CHAPTER - III

Cost Analysis

01] Raw Material Cost
02] Direct Labour Cost
03] Manufacturing Expenses
04] Depreciation Cost
Chapter - III

Cost Analysis

Introduction

Costing is the technique and process of ascertaining costs. It can also be said that costing is classifying, recording and appropriate allocations of expenditure for the determination of costs of products.

Cost is defined as the amount of expenditure, incurred on manufacturing of product. The expenditure incurred on purchase of raw material components, packing material, stores consumables and other services used for manufacturing product.

Classification of cost means to ascertain the Raw material cost, Direct labour cost, Manufacturing Expenditure and Depreciation.

A proper analysis of cost enables any industrial establishment to detect all the sources of waste in different process of production. It provides information to the management on the basis of which they can control day to day operations of the establishment.

While studying the following cost trends of Engineering Industries in Maharashtra State, it is observed that -

In the published financial statement of the companies, separate details relating to the cost of production of different product was not given and merely details of various expenses incurred on all the products manufactured was given.
As such due to product differentiation and different product makes among the engineering companies and changing the product makes from year to year in each company, it is not possible to calculate product-wise cost of each unit. The only alternative therefore, left is to study the proportion of expenditure on various heads. It is true that these proportions would not provide an exact idea relating to the cost under various heads, but they would at least give a broad relative idea about the cost under different heads.

1) Raw Material Cost.  
2) Direct Labour Cost.  
3) Manufacturing Expenses.  
4) Depreciation Cost.  
5) Cost Of Production.

Material is very important factor of production. It includes physical commodities used to manufacture the final end product. Raw material is a varying quantity according to the production. It is most flexible and controllable input. It is the first and utmost important element of cost material account. For nearly 60% of the cost of production is utilised in material which is clear from the analysis of the financial statement of a large number of private and public sector organizations. The information on the average materials expenditure for different manufacturing industries are as follows:-
Table No. 3.1 : Average Raw Material Cost:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Group of Industry</th>
<th>Average expenditure of material percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cotton yarn, earth moving equipments, sugar, wool, jute, commercial vehicles and Fabrication.</td>
<td>Above 65</td>
</tr>
<tr>
<td>2</td>
<td>Cotton textiles.</td>
<td>60 - 65</td>
</tr>
<tr>
<td>3</td>
<td>Engineering Industries.</td>
<td>55 - 60</td>
</tr>
<tr>
<td>4</td>
<td>Ship Building, Chemical, Machine Tools, Cement, tire.</td>
<td>50 - 55</td>
</tr>
<tr>
<td>5</td>
<td>Pharmaceuticals.</td>
<td>45 - 50</td>
</tr>
<tr>
<td>6</td>
<td>Steel product, Aircraft, Fertilizer and Newspaper.</td>
<td>40 - 45</td>
</tr>
</tbody>
</table>

Source: Figures taken from the speech delivered by Mr. C. Subramniam, Former Union Finance Minister.

According to the Indian Association of materials management, 64 paise in rupee are spent on material by Indian Industries, 16 paise on labour and rest on overheads. Thus, the importance of material control lies in the fact that any saving made in the cost of materials will go a long way in reducing the cost of production and improving the profitability of a concern. Raw Material is a significant part of product cost and since this cost is controllable by proper planning, purchasing, handling and accounting which have great importance.

1) **Raw Material Cost:**

The accounting data does not supply useful information to management for comparison with previous period and for taking various financial decisions.
Therefore, the head wise expenses are classified horizontally and vertically to compare the values of each industry for 11 years.

This analysis gives correct direction to the management for controlling the cost and taking corrective actions.

