statements which the accountant prepares at the end of the financial period:

a. Profit and Loss Account

b. Balance Sheet

The basic objective for preparing these statements is to see the effect of operations and management decisions made by the managers on financial health of the unit. Financial statements are prepared for the purpose of presenting a periodical review or report on the progress by the management and deal with the:

a. Status of the investment in the business, and

b. Results achieved during the period under review.  

Financial statements once prepared do not serve the purpose of the management, as such figures have no value unless and until they are made understandable. Hence in order to draw some meaningful conclusion from financial statements, it

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64 AICPA: Examination of financial statements by Independent Public Accountants, 2000, p.1
is important to analyse the financial statements.

5.2 Analysis and Interpretation of Financial Statements

As financial statements are prepared by following certain format as well as certain norms applicable to entity, it may not directly speak the story. In other words we need to decode the information already there in the financial statements. And hence we need a system of mechanism which decodes the information already present in the statements into some form which is understandable and which can be useful in coming to some conclusions and make decisions. Analysis and interpretation of financial statements refers to such a treatment of the information contained in the income statement and the balance sheet so as to afford full diagnosis of the profitability and financial soundness of the business.65

Hence to know the real message conveyed by financial statements, it is essential to analyze and interpret them. Among various tools of financial statement analysis, trend analysis is one of the most important tools to analyze the financial statements.

5.3 Trend Analysis

Trend analysis is the tool which analyses the financial statements by comparing the figures of several years and examining their trend. As per the dictionary meaning of the word “Trend”, it means, “a general tendency or direction”.66

As such no conclusion can be reliable if they are drawn from the figures of a particular year or two. But if figures of same items for a number of years are methodically arranged and if some analysis is made, then that analysis would definitely give some very authentic and reliable conclusive piece of information.

Trend analysis can be carried out with the help of several methods: 67

1. Year to Year Comparison
2. Index Number
3. Trend Series
4. Trend Ratio

5.4 Advantages of Trend Analysis

1. Huge figures can be converted into percentages; hence brevity and readability are achieved.

2. Figures of individual year’s financial statements have much less significance, but if figures of several years are put together, give meaningful information.

3. Trend analysis can be done of any financial statements.

4. Any year which is stable can be taken as base year. This may be in the beginning, mid or end of period of study.

5. Trend Analysis can be carried out with the number of tools, like:
   a. Year to Year Comparison
   b. Index Number
   c. Trend Series
   d. Trend Ratios

6. Conclusion regarding favourable or unfavourable tendencies can be easily made with the help of trend analysis.

5.5 Limitations of Trend Analysis

1. Trend Analysis can be logical only if the accounting principles and practices followed are constant throughout the period for which analysis is made. In the absence of such consistency, the comparability will be adversely affected.  

2. Base year is to be selected very carefully; it should be a normal year without any internal or external major fluctuation.

3. Although financial analysis gives some useful information regarding the performance, but still it is not the final thing. After analysis, proper interpretation is required for coming to any final conclusion.

4. Trend Analysis is carried out on the figures of financial statements which are prepared on historical cost basis. Hence the price level changes are not given effect, thus whatever results are obtained are not up-to-date.

5.6 Cost Structure of Pharmaceutical Companies under study

1. Raw Materials Consumed

2. Factory Overheads

3. Administrative Cost

4. Selling & Distribution Cost

---

5.7 Method to carry out Trend Analysis

In order to study the movement of total costs of all the companies under study, total cost of each year has been taken as 100, and each element of cost is taken as percentage of total cost. This would enable us to identify the importance or contribution of each item of cost in the total cost of each company over the entire period of study.

5.8 Analysis of Individual Cost to Total Cost of sample units.

1. Raw Material Consumed

Every production unit normally converts the raw material into finished goods and then sells it into the market. This raw material either may be purchased from the market or it can even be manufactured by the unit itself, depending upon particular situation.

The term “Material” refers to the commodities supplied to an undertaking for the purpose of consumption in the process of manufacture or of rendering service or for transformation into products.69 There are two types of materials: Direct Materials and Indirect Materials. All the materials which becomes an internal part of the finished product and which can be conveniently assigned to specific physical units is termed as “Direct Material”.70 While all material which is used for purpose ancillary to the business and which

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70 Dr. S. N. Maheshwari, Financial Management: Principles & Practice, 5th Edi, 2000, Sultan Chand & sons, Pg-144.
cannot be conveniently assigned to specific physical units is termed as “Indirect Material”.