**Table No. 3.2 : Industry-wise Raw Material Cost Comparison**

*For The Period From 1992-2002*

<table>
<thead>
<tr>
<th>Years</th>
<th>TTL</th>
<th>Mukund</th>
<th>Zenith</th>
<th>Bajaj</th>
<th>KBX</th>
<th>Ispat</th>
<th>Ind. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>39.50</td>
<td>56.72</td>
<td>67.35</td>
<td>NA</td>
<td>73.21</td>
<td>NA</td>
<td>59.76</td>
</tr>
<tr>
<td>1993</td>
<td>38.21</td>
<td>52.67</td>
<td>71.65</td>
<td>57.31</td>
<td>73.38</td>
<td>82.38</td>
<td>61.61</td>
</tr>
<tr>
<td>1994</td>
<td>43.35</td>
<td>42.27</td>
<td>68.66</td>
<td>60.85</td>
<td>62.59</td>
<td>81.19</td>
<td>64.66</td>
</tr>
<tr>
<td>1995</td>
<td>55.95</td>
<td>42.19</td>
<td>76.16</td>
<td>62.69</td>
<td>64.68</td>
<td>75.30</td>
<td>61.17</td>
</tr>
<tr>
<td>1996</td>
<td>38.66</td>
<td>47.08</td>
<td>69.34</td>
<td>63.54</td>
<td>67.40</td>
<td>69.38</td>
<td>61.78</td>
</tr>
<tr>
<td>1997</td>
<td>39.85</td>
<td>41.83</td>
<td>72.93</td>
<td>61.73</td>
<td>64.02</td>
<td>66.19</td>
<td>60.22</td>
</tr>
<tr>
<td>1998</td>
<td>40.15</td>
<td>47.76</td>
<td>73.68</td>
<td>61.13</td>
<td>63.09</td>
<td>67.58</td>
<td>61.31</td>
</tr>
<tr>
<td>1999</td>
<td>39.01</td>
<td>42.42</td>
<td>67.31</td>
<td>63.40</td>
<td>60.56</td>
<td>67.99</td>
<td>61.99</td>
</tr>
<tr>
<td>2000</td>
<td>39.61</td>
<td>31.61</td>
<td>66.17</td>
<td>64.51</td>
<td>63.59</td>
<td>69.95</td>
<td>60.99</td>
</tr>
<tr>
<td>2001</td>
<td>41.88</td>
<td>42.27</td>
<td>68.02</td>
<td>66.51</td>
<td>63.46</td>
<td>42.58</td>
<td>55.87</td>
</tr>
<tr>
<td>2002</td>
<td>43.98</td>
<td>NA</td>
<td>NA</td>
<td>70.47</td>
<td>62.77</td>
<td>52.07</td>
<td>63.41</td>
</tr>
</tbody>
</table>

**Avg.** 41.83 44.68 70.13 63.21 65.34 67.46 61.16

**Min.**

Range 38.21 31.61 66.17 57.31 60.56 42.58 55.87

**Max.**

Range 55.95 56.72 76.16 70.47 73.38 82.38 64.66

**Source :** Annual Report of TTL, Mukund, Zenith, Bajaj, K.B.X. and Ispat Industries for the period from 1992 to 2002.
Sample Units

1) Taparia Tools Limited.
2) Mukund Limited.
3) Zenith Limited.
4) Bajaj Auto Limited.
5) Kalyani Breaks Limited.
6) Ispat Industries Limited.

Taparia Tools Ltd.

During the 11 years period Raw Material Cost varied by 5.77% from 38.21% in 1992-93 to 43.98% in 2001 - 2002. The trend was fluctuating. In the year 1995 the cost was very high i.e. 55.95% because the company sold the Screw-driver and Pliers more than other product. These products required the plastic component therefore the consumption of plastic component was more in that year. Rest of the year cost was around 40% to 43%, which was below the Engineering Industries Average.

Graphical Representation

![Graph](image-url)
Mukund Ltd.

Mukund's Raw Material Cost varied from 56.72% in 1991-92 to 31.61% in 1999-2000, constituted variation of 25.11%. This variation was very high, but it was a good sign that the cost went down to 31.61% from 56.72%. In the year 2000-2001 cost again grew up from 31.61% to 42.27%. In the year 1992-93 the Raw Material Cost of Mukund was very high but in comparison to other industries it was slightly less. During the year 1996-99 only Taparia Tools Raw Material cost was less than Mukund but other industries cost was more than Mukund.

In the year 2000 cost registered was very low i.e. 31.61%. But in the next year it went up by 42.27%. In comparison to other industries Mukund's Raw Material Cost was low during the period. In the year 1994, 1995, 2000 Raw Material Cost was less than Taparia Tool's, the rest of the period cost was more than Taparia Tools. In the year 1992-93 cost was slightly higher but it was below the average of industrial norms. The average cost was 44.68% during the period.

Graphical Representation
Zenith Ltd.

Zenith's Raw Material Cost was higher in comparison to other industries. During the 10 years period Zenith Raw Material Cost varied from 76.16% in 1994-95 to 66.17% in 1999-2000 giving variation of 9.99%. In the year 1992, 1993 and 1994 the Raw Material Cost of Zenith was less than Ispat Industries and K.B.X. industries. The remaining period zenith cost was higher than other industries. It also crossed the industrial average hence the management had to take the serious view for controlling the Raw Material Cost.

Graphical Representation

Bajaj Auto Ltd.

Bajaj's minimum Raw Material Cost percentage to the cost of production registered was 57.31% in 1993 and maximum was 70.47% in 2002, constituted the variation of 13.16%. Except to the year 1997 and 1998 when the cost was in increasing trend. The average cost was 62.21% during the period. Bajaj's Raw Material Cost crossed the industrial average and throughout the period the cost was more than 60%. In our observation the industry using the
components in the production incurred more Raw Material Cost in comparison to other industries. In our study Bajaj and K.B.X. are assembly based industries. Both industries were purchasing the components from other vendors therefore Bajaj should control the component cost.

**Graphical Representation**

![Graph](image)

**K.B.X. Ltd.**

K.B.X. average Raw Material Cost was 59% during the 11 years period from 1991-1992 to 2001-2002. Maximum cost was 73.38% incurred during the year 1992-93 and minimum cost was 62.59% immediately in the next year i.e. 1993-94 giving variation of 10.79%. It was within the range of Engineering Industries but considering present recession period and tough competition cost was at higher side. The Kalyani Breaks is the break manufacturing company. It's Raw Material is breaks component and its nature is to assemble the components and manufacture the breaks. For controlling the Raw Material Cost the management has to control the component's cost.
Graphical Representation

Ispat Industries Ltd.

Ispat Industry’s Raw Material Cost was very high in the year 1992-93. The maximum cost was 82.38% and minimum cost was 42.58% in the year 2000-2001, forming variation of 39.80%. Costs were controlled and reduced continuously during the period. In the year 1997-98 and 1999-2000 cost increased by 1.39% and 1.96% respectively. After achieving the minimum range of 42.58% in the year 2000-01, cost again went up to 52.07% in the year 2001-02. But the cost was within the range of industrial average. In comparison to other industries cost was less except for first three years.

Graphical Representation

[Diagram showing cost trend over years]
On observing we can say that Ispat Industries and Zenith have to take more efforts for controlling the Raw Material Cost, especially Zenith have to search out the reasons for their high cost. Whether the consumption is more than standards or Raw Material prices are more than standards.

**Engineering Industries Average**

**Graphical Representation**

While comparing the industrial average throughout the period of 11 years, we observed that the Raw Material Cost varied from 64.66% in 1993-94 to 55.87% in 2000-2001, constituted variation of 8.79%. The Raw Material Cost again grew up to 63.41% in 2001-2002. On the observation of graph it seems that in the first 3 years cost increased. Latter on from 1995 to 2000 it was stable in the range of 60% to 62%. In the year 2001 it went down to 55.87% and finally in the last year 2002 it again increased up to 63.41%.

**Direct Labour Cost:**

Labour cost is a second major element of cost. It is the most sensitive element amongst the three elements of cost. The control of labour cost is more difficult as there is a human element in labour. If it is not controlled properly, it
will results in:

1) Low labour efficiency.
2) Low volume of output.

Increase in labour cost per unit is possible due to:

1) High incidence of defectives, scrap and spoilage.
2) High machine breakdowns.
3) High tool breakage.
4) High overhead cost due to absorption of fixed overhead cost.

Hence economic and efficient labour utilization is a need of the industry. This will maximize the output of the workers and minimize the labour cost per unit of output.

In general, labour cost is divided into two parts,

(i) Direct labour cost  (ii) Indirect labour cost.

The cost paid to the labours on the shop floor is a direct labour cost. These labours are converting the raw material into finished product, such as Machine operators, Welders, Assembly line workers, Craftsman, Polishers etc. Payment to the direct workers is called direct wages.

In the annual report of companies the Employee’s Cost was given under common head & not separately i.e. direct and indirect cost. Researcher has personally visited Taparia Tools, Kalyani Breaks and Bajaj Auto for collection of data regarding employee’s nature of working and production process and found that 2/3 of employees were engaged on direct production and 1/3 of employees were engaged in service department. Therefore the entire companies employee’s cost is bifurcated in this ratio. On observation it seems that the Taparia Tools direct labour cost incurred was very high in comparison to other units.
This cost was high due to the reason that hand tool industry (Taparia) are labour oriented, therefore number of employees are more in proportion to company’s sales turnover. On the other hand Ispat Industries labour cost was very low in comparison to other units. This is because Ispat Industries hired their labours on contractual basis. Therefore the Ispat was saving additional burden of fixed cost i.e. Leave salary, Bonus, Gratuity, P.F. and ESIS. etc.