For example: Consumable Stores, Oil and waste, etc.

The calculation of raw material cost is done as under:

The opening stock of raw material is taken as the base for the current year’s total expenses on raw materials consumed. Additional purchases of raw materials are added to this opening stock of raw materials. Purchase of trading goods is also added to the total expenses for the raw materials. Further direct expenses on the purchases of this raw material like the expenses paid on freight or such incidental expenses made for the purchase of raw material is added to the raw material expenses. Finally the closing stock of raw materials is adjusted in order to arrive at the final figure of raw material consumption of the year.

Table: 5.1

Table Showing Proportion of Raw Materials Cost to Total Cost of Pharmaceutical Companies under Study [in percentage]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranbaxy</td>
<td>57.25</td>
<td>55.21</td>
<td>58.14</td>
<td>60.23</td>
<td>62.28</td>
<td>65.24</td>
<td>68.85</td>
</tr>
<tr>
<td>Dr. Reddy</td>
<td>55.89</td>
<td>54.72</td>
<td>53.26</td>
<td>52.27</td>
<td>65.32</td>
<td>68.25</td>
<td>66.23</td>
</tr>
<tr>
<td>Cipla</td>
<td>33.28</td>
<td>36.05</td>
<td>40.20</td>
<td>42.29</td>
<td>50.20</td>
<td>52.37</td>
<td>60.25</td>
</tr>
<tr>
<td>Sun Pharma.</td>
<td>52.38</td>
<td>47.88</td>
<td>55.38</td>
<td>54.22</td>
<td>60.21</td>
<td>59.27</td>
<td>61.23</td>
</tr>
<tr>
<td>Lupin</td>
<td>30.26</td>
<td>37.28</td>
<td>35.27</td>
<td>40.29</td>
<td>37.22</td>
<td>45.22</td>
<td>48.55</td>
</tr>
<tr>
<td>Aurobindo</td>
<td>26.16</td>
<td>22.77</td>
<td>35.44</td>
<td>45.22</td>
<td>38.28</td>
<td>50.21</td>
<td>55.26</td>
</tr>
</tbody>
</table>

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From the above Table no. 5.1 it is evident that proportion of raw material cost to total cost for Ranbaxy is 57.25% in the year 2003-04 it is decreased during the year of 2004-05 but after than from the next year continuous rise will be there up to the year 2009-10. The Ratio is between 55.21% to 68.85% with an average of 61.03% which is very high compared to the overall average of 49.30% during the study period.

The proportion of raw material cost to total cost for Dr. Reddy is 55.89% in the year 2003-04 there is down fall during the year 2004-05 to 2006-07 but than after from the year 2007-08 to 2009-10 there will be improvement in the proportion of raw material cost to total cost. During the study period the Ratio is higher than the overall average of 59.42% between 2007-08 to 2009-10.

The proportion of raw material cost to total cost for Cipla Ltd. was 33.28% in the year 2003-04 which was lowest for the entire study period, the highest value observed was 60.25% which was in the year 2009-10. The average for the entire study period was 44.95% which is slightly lower than the overall average 49.30% for the study period. There are three instances in which the ratio is higher than the average otherwise for the four years the ratio has remained lower than the average.

The proportion of raw material cost to total cost for Sun Pharmaceuticals lies in between 61.23(2009-10) and 47.88(2003-04) with an average of 55.80 which is higher than the overall average of 49.30 for the same study period.
The proportion of raw material cost to total cost for Lupin is 30.26% in the year 2003-04 there is ups & down during the year 2004-05 to 2007-08 but than after from the year 2008-09 to 2009-10 there will be improvement in the proportion of raw material cost to total cost. During the study period the Ratio is higher than the overall average of 39.16% in the year 2006-07 2008-09 & 2009-10.

The proportion of raw material cost to total cost for Aurobindo is 26.16% in the year 2003-04 it is decreased during the year of 2004-05 but after than from the next year continuous rise will be there upto the year 2006-07. The Ratio is between 22.77% to 55.26% with an average of 39.05% which is very low compared to the overall average of 49.30% during the study period.

The proportion of raw material cost to total cost for Glaxo Ltd. was 46.21% in the year 2003-04 during the entire study period the highest value observed was 60.25% which was in the year 2009-10. The average for the entire study period was 50.39% which is slightly higher than the overall average 49.30% for the study period. There are two instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

The proportion of raw material cost to total cost for Cadila is 48.81% in the year 2003-04 it is increased during the year of 2004-05 but after than from the next year continuous rise will be there upto the year 2008-09. The Ratio is between 48.25% to 60.25% with an average of 52.84% which is very higher compared to the overall average of 49.30% during the study period.