Table No. 3.3 : Direct Labour Cost Percentage To Cost Of Production During The Year 1992 To 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>TTL</th>
<th>Mukund</th>
<th>Zenith</th>
<th>Bajaj</th>
<th>KBX</th>
<th>Ispat</th>
<th>Engg. Ind.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>18.46</td>
<td>3.83</td>
<td>7.74</td>
<td>NA</td>
<td>9.04</td>
<td>NA</td>
<td>5.05</td>
</tr>
<tr>
<td>1993</td>
<td>17.35</td>
<td>3.97</td>
<td>5.70</td>
<td>5.99</td>
<td>7.55</td>
<td>0.78</td>
<td>4.68</td>
</tr>
<tr>
<td>1994</td>
<td>14.03</td>
<td>4.72</td>
<td>9.00</td>
<td>5.47</td>
<td>5.45</td>
<td>0.92</td>
<td>4.34</td>
</tr>
<tr>
<td>1995</td>
<td>11.41</td>
<td>4.07</td>
<td>6.27</td>
<td>5.13</td>
<td>4.92</td>
<td>0.89</td>
<td>4.31</td>
</tr>
<tr>
<td>1996</td>
<td>13.07</td>
<td>3.73</td>
<td>8.58</td>
<td>5.46</td>
<td>5.87</td>
<td>1.04</td>
<td>4.15</td>
</tr>
<tr>
<td>1997</td>
<td>14.59</td>
<td>5.17</td>
<td>6.13</td>
<td>5.32</td>
<td>6.13</td>
<td>1.06</td>
<td>4.38</td>
</tr>
<tr>
<td>1998</td>
<td>14.39</td>
<td>5.15</td>
<td>6.47</td>
<td>5.83</td>
<td>6.80</td>
<td>1.05</td>
<td>4.63</td>
</tr>
<tr>
<td>1999</td>
<td>16.78</td>
<td>6.80</td>
<td>8.82</td>
<td>5.50</td>
<td>8.09</td>
<td>1.20</td>
<td>4.83</td>
</tr>
<tr>
<td>2000</td>
<td>15.38</td>
<td>5.78</td>
<td>8.85</td>
<td>5.29</td>
<td>7.28</td>
<td>1.24</td>
<td>4.68</td>
</tr>
<tr>
<td>2001</td>
<td>15.49</td>
<td>4.64</td>
<td>7.85</td>
<td>5.19</td>
<td>7.70</td>
<td>1.50</td>
<td>4.17</td>
</tr>
<tr>
<td>2002</td>
<td>14.59</td>
<td>NA</td>
<td>NA</td>
<td>4.73</td>
<td>6.80</td>
<td>1.32</td>
<td>3.61</td>
</tr>
<tr>
<td>Avg.</td>
<td>15.05</td>
<td>4.79</td>
<td>7.54</td>
<td>5.39</td>
<td>6.88</td>
<td>1.10</td>
<td>4.44</td>
</tr>
<tr>
<td>Min. Range</td>
<td>11.41</td>
<td>3.73</td>
<td>5.70</td>
<td>4.73</td>
<td>4.92</td>
<td>0.78</td>
<td>3.61</td>
</tr>
<tr>
<td>Max. Range</td>
<td>18.46</td>
<td>6.80</td>
<td>9.00</td>
<td>5.99</td>
<td>9.04</td>
<td>1.50</td>
<td>5.05</td>
</tr>
</tbody>
</table>

Taparia Tools Ltd.

The labour cost of Taparia Tools Ltd. was very high in comparison to other units. In the year 1991-92 the labour cost was maximum at 18.46% and minimum at 11.41% in the year 1994-95. The cost variation was 7.05%. The cost was very high due to the fact that it is labour oriented unit and labours are permanent in nature. The Taparia Tools management has to think about the atomization to reduce labour cost. With the present labour strength, Management should increase production capacity and reduce labour cost. The average labour cost during the period was 15.04%, which was serious matter, and management should take necessary steps for the reduction of labour cost.

Graphical Representation

![Graphical Representation]

Mukund Ltd.

Mukund Limited registered the lowest labour cost i.e. 3.73% in the year 1996 and highest 6.80% in the year 1999, constituting the variation of 3.07%. The average labour cost during the period was 4.79%. The trend of labour cost was increasing in initial period upto 1994. In 1995 & 1996 it decreased by 0.65% and 0.34% respectively. After that every year it increased and decreased by one or two percent and finally in the year 2001 it was 4.64%.
The steel industry hired the labour on contract basis therefore their labour cost was less than other industries. But Ispat Industries labour cost was less than Mukund. The graphical position shows the trend is as below.

**Graphical Representation**

![Graph showing labour cost over years](image)

**Zenith Ltd.**

Zenith’s direct labour cost percentage to the cost of production varied from 5.70% in 1992-93 to 9.0% in 1993-94, giving variation of 3.3%. The said cost increased immediately within a year. After 1994 cost was controlled and reduced upto 6.13% till 1996-97. In 1997 onwards cost again increased till 2000 and reached upto 8.85%. In the year 2000-01 cost decreased by 1.0% and booked at 7.85%. The direct labour cost of zenith was higher than Mukund, Bajaj, KBX, Ispat and Industries average. Zenith recorded the average cost of 7.54% during the period. Zenith's management should take efforts for controlling the cost.
Graphical Representation

Bajaj Auto Ltd.

Bajaj's direct labour cost percentage to cost of production varied from 5.99% in 1993 to 4.73% in 2002, giving variation of 1.26%. This cost continuously reduced except in 1996 and 1998. (The cost increased by 0.33% in the year 1996 and in 1998 it increased by 0.51%). The average labour cost during the period was 4.79%. In comparison to other industries Bajaj's labour cost was higher than Ispat and Mukund Industries but lower than Taparia Tools, Zenith Ltd. and K.B.X. For controlling labour cost Bajaj has already taken the steps and started Voluntary Retirement Scheme (VRS) for their employees.

Graphical Representation
K.B.X. Ltd.

K.B.X. direct labour cost percentage to the cost of production varied from 9.04% in 1991-92 to 4.92% in 1994-95, constituted variation of 4.12%. The average of direct labour cost during the period was 6.88%, which was at higher side. K.B.X. labour cost was higher than Mukund, Ispat Industries and Bajaj but lower than Taparia Tools and Zenith Ltd. The cost was higher than the industrial average therefore K.B.X. has to take the efforts for the reduction of labour cost.

The line Graph shows the cost downtrend from 1992-94 and from 1994-96 in increasing trend and it went down till 1999. In 2000 it grew up by 3.03% and in 2001 it reduced by 0.13%. In 2002 it again went down to 62.77%.

**Graphical Representation**

Ispat Industries Ltd.

The labour cost percentage to cost of production varied from 0.78% in 1992-93 to 1.50% in 2000-01, giving variation of 0.72%. This percentage was very low in comparison to other industry. Because Ispat Industries hired the labour on contractual basis. The Ispat Industries labour cost trend was in increasing trend and it increased by 0.72% during the period. The average direct labour cost of Ispat industries registered was at 1.1%.
The direct labour cost of Engineering Industries registered within the range of 5.5% in 1991-92 to 3.61% in 2000-02 varied by 1.44%. The labour cost was in declining trend from 1995-96 to 1998-99, it increased slightly from 4.15% to 4.83%, after 1999 the cost decreased and reached up to 4.17% in the year 2001 and in the year 2002 up to 3.61%. The said cost appeared within the range of standard industrial norms.
Manufacturing Expenses:

Other manufacturing cost means expenses incurred in the factory for the purposes of production is called as manufacturing expenses or factory overheads. Which includes indirect materials such as consumable items, electrodes, coolants, oils, gases, tools, spares, cotton waste, repairs and maintenance of Building, plant and machinery, jobwork charges etc. These items are required for completion of a finished product.

This cost is controllable cost, if the management concentrate on it and advice to concern person for proper use of respective material. In normal situation said cost varies in the range of 25% to 35% in engineering industries.

Manufacturing expenses are directly related to production. While studying the manufacturing cost researcher has worked-out the percentage of cost with the cost of production. Following is the unit-wise analysis given for detail study and comments.
Table No. 3.4: Mfg. Expenses Percentage To Cost Of Production During The Year 1992 To 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>TTL</th>
<th>Mukund</th>
<th>Zenith</th>
<th>Bajaj</th>
<th>KBX</th>
<th>Ispat</th>
<th>Ind. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>43.11</td>
<td>36.98</td>
<td>23.67</td>
<td>NA</td>
<td>14.20</td>
<td>NA</td>
<td>32.95</td>
</tr>
<tr>
<td>1993</td>
<td>46.10</td>
<td>41.08</td>
<td>22.22</td>
<td>29.83</td>
<td>16.06</td>
<td>15.07</td>
<td>29.44</td>
</tr>
<tr>
<td>1994</td>
<td>44.12</td>
<td>52.00</td>
<td>22.14</td>
<td>29.06</td>
<td>30.06</td>
<td>17.57</td>
<td>28.54</td>
</tr>
<tr>
<td>1995</td>
<td>33.56</td>
<td>52.25</td>
<td>18.78</td>
<td>29.12</td>
<td>29.06</td>
<td>21.48</td>
<td>32.27</td>
</tr>
<tr>
<td>1996</td>
<td>44.77</td>
<td>47.39</td>
<td>22.77</td>
<td>27.97</td>
<td>25.38</td>
<td>26.20</td>
<td>31.35</td>
</tr>
<tr>
<td>1997</td>
<td>46.06</td>
<td>50.52</td>
<td>21.27</td>
<td>28.73</td>
<td>28.03</td>
<td>28.55</td>
<td>31.71</td>
</tr>
<tr>
<td>1998</td>
<td>45.59</td>
<td>44.86</td>
<td>21.34</td>
<td>28.12</td>
<td>28.41</td>
<td>27.75</td>
<td>30.25</td>
</tr>
<tr>
<td>1999</td>
<td>43.16</td>
<td>46.65</td>
<td>25.41</td>
<td>27.17</td>
<td>27.85</td>
<td>27.70</td>
<td>29.64</td>
</tr>
<tr>
<td>2000</td>
<td>44.04</td>
<td>58.52</td>
<td>24.96</td>
<td>26.28</td>
<td>26.48</td>
<td>27.17</td>
<td>31.08</td>
</tr>
<tr>
<td>2001</td>
<td>41.69</td>
<td>49.32</td>
<td>24.09</td>
<td>23.54</td>
<td>25.91</td>
<td>48.12</td>
<td>34.60</td>
</tr>
<tr>
<td>2002</td>
<td>40.71</td>
<td>NA</td>
<td>NA</td>
<td>20.14</td>
<td>28.06</td>
<td>37.98</td>
<td>26.97</td>
</tr>
</tbody>
</table>

| Avg. | 42.99| 47.96  | 22.67  | 27.00 | 25.41| 27.76 | 30.80     |
| Min. Range | 33.56| 36.98  | 18.78  | 20.14 | 14.20| 15.07 | 26.97     |
| Max. Range | 46.10| 58.52  | 25.41  | 29.83 | 30.06| 48.12 | 34.60     |

Taparia Tools Ltd.

Graphical Representation

Taparia Tools Ltd. manufacturing expense percentage to the cost of production during the period varied from 46.10% in 1992-93 to 33.56% in the year 1994-95, constituting the variation of 12.54%. Except 1994-95 rest of the year’s cost fluctuated within the range of 40% to 45%. The average cost for the period was 43%. This cost was comparatively very high. The reduction in the cost is necessary and it should be reduced by 10% to 15% to match the Industrial Average.