The proportion of raw material cost to total cost for Aventis is 38.35% in the year 2003-04 there is down fall during the year 2004-05 but than after from the year 2005-06 to 2007-08 there will be improvement in the proportion of raw material cost to total cost. During the study period the Ratio is higher than the overall average of 40.54%
between 2007-08 to 2009-10.

The proportion of raw material cost to total cost for IPCA Ltd. was 44.27% in the year 2003-04 during the entire study period the highest value observed was 55.12% which was in the year 2009-10. The average for the entire study period was 49.86% which is slightly higher than the overall average 49.30% for the study period. There are three instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

**F - TEST (ANOVA) ANALYSIS : -**

In order to establish relationship in the ratio of Raw Material Cost to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the ratio of Raw Material Cost to Total Cost among different years for each company, F – Test (ANOVA) is used. The statements of hypothesis for the comparison among the different companies and for comparison among different years for individual companies during the study period are as under.

**Hypothesis for comparison between different companies : -**

**Null Hypothesis (H₀) : -** “The Ratio of Raw Material Cost to Total Cost between Different companies under study during the study period is same.”

**Alternate Hypothesis (Hₐ) : -** “The Ratio of Raw Material Cost to Total Cost between different companies under study during the study period is not same.”

**Hypothesis for comparison between different years : -**

**Null Hypothesis (H₀) : -** “The Ratio of Raw Material Cost to Total Cost between different years during the study period in each company study is same.”
**Alternate Hypothesis (Hₐ) :** “The Ratio of Raw Material Cost to Total Cost between different years during the study period in each company study is not same.”

In the following table – 5.2 the calculation of F –Test (ANOVA) is shown of Raw Material Cost to Total Cost Ratio for the Pharmaceutical Companies under study, during the study period.

**Table 5.2 :** - Table Showing The Calculation Of F –Test (ANOVA)

<table>
<thead>
<tr>
<th>sv</th>
<th>d.f.</th>
<th>s.s.</th>
<th>m.s.s.</th>
<th>F_cal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Companies</td>
<td>9</td>
<td>11125.7985</td>
<td>1236.19983</td>
<td>29.9937173</td>
</tr>
<tr>
<td>Between Years</td>
<td>6</td>
<td>1442.45</td>
<td>240.408333</td>
<td>5.83298864</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>2225.6258</td>
<td>41.2152926</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>14793.873</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSION :**

The Above Table- 5.2 shows the F Calculated value of 29.99 at 5 % level of significance and at (9,54) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.06 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Raw Material Cost to Total Cost.

F Calculated value of 5.83 at 5 % level of significance and at (6,54) degree of freedom is greater than the table value of 2.27 hence the null hypothesis is rejected and
the alternate hypothesis is accepted, which means that there is a significant difference among the different year’s ratio for all the individual companies.

Hence it can be concluded that the Raw Material Cost to Total Cost ratio among different companies and among different years under study is not same.

2. Factory Overheads

There are three elements of cost; materials, labour and other expenses. Any of these or all, if attributable or which can be identified with cost unit refers to direct cost. While Indirect cost constitutes the overhead cost, which is the aggregate of indirect material cost, indirect wages and indirect expenses.  

Hence the cost which cannot be allocated to a particular cost unit, but only can be apportioned is referred as “Overheads”.

Now this indirect cost or overheads pertaining factory or manufacturing process are known as factory overheads. Hence, factory overhead is the indirect cost of factory or manufacturing process, which includes indirect factory wages, indirect factory materials as well as indirect factory expenses. Following are some examples of factory overheads in the pharmaceutical companies under study: Power, oil, fuel, electricity, water, freight, transport, packing material, repairing expenses, technical expenses, drilling, etc.

Table: 5.3

Table Showing Proportion of Factory Overheads to Total Cost of Pharmaceutical Companies under Study [in percentage]

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From the above Table no. 5.3 it is evident that proportion of Factory Overheads to Total Cost for Ranbaxy is 13.25 % in the year 2003-04 it is increased during the year of 2004-05 but after than from the next year continuous ups & downs will be there up to the year 2009-10. The Ratio is between 12.65 % to 14.57 % with an average of 13.78 % which is very high compared to the overall average of 10.01 % during the study period.
The proportion of Factory Overheads to Total Cost for Dr. Reddy is 12.14% in the year 2003-04 there is down fall during the year 2004-05 but than after from the year 2005-06 there will be improvement in the proportion of Factory Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 12.52% during the year 2005-06, 2008-09 & 2009-10.

The proportion of Factory Overheads to Total Cost for Cipla Ltd. was 12.16% in the year 2003-04 the highest value observed was 12.58% which was in the year 2009-10. The average for the entire study period was 12.17% which is slightly lower than the overall average 10.01% for the study period. There are three instances in which the ratio is higher than the average otherwise for the four years the ratio has remained lower than the average.

The proportion of Factory Overheads to Total Cost for Sun Pharmaceuticals lies in between 6.56% (2009-10) and 5.74% (2004-05) with an average of 6.10% which is lower than the overall average of 10.01% for the same study period.

The proportion of Factory Overheads to Total Cost for Lupin is 4.35% in the year 2003-04 there is upward trend during the year 2004-05 to 2006-07 but than after in the year 2007-08 there will be decrease in the proportion of Factory Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 5.61% in the year 2006-07 2008-09 & 2009-10.

The proportion of Factory Overheads to Total Cost for Aurobindo is 14.00% in the year 2003-04 it is decreased during the year of 2004-05 to 2006-07 but after than from the year 2007-08 continuous rise will be there up to the year 2009-10. The Ratio is between 11.35% to 18.38% with an average of 14.19% which is very high compared to the overall average of 10.01% during the study period.

The proportion of Factory Overheads to Total Cost for Glaxo Ltd. was 12.02%
% in the year 2003-04 during the entire study period the highest value observed was 13.64 % which was in the year 2009-10. The average for the entire study period was 12.52 % which is slightly higher than the overall average 10.01 % for the study period. There are three instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

The proportion of Factory Overheads to Total Cost for Cadila is 4.27 % in the year 2003-04 it is increased from the year of 2004-05 to 2006-07 but after than in the year 2007-08 slight down fall is there. The Ratio is between 4.27 % to 6.78 % with an average of 5.49 % which is very low compared to the overall average of 10.01 % during the study period.

The proportion of Factory Overheads to Total Cost for Aventis is 7.45 % in the year 2003-04 there is increase during the year 2004-05 to 2005-06 but than after in the year 2006-07 there will be down fall in the proportion of Factory Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 8.32 % in the year 2005-06, 2007-08 & 2009-10.

The proportion of Factory Overheads to Total Cost for IPCA Ltd. was 8.50 % in the year 2003-04 during the entire study period the highest value observed was 10.25 % which was in the year 2009-10. The average for the entire study period was 9.40 % which is slightly lower than the overall average 10.01 % for the study period. There are three instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

**F – TEST (ANOVA) ANALYSIS:**

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In order to establish relationship in the proportion of Factory Overheads to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in the proportion of Factory Overheads to Total Cost among different years for each company, F – Test (ANOVA) is used. The statements of hypothesis for the comparison among the different companies and for comparison among different years for individual companies during the study period are as under.

**Hypothesis for comparison between different companies : -**

**Null Hypothesis (H_0) :** "The proportion of Factory Overheads to Total Cost between different companies under study during the study period is same."

**Alternate Hypothesis (H_a) :** "The proportion of Factory Overheads to Total Cost between different companies under study during the study period is not same."

**Hypothesis for comparison between different years : -**

**Null Hypothesis (H_0) :** "The proportion of Factory Overheads to Total Cost between different years during the study period in each company study is same."

**Alternate Hypothesis (H_a) :** "The proportion of Factory Overheads to Total Cost between different years during the study period in each company study is not same."

In the following table – 5.4 the calculation of F – Test (ANOVA) is shown of Factory Overheads to Total Cost Ratio for the Pharmaceutical Companies under study, during the study period.

**Table 5.4 :** Table Showing The Calculation Of F – Test (ANOVA)
The Above Table- 5.4 shows the F Calculated value of 55.63 at 5 % level of significance and at (9,54) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.06 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Factory Overheads to Total Cost.

F Calculated value of 2.19 at 5 % level of significance and at (6,54) degree of freedom is less than the table value of 2.27 hence the null hypothesis is accepted and the alternate hypothesis is rejected, which means that there is not a significant difference among the different year’s ratio for all the individual companies.

Hence it can be concluded that the Factory Overheads to Total Cost ratio among different companies is not same and among different years under study is same.