Mukund Ltd.

Graphical Representation
During the period of study, cost of manufacturing expenses to cost of production percentage varied from 36.98% in 1991-92 to 58.52% in 1999-2000, Constituting variation of 21.54%. The cost reduced more than 50% in the year 1993-94, 1994-95,1996-97 and 1999-2000. In rest of years cost fluctuated between 40% to 46%. This cost percentage was very high. Normally cost should not go more than 30%. Therefore management of Mukund must concentrate on reduction of this cost and it should be reduced to 30%. The average cost recorded during the period was 47.96%.

The line graph shows increasing trend from 1992-95 and then it fluctuated year by year till 1999 and recored as 58.52%. In the year 2002 it reduced up to 49.32%.

While comparing other industries manufacturing expenses we observe that Taparia Tools Ltd. and Mukund Ltd. Manufacturing Expenses was very high. Since this cost was controllable cost, the Management should take the efforts for bringing down the average below the Industrial average.

Zenith Ltd.

Graphical Representation
During the study period the percentage of manufacturing expenses to cost of production was in fluctuating trend. The minimum cost was 18.78% in the year 1994-95 and maximum was 25.41% in the year 1998-99. Zenith's manufacturing expenses was within the range. In rest of the period cost fluctuated within 2.0% to 3.7% i.e. from 21.27% to 24.96% respectively. The average cost recorded during the period was 22.67%.

The line graph shows the decreasing cost trend from 1992-95 and in 1996 it again raised up to 22.77%. In the year 1997-98 the cost was more or less same but in the year 1999 it increased by 4.07% and in the year 2000 and 2001 reduced slightly.

**Bajaj Auto Ltd.**

**Graphical Representation**

![Graph showing the percentage of manufacturing expenses](image)

Manufacturing expenses percentage to total cost of production registered in declining trend throughout the period of study from 1992-93 to 2001-2002. The proportion varied from 29.83% in 1992-93 to 20.14% in 2001-2002 forming a range of 9.69%. On the whole the proportion of expenses in Bajaj was slightly higher in comparision to other Engineering Industries. In other companies the proportion of manufacturing expenses fluctuated from year to year while in the Bajaj it decreased throughout the study period. From the manufacturing expenses figures it seems that Bajaj has controlled the cost nicely.
K.B.X. Ltd.

Graphical Representation

In Kalyani Breaks during the period of study from 1991-92 to 2001-2002 the percentage of manufacturing expenses to cost of production varied from 14.20% in 1991-92 to 30.06% in 1993-94, constituting a range of 15.86%. It appears from table that the cost increased from 1992 to 1994 by 15.86%, which was more than double the figure of 1991-1992. After 1994 Manufacturing Expenses decreased except the year 1997, 1998 and 2002. In these years expenses increased. The average cost of manufacturing expenses was 25.41%. The K.B.X. should take more efforts for controlling these expenses.

If we compare other industries Manufacturing Expenses with K.B.X. Manufacturing Expenses, we observe that except Zenith, other industries cost was more than K.B.X. In the year 2002 cost went up by 2.15%, so the management should see that the cost should not go more than its average cost.
Ispat Industries Ltd.

Graphical Representation

In Ispat the proportion of manufacturing cost to cost of production registered in increasing trend from 1992 to 2001. The proportion varied from 15.07% in 1993 to 48.12% in 2001, constituting a range of 33.05%. However, the proportions registered an increasing trend from 1993 to 1997; but from 1998 onward proportion slightly decreased upto 2000 and registered to 27.17%. In the year 2001 it was shoot up by 20.95% and in 2002 proportion slightly decreased from 48.12% to 37.98%. The average cost registered was 27.76%, which was higher than other Units.

Industrial Average

Graphical Representation
The Engineering Industry's manufacturing cost percentage to cost of production varied from 34.60% in 2000-01 to 26.97% in 2001-02, constituting a range of 7.63%. The percentage decreased in 2002 by 7.63%. In rest of the years’ percentage varied by 1% to 2%, sometimes cost increased and sometimes it decreased. Actually manufacturing cost should be in the range of 25% to 30% only and not more than 30%. The average cost of Engineering Industry during the study period was workedout as 30.80%.

While comparing the manufacturing cost of various units, it is observed that Taparia Tools Ltd. and Mukund Ltd. incurred highest cost i.e. 43.00% and 47.96% respectively. Other units manufacturing expenses were in the range of 22.67% to 27.76%. The said cost was lower than Engineering Industry’s cost.

Manufacturing cost incurred was highest in Taparia Tools and Mukund due to purchase of components, the jobwork done from the outsiders and reversal of excise modvat.