3. Administrative Overheads

Normally cost accounting is focused on production or manufacturing cost.
But administration and the expenses incurred on that is equally important. Without administration whatever produced cannot be sold in the market. All planning and controlling of any organization is dependent upon the administration. And this administration expenses are normally in the nature of indirect cost. Administrative overheads, termed administration costs by some accountants, are mainly in the nature of indirect costs and refer to all expenditure incurred in formulating the policy, directing the organization and controlling the operation of an undertaking which is not directly related to research and development, production, distribution and selling activity functions.  

Some examples of administrative overheads are as follows: Accounts office expenses, audit fees, bank charges, depreciation of office building and equipment, legal expenses, stationery, telegram and telephone, internet expenses, etc.

Table: 5.5

Table Showing Proportion of Administrative Overheads to Total Cost of Pharmaceutical Companies under Study [in percentage]

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranbaxy</td>
<td>6.28</td>
<td>7.95</td>
<td>6.23</td>
<td>6.89</td>
<td>7.89</td>
<td>7.24</td>
<td>8.95</td>
</tr>
<tr>
<td>Dr. Reddy</td>
<td>25.74</td>
<td>22.61</td>
<td>23.56</td>
<td>22.68</td>
<td>22.31</td>
<td>23.58</td>
<td>23.98</td>
</tr>
<tr>
<td>Cipla</td>
<td>6.00</td>
<td>7.15</td>
<td>6.44</td>
<td>6.59</td>
<td>7.58</td>
<td>7.22</td>
<td>8.65</td>
</tr>
<tr>
<td>Sun Pharma.</td>
<td>9.53</td>
<td>8.12</td>
<td>9.40</td>
<td>9.50</td>
<td>8.95</td>
<td>9.56</td>
<td>10.23</td>
</tr>
<tr>
<td>Lupin</td>
<td>5.95</td>
<td>4.96</td>
<td>5.45</td>
<td>6.88</td>
<td>7.75</td>
<td>8.45</td>
<td>9.65</td>
</tr>
</tbody>
</table>

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From the above Table no. 5.5 it is evident that proportion of Administrative Overheads to Total Cost for Ranbaxy is 6.28 % in the year 2003-04 it is increased during the year of 2004-05 but after than from the next year continuous ups & downs will be there upto the year 2009-10. The Ratio is between 6.23 % to 8.95 % with an average of 7.35 % which is very low compared to the overall average of 11.77 % during the study period.

The proportion of Administrative Overheads to Total Cost for Dr. Reddy is 25.74 % in the year 2003-04 there is down fall during the year 2004-05 but than after from the year 2005-06 there will be improvement in the proportion of Administrative Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 23.49 % during the year 2003-04, 2005-06, 2008-09 & 2009-10.

The proportion of Administrative Overheads to Total Cost for Cipla Ltd. was 6.00 % in the year 2003-04 the highest value observed was 8.65 % which was in the year 2009-10. The average for the entire study period was 7.09 % which is slightly lower than the overall average 11.77 % for the study period. There are four instances in which the ratio is higher than the average otherwise for the three years the ratio has remained lower than the average.

The proportion of Administrative Overheads to Total Cost for Sun Aurobindo

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aurobindo</td>
<td>6.05</td>
<td>4.68</td>
<td>5.55</td>
<td>6.78</td>
<td>7.56</td>
<td>8.32</td>
<td>11.22</td>
</tr>
<tr>
<td>Glaxo</td>
<td>24.33</td>
<td>15.78</td>
<td>16.68</td>
<td>17.63</td>
<td>16.54</td>
<td>16.85</td>
<td>17.46</td>
</tr>
<tr>
<td>Cadila</td>
<td>25.27</td>
<td>16.24</td>
<td>17.36</td>
<td>18.67</td>
<td>17.36</td>
<td>17.95</td>
<td>18.56</td>
</tr>
<tr>
<td>Aventis</td>
<td>8.45</td>
<td>8.98</td>
<td>9.35</td>
<td>8.85</td>
<td>9.87</td>
<td>9.64</td>
<td>10.38</td>
</tr>
</tbody>
</table>

(Source: Annual Reports of Companies from the year 2003-04 to 2009-10)
Pharmaceuticals lies in between 10.23% (2009-10) and 8.12% (2004-05) with an average of 9.33% which is lower than the overall average of 11.77% for the same study period.

The proportion of Administrative Overheads to Total Cost for Lupin is 5.95% in the year 2003-04 there is upward trend during the year 2005-06 to 2009-10 in the proportion of Administrative Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 7.01% in the year 2007-08 to 2009-10.

The proportion of Administrative Overheads to Total Cost for Aurobindo is 6.05% in the year 2003-04 it increased during the year of 2005-06 to 2009-10 but during the year 2004-05 there is slight decline. The Ratio is between 4.68% to 11.22% with an average of 7.17% which is very low compared to the overall average of 11.77% during the study period.

The proportion of Administrative Overheads to Total Cost for Glaxo Ltd. was 24.33% in the year 2003-04 which is highest during the entire study period. The average for the entire study period was 17.90% which is slightly higher than the overall average 11.77% for the study period. There is one instance in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

The proportion of Administrative Overheads to Total Cost for Cadila is 25.27% in the year 2003-04 it is increased from the year of 2005-06 to 2006-07 but after than in the year 2007-08 slight down fall is there. The Ratio is between 25.27% to 16.24% with an average of 18.77% which is very high compared to the overall average of 11.77% during the study period.

The proportion of Administrative Overheads to Total Cost for Aventis is 8.45% in the year 2003-04 there is increase during the year 2004-05 to 2005-06 but than after in the year 2006-07 there will be down fall in the proportion of Administrative Overheads to Total Cost. During the study period the Ratio is higher than the overall
average of 9.36 % in the year 2007-08, 2008-09 & 2009-10.

The proportion of Administrative Overheads to Total Cost for IPCA Ltd. was 9.63 % in the year 2003-04 during the entire study period the highest value observed was 11.35 % which was in the year 2009-10. The average for the entire study period was 10.19 % which is slightly lower than the overall average 11.77 % for the study period. There are four instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

**F – TEST (ANOVA) ANALYSIS : -**

In order to establish relationship in The proportion of Administrative Overheads to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in The proportion of Administrative Overheads to Total Cost among different years for each company, F – Test (ANOVA) is used. The statements of hypothesis for the comparison among the different companies and for comparison among different years for individual companies during the study period are as under.

**Hypothesis for comparison between different companies : -**

**Null Hypothesis (H₀) :** “The proportion of Administrative Overheads to Total Cost between different companies under study during the study period is same.”

**Alternate Hypothesis (H₁) :** “The proportion of Administrative Overheads to Total Cost between different companies under study during the study period is not same.”

**Hypothesis for comparison between different years : -**
Null Hypothesis (H$_0$) : - “The proportion of Administrative Overheads to Total Cost between different years during the study period in each company study is same.”

Alternate Hypothesis (H$_a$) : - “The proportion of Administrative Overheads to Total Cost between different years during the study period in each company study is not same.”

In the following table – 5.6 the calculation of F –Test (ANOVA) is shown of Administrative Overheads to Total Cost Ratio for the Pharmaceutical Companies under study, during the study period.

**Table 5.6 : - Table Showing The Calculation Of F –Test (ANOVA)**

<table>
<thead>
<tr>
<th>sv</th>
<th>d.f.</th>
<th>s.s.</th>
<th>m.s.s.</th>
<th>F$_{cal.}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Companies</td>
<td>9</td>
<td>1679.940</td>
<td>186.66</td>
<td>27.5724692</td>
</tr>
<tr>
<td>Between Years</td>
<td>6</td>
<td>204.3343</td>
<td>34.0557167</td>
<td>5.03053787</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>365.569</td>
<td>6.7697963</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>2249.843</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSION : -**

The Above Table- 5.6 shows the F Calculated value of 27.57 at 5 % level of significance and at (9,54) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.06 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a
significant difference among the different companies under study in the ratio of Administrative Overheads to Total Cost.

F Calculated value of 5.03 at 5 % level of significance and at (6,54) degree of freedom is higher than the table value of 2.27 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different year’s ratio for all the individual companies.

Hence it can be concluded that the Administrative Overheads to Total Cost ratio among different companies and among different years under study is not same.

4. Selling and Distribution Overheads

Selling and Distribution overheads are also one of the important indirect costs. As such every business unit has to incur this cost, be it a manufacturing concern of a trading concern, and be it a retail shop or wholesale business.

The nature of selling and distribution overheads is different from many manufacturing overheads. Even sometimes selling and distribution overheads are given more importance than any other manufacturing overheads, because whatever is produced cannot be sold unless the promotional efforts are made. Selling and Distribution overheads includes market research expenses, advertisement expenses, salaries and commission of salesmen, sales office expense, packing and shipping expenses, warehouse expenses etc.