**Depreciation:**

Depreciation is the diminution in the value of a fixed assets due to usage and lapse of time. A fixed assets has a span of life during which it render services for production purposes and on the expiry of which, the assets has either no value or has only small scrap value. The life of assets is enhanced by efficient maintenance and reduced by its extensive use. Throughout its life the machine gradually diminishes the value to reach the scrap value at the expiry of its life. The gradual reduction in the value is called depreciation. Depreciation is the result of two factors namely, usage and lapse of time. An asset continues to depreciate with the passage of time even if it is not in active use, though the rate of depreciation may be lower. The more the use of assets, the depreciation will be larger.
If an asset works on two or more shifts, the depreciation may be double or trebled. The method of depreciation takes either the usage or time factor or both into consideration while calculating the depreciation.

Depreciation is the major cost component in cost of production of Engineering Industry. The Engineering Industries in Maharashtra are charging the depreciation on all the assets on the basis of straight-line method. Due to this method in depreciation, fluctuation in the cost is not much. However, sometimes other factors are affecting the cost like revaluation of assets, assets purchase in foreign currency and inflation cost. Effect adds the value of assets, accordingly the depreciation cost is also adjusted. Sometimes because of heavy losses management may adjust depreciation cost from the revaluation reserve funds. Such type of adjustments affects the proportion of depreciation cost. Due to number of shifts working, the depreciation proportion gets fluctuated.
Table No. 3.5: Depreciation Percentage To Cost Of Production During The Year 1992 To 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>TIL</th>
<th>Mukund</th>
<th>Zenith</th>
<th>Bajaj</th>
<th>K.B.X</th>
<th>Ispat Ind. Avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>3.06</td>
<td>2.98</td>
<td>3.48</td>
<td>NA</td>
<td>4.79</td>
<td>NA</td>
</tr>
<tr>
<td>1993</td>
<td>1.87</td>
<td>2.95</td>
<td>2.39</td>
<td>7.32</td>
<td>4.97</td>
<td>4.71</td>
</tr>
<tr>
<td>1994</td>
<td>1.80</td>
<td>1.99</td>
<td>2.01</td>
<td>5.20</td>
<td>2.69</td>
<td>3.58</td>
</tr>
<tr>
<td>1995</td>
<td>1.55</td>
<td>1.95</td>
<td>1.24</td>
<td>3.53</td>
<td>2.09</td>
<td>4.87</td>
</tr>
<tr>
<td>1996</td>
<td>6.50</td>
<td>1.98</td>
<td>1.30</td>
<td>3.49</td>
<td>2.10</td>
<td>5.52</td>
</tr>
<tr>
<td>1997</td>
<td>2.13</td>
<td>2.67</td>
<td>0.95</td>
<td>4.74</td>
<td>2.55</td>
<td>6.08</td>
</tr>
<tr>
<td>1998</td>
<td>2.43</td>
<td>2.50</td>
<td>0.85</td>
<td>5.71</td>
<td>3.41</td>
<td>5.64</td>
</tr>
<tr>
<td>1999</td>
<td>3.46</td>
<td>4.30</td>
<td>1.37</td>
<td>4.74</td>
<td>4.58</td>
<td>5.10</td>
</tr>
<tr>
<td>2000</td>
<td>3.18</td>
<td>4.40</td>
<td>1.75</td>
<td>4.89</td>
<td>3.93</td>
<td>5.50</td>
</tr>
<tr>
<td>2001</td>
<td>2.84</td>
<td>4.02</td>
<td>1.23</td>
<td>5.64</td>
<td>4.43</td>
<td>9.74</td>
</tr>
<tr>
<td>2002</td>
<td>2.53</td>
<td>NA</td>
<td>NA</td>
<td>5.36</td>
<td>4.11</td>
<td>10.50</td>
</tr>
</tbody>
</table>

Min. Range: 1.80  1.95  0.85  3.49  2.09  3.58  3.18
Min. Range: 6.50  4.40  3.48  7.32  4.97  10.50  7.17
Min. Range: 2.85  2.97  1.66  5.06  3.60  6.12  4.69

Taparia Tools Ltd.

Graphical Representation

Proportion of Depreciation cost to cost of production of Taparia Tools was 1.55% in 1995 to 6.50% in 1996, forming the range of 4.95%. The cost increased so much within the year because Taparia Tools adjusted the foreign currency rate and re-evaluated the plant and machineries. Accordingly depreciation cost also adjusted. Therefore the cost of depreciation registered was 6.50% in 1996, otherwise cost fluctuated below 2%. The average cost recorded during the period was 2.85%.

If we compare the cost with other industries, we find that except Zenith Ltd. the cost of the other industries were more than the Taparia Tools ltd.

Mukund Ltd.

Graphical Representation
In Mukund the proportion of depreciation cost to the cost of production was in a fluctuating trend throughout the period of study. The proportion varied from 1.95% in 1995 to 4.40% in 2000, constituting range of 2.45%. However, it appears from the table that the Mukund Industry exercised proper control over the depreciation cost. The average cost recorded during the period was 2.97%, which was within the range of normal cost.

In the line graph we see that the cost reduced in year 1994 and increased in year 1997 and it went down in the year 1999 and slightly increased in year 2000 by 0.10%. Finally in the year 2001 it came down by 4.02%.

The Depreciation Cost of Mukund was higher than Taparia Tools and Zenith Ltd. but lower than other units.