Even before production a business unit which is relatively new has to incur expenses on market research and after production proper advertisement and sales promotion expenses are to be made in order to sell the produce. As every business unit has a objective of profit maximization, it can be achieved only by increasing sales, which can be achieved by making selling and distribution expenses very tactfully.
increased efforts for promoting sales and also due to increase in competition, considerable expenditure is incurred on selling and distribution and this sometimes exceeds even the cost of manufacture.  

Table: 5.7

Table Showing Proportion of Selling & Distribution Overheads to Total Cost of Pharmaceutical Companies under Study [in percentage]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranbaxy</td>
<td>13.56</td>
<td>12.78</td>
<td>13.11</td>
<td>12.45</td>
<td>12.56</td>
<td>13.95</td>
<td>14.30</td>
</tr>
<tr>
<td>Dr. Reddy</td>
<td>13.03</td>
<td>12.98</td>
<td>13.56</td>
<td>12.68</td>
<td>12.25</td>
<td>13.75</td>
<td>14.10</td>
</tr>
<tr>
<td>Lupin</td>
<td>3.65</td>
<td>3.25</td>
<td>4.20</td>
<td>5.96</td>
<td>7.64</td>
<td>8.40</td>
<td>11.27</td>
</tr>
<tr>
<td>Aurobindo</td>
<td>3.83</td>
<td>3.48</td>
<td>4.55</td>
<td>5.85</td>
<td>7.84</td>
<td>8.98</td>
<td>12.25</td>
</tr>
<tr>
<td>Glaxo</td>
<td>13.95</td>
<td>13.30</td>
<td>14.10</td>
<td>15.20</td>
<td>14.95</td>
<td>16.10</td>
<td>17.46</td>
</tr>
<tr>
<td>Aventis</td>
<td>13.55</td>
<td>15.20</td>
<td>15.63</td>
<td>14.33</td>
<td>15.56</td>
<td>14.68</td>
<td>15.85</td>
</tr>
</tbody>
</table>

(Source: Annual Reports of Companies from the year 2003-04 to 2009-10)

---

From the above Table no. 5.7 it is evident that Proportion of Selling & Distribution Overheads to Total Cost for Ranbaxy is 13.56 % in the year 2003-04 it is decreased during the year of 2004-05 but after than from the next year continuous ups & downs will be there up to the year 2009-10. The Ratio is between 12.45 % to 14.30 % with an average of 13.24 % which is very high compared to the overall average of 11.96 % during the study period.

The Proportion of Selling & Distribution Overheads to Total Cost for Dr. Reddy is 13.03 % in the year 2003-04 there is downfall during the year 2004-05 but than after from the year 2005-06 there will be improvement in the Proportion of Selling & Distribution Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 13.19 % during the year 2005-06, 2008-09 & 2009-10.

The Proportion of Selling & Distribution Overheads to Total Cost for Cipla Ltd. was 9.34 % in the year 2003-04. The highest value observed was 10.35 % which was in the year 2009-10. The average for the entire study period was 9.31 % which is slightly lower than the overall average 11.96 % for the study period. There are four instances in which the ratio is higher than the average otherwise for the three years the ratio has remained lower than the average.

The Proportion of Selling & Distribution Overheads to Total Cost for Sun Pharmaceuticals lies in between 14.59 % (2009-10) and 11.25 % (2004-05) with an average of 12.99 % which is higher than the overall average of 11.96% for the same study period.

The Proportion of Selling & Distribution Overheads to Total Cost for Lupin is 3.65 % in the year 2003-04 there is upward trend during the year 2005-06 to 2009-10 in the Proportion of Selling & Distribution Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 6.34 % in the year 2007-08 to 2009-10.

The Proportion of Selling & Distribution Overheads to Total Cost for
Aurobindo is 3.83 % in the year 2003-04 it is increased during the year of 2005-06 to 2009-10 but during the year 2004-05 there is slight decline. The Ratio is between 3.48 % to 12.25 % with an average of 6.68 % which is very low compared to the overall average of 11.96 % during the study period.

The Proportion of Selling & Distribution Overheads to Total Cost for Glaxo Ltd. was 13.95 % in the year 2003-04. The average for the entire study period was 15.01 % which is slightly higher than the overall average 11.96 % for the study period. There are three instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.

The Proportion of Selling & Distribution Overheads to Total Cost for Cadila is 14.87 % in the year 2003-04 it is increased from the year of 2005-06 to 2006-07 but after than in the year 2007-08 slight down fall is there. The Ratio is between 12.30 % to 14.98 % with an average of 13.90 % which is very high compared to the overall average of 11.96 % during the study period.