**Zenith Ltd.**

**Graphical Representation**

![Graphical Representation](image)

The proportion of depreciation cost to cost of production in Zenith was lower, as compared to other industries. The depreciation varied in range of 2.63%, from 3.48% in 1992 to 0.85% in 1998. The cost was continuously decreased during the period. After 1998 it increased upto 1.37% in 1999 and 1.75% in 2000. In 2001 it again gone down to 1.23%. The average cost recorded during the period was 1.66%.
Bajaj Auto Ltd.

Graphical Representation

In Bajaj the proportion of depreciation cost to cost of production, during the period 1993 to 2002 constituted a range of 3.83% varied from 7.32% in 1993 to 3.49% in 1996. In the initial period cost decreased substantially, after 1996 it fluctuated from year to year. Comparatively Bajaj’s depreciation cost recorded at higher side. The average depreciation cost of Bajaj was 5.06%. The Bajaj Auto Ltd. did not make any adjustment in depreciation during the study period.

K.B.X. Ltd.

Graphical Representation
In K.B.X. the proportion of depreciation cost to the cost of production for the period varied from 4.79% in 1993 to 2.09% in 1994, forming a range of 2.88%. The trend of depreciation recorded in fluctuating mode. The average depreciation cost was 3.60% during the study period.

**Ispat Industries Ltd.**

During the study period the proportion of depreciation cost to the cost of production varied from 3.58% in 1994 to 10.50% in 2002, constituting range of 6.92%. The percentage of 2001 and 2002 was 9.74% and 10.50% respectively, which were very high in comparison to earlier year’s depreciation. This cost was high because of plant and machinery’s values appreciated by foreign exchange rate difference during the period, accordingly depreciation cost adjusted.

**Graphical Representation**

![Graph](image)

**Industrial Average**

The proportion of depreciation cost to the cost of production during the period varied from 3.18% in 1992 to 7.17% in 2002, constituting a range of 3.99%. The average cost booked during the period was 4.69%, which was at higher side due to revaluation of assets and exchange rate difference.
During the period of 1st five years i.e. from 1992 to 1997 cost varied from 3.18% to 4.55% and in the latter period from 1997 to 2002, it varied from 4.55% to 7.17%. The cost trend registered in increasing trend throughout the study period.

Graphical Representation

The depreciation cost of Zenith Ltd., Taparia Tools Ltd., Mukund Ltd. and Kalyani Breaks Ltd. was at lower side. The average of said cost was within the range of 1.66% to 3.60%. As regards the Bajaj Auto and Ispat Industry’s cost seems very high. During the period Bajaj recorded the average cost of 5.06% and Ispat recorded the average cost of 6.12%. Many times, most of the organizations were making adjustment in depreciation cost like revaluation of assets and creating depreciation reserve. Whenever there was a heavy loss, they transferred the funds from the reserve and made the adjustment in depreciation. Therefore it is very difficult to give scientific comparison of depreciation cost for different units. In our case study Taparia Tools Ltd., Mukund Ltd., Zenith Ltd. and Ispat industry’s Ltd. re-valuated the assets and created reserve. From the said reserve whenever they required the funds they were transferring the funds by adjustment of the depreciation. This is one of the reason for the reduction of depreciation cost.
Cost Of Production

To arrive at the cost of production we have to add following:

1) Raw Material Cost.
2) Direct Labour Cost.
3) Manufacturing Expenses.
4) Depreciation Cost.

The total of these four elements gives us cost of production. This cost of production is not compared year-wise. We can not consider the inter-firm comparison because these cost will be considered and compared in the next chapter i.e. No. 4, i.e. Profitability. To arrive at the operating profit, we have to the sales of respective units for the study period and deduct the cost of production from sales figures. Balance amount is operating profit or loss. Therefore readers are requested to note that the analysis of production cost is precisely given in the next chapter.
Reference:

1) Management Accountancy
   - Chakraborty & Chakraborty

2) Cost & Management Accountancy
   - N.K. Prasad.
   Book Syndicate P. LTD. 1996.

3) Cost And Management Accountancy
   - V.K. Saxena,
   C.D. Vashist.
   Sultanchand & Sons - 1996.

4) Asset/Liability Management
   - Frank J. Fabozzi
   Atsuo Konishi.
   S. Chand & Co. Ltd. 1995.

5) Principles Of Cost Accountancy
   - Dr. S.N. Maheshwari.
   Sultanchand & Sons - 1990.

6) Practical Costing
   - Tulsian's
   P.C. Tulsian.
7) Management & Cost Accounting
    - Khan & Jain.
    Book Syndicate P. Ltd. 1997

8) Advance Cost Accounting
    - B.M. Lalla Nigam & G.L. Sharma
    Himalaya Publishing House 2000

9) Cost Accounting
    - P.V. Rathnam and D. Hanumanta Raju.

10) Cost Accounting
    - Jain Narang.

11) Analysis of Financial Statement (Aluminum Industry)
    - N.P. Agrawal.

12) Financial and Cost Analysis of Sugar Co-operative.
    - G.A. Nikam.