The Proportion of Selling & Distribution Overheads to Total Cost for Aventis is 13.55 % in the year 2003-04 there is increase during the year 2004-05 to 2005-06 but than after in the year 2006-07 there will be down fall in the proportion of Selling & Distribution Overheads to Total Cost. During the study period the Ratio is higher than the overall average of 14.97 % in the year 2004-05, 2005-06, 2007-08 & 2009-10.

The Proportion of Selling & Distribution Overheads to Total Cost for IPCA Ltd. was 12.65 % in the year 2003-04 during the entire study period the highest value observed was 14.75 % which was in the year 2009-10. The average for the entire study period was 13.96 % which is slightly higher than the overall average 11.96 % for the study period. There are four instances in which the ratio is higher than the average otherwise the ratio has remained lower than the average.
**F – TEST (ANOVA) ANALYSIS : -**

In order to establish relationship in The Proportion of Selling & Distribution Overheads to Total Cost among different Pharmaceutical companies under study during the study period and for establishing relationship in The Proportion of Selling & Distribution Overheads to Total Cost among different years for each company, F – Test (ANOVA) is used. The statements of hypothesis for the comparison among the different companies and for comparison among different years for individual companies during the study period are as under.

**Hypothesis for comparison between different companies : -**

**Null Hypothesis (H₀) : -** “The Proportion of Selling & Distribution Overheads to Total Cost between different companies under study during the study period is same.”

**Alternate Hypothesis (Hₐ) : -** “The Proportion of Selling & Distribution Overheads to Total Cost between different companies under study during the study period is not same.”

**Hypothesis for comparison between different years : -**

**Null Hypothesis (H₀) : -** “The Proportion of Selling & Distribution Overheads to Total Cost between different years during the study period in each company study is same.”

**Alternate Hypothesis (Hₐ) : -** “The Proportion of Selling & Distribution Overheads to Total Cost between different years during the study period in each company study is not same.”
In the following table – 5.8 the calculation of F–Test (ANOVA) is shown of Proportion of Selling & Distribution Overheads to Total Cost Ratio for the Pharmaceutical Companies under study, during the study period.

**Table 5.8 : - Table Showing The Calculation Of F –Test (ANOVA)**

<table>
<thead>
<tr>
<th></th>
<th>d.f.</th>
<th>s.s.</th>
<th>m.s.s.</th>
<th>F_{cal.}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Companies</td>
<td>9</td>
<td>1174.770</td>
<td>130.53</td>
<td>16.2598374</td>
</tr>
<tr>
<td>Between Years</td>
<td>6</td>
<td>89.70857</td>
<td>14.9514283</td>
<td>1.86246682</td>
</tr>
<tr>
<td>Error</td>
<td>54</td>
<td>433.4988</td>
<td>8.0277556</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>1697.977</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSION : -**

The Above Table- 5.8 shows the F Calculated value of 16.26 at 5 % level of significance and at (9,54) degree of freedom for different pharmaceutical companies under study during the study period which is greater than the table value of 2.06 hence the null hypothesis is rejected and the alternate hypothesis is accepted, which means that there is a significant difference among the different companies under study in the ratio of Selling & Distribution Overheads to Total Cost.

F Calculated value of 1.86 at 5 % level of significance and at (6,54) degree of freedom is lower than the table value of 2.27 hence the null hypothesis is accepted and
the alternate hypothesis is rejected, which means that there is not a significant difference among the different year’s ratio for all the individual companies.

Hence it can be concluded that the Selling & Distribution Overheads to Total Cost ratio among different companies is not same and among different years under study is same.

5.9 Conclusion

From the above calculation of individual cost to total cost ratio there can be some general conclusions drawn from the statistical analysis. From the study of four individual cost to total cost ratio and their comparison among companies for the study period and individual companies comparison for different years, following conclusions can be drawn:

The ratio of raw material cost to total cost among companies is not same and the ratio of raw material cost to total cost between different years of each individual company under study for the study period is also not same.

The ratio of factory overheads to total cost among companies is not same and the ratio of factory overheads to total cost between different years of each individual company under study for the study period is same.

The ratio of administrative overheads to total cost among companies is not same and there is ratio of administrative overheads to total cost between different years of each individual company under study for the study period is also not same.

The ratio of selling & distribution cost to total cost among companies is not same but the percentage of selling & distribution cost to total cost between different years of each individual company under study for the study period is same.