Chapter 4 - Measurement of Cost-effectiveness
- Cost-structure Analysis
CHAPTER 4

MEASUREMENT OF COST EFFECTIVENESS- COST ANALYSIS OF SELECTED SUGAR CO-OPERATIVES

4.1 Technical Parameters for Assessing Cost Effectiveness: -

Sugar industry in India is operating under multiple controls and regulations and is under constant pressure of containing the sugar prices in spite of the steep increase in the costs of the inputs including the raw material cost. In fact the sugar industry is one of the very few industries that are still under tight Government control even after 13 years of the economic liberalisation.

In such a competitive situation, in order to survive, the sugar co-operatives will have to apply themselves to the arduous task of controlling and reducing the cost of production. The raw material cost is governed by the SMP (Statutory Minimum Price). Therefore, for the cost optimization improvement in technical efficiency is an imperative. The norms regarding the efficiency will have to be studied thoroughly and efforts will have to be made to achieve them. The norms for the technical efficiency are enumerated below.

4.2 Technical Parameters For Measuring Efficiency: -(i)

1. Cane quality:- It has been observed that besides the basic quality of the raw material, the presence of the extraneous matter with the raw material (sugarcane) has a very depressing influence on the extraction. The extraneous matter represents the grass etc cut along with the sugarcane. The standard norm for the presence of extraneous matter is
2% of the total sugarcane procured. If there is presence of more percentage of the extraneous matter, it results into a heavy loss in the form of increased cost of production. An effort has been made to quantify the losses due to the extraneous matter and it has been observed that extraneous matter of .05% results into an increased cost of production of sugar of Rs. 56 per bag, i.e. a quintal.

1. **Time Between harvesting and crushing:** The crushing of sugarcane should be commenced immediately after its harvesting. In other words, the time gap between the harvesting and the crushing should be minimum. The reason for this is that the sugarcane starts deteriorating immediately after it is harvested from the farms. The sugar in the sugarcane starts inverting due to acidic nature of the juice and also due to the presence of the ‘Invertus’ enzyme in the juice. Similarly bacteria present in the juice also start consuming the sugar and the sugar content in the juice is further reduced. Apart from this a sticky substance, ‘Dextron’ is also formed which creates hurdles in the sugar formation and the sugar loss in the final molasses increases. It has been observed that due to the time gap of 24 hours between harvesting and crushing, 3-5% sugar is lost and if the gap increases to 48 hours, the loss mounts to about 10%. Therefore the time gap between the harvesting and the crushing should be minimum and as per the standard it should not be more than 24 hours in any case.

2. **Time Efficiency:** In order to achieve the standard efficiency; it is essential that the factory is operating continuously without any break. Sugar industry is a continuous process industry and hence there should be minimum stoppages in the production process. Normally the following reasons are responsible for the stoppages in the manufacturing process.
a) Irregular and insufficient supply of sugarcane.
b) Stoppage due to mechanical and electrical defects.
c) General cleaning
d) Rains and other natural calamities
e) Other.

Out of these reasons, the maximum stoppages are due to the irregular and insufficient supply of sugarcane. It is necessary to take care that the supply of sugarcane is without any interruption and the preventive maintenance of the machinery is taken care of in the off season itself. As per the norms the down time should not be more than 10% of the total time available.

4) **Capacity utilization**: - The installed capacity in case of the sugar factories is measured in terms of the number of tones of sugarcane crushed per day. At the national level, however the installed capacity of the industry is measured in terms of the sugar production per annum. The common practice adopted for expression of capacity utilization relies on a product of cane crushing capacity, average duration of the region, and average recovery of the region, the production of which gives the estimated sugar production potential by which is divided the actual production to arrive at the capacity utilization. The standard norm of capacity utilization is 100%.

5) **Energy consumption**: - Electrical energy is one of the important input in the cost of conversion and its incidence can be estimated to be an equivalent of Rs. 15 to Rs. 30 per bag. It must be realised that saving in power consumed will in one way or other contribute to economy in the conversion cost. There is a need to visualise a
normal/target consumption of power in unit production of sugar. The norm suggested is 18 KWH per quintal of sugar.

6) Steam and fuel: - Another important element in the conversion cost is the cost of steam and fuel. The percentage of the cost of these inputs to the total cost of production works about 3%. This does surely call for attention to economise this cost. Accordingly, the norm suggested for the standard consumption of this item is 0.5 tons per quintal of sugar.

7) Manpower productivity: - The idle time costs the factory very much. The manpower cost plays quite a significant role in the cost of conversion and it is of paramount importance to reduce the same. The suggested norm for the indication of the productivity is Man-days per Ton of sugar is 4 days.

8) Mill Extraction: - Milling station in a sugar factory is a very important section as the recovery of sugar is dependent on the efficiency of the milling section. The first stage in the sugar manufacture is extraction of juice from the sugarcane and the main function of the milling section is to extract maximum possible juice from the sugarcane and thus to minimise the sugar lost in the bagasse. The standard norms in this case are as given below.

   a) Factories established prior to 1987 and without modernization or expansion thereafter: - Minimum 94%

   b) Factories established after 1987/established prior to 1987 but have carried out modernization or expansion thereafter: - Minimum 95%.

In addition to these standards, there are standards regarding the percentage of imbibing water to the fiber and the standard prescribes that the percentage of imbibation water to fiber should be at least between 200 to 220%. The temperature of the added water should be
around 80°C. The hydraulic pressure on the roller should be around 190-200 kg/cm sq.

All these standards are to be followed for maximum extraction of juice from the sugarcane.

9) Water consumption: In the conversion cost of sugar, one of the important element is water. The cost of water is about 3% of the total cost of production. It is a well-known fact that the sugarcane creates its own water and fuel. In view of this it would appear that the water consumed and liquid effluent generated/ discharged by a mill will tend to indicate the inefficiency of the plant management or inadequacy of the technology or systems designs. Therefore there should be constant comparison between actual water consumed and the standard norm in this case. The standard norm suggested for water consumption is,

Water consumed per ton of sugar: - 3 m³.

10) Boiling House Recovery: - The boiling house recovery shows the percentage of sugar bagged to the sugar content in the mixed juice. When the purity of juice is low, the proportion of non-sugars in the juice increases which results in increase of sugar lost in the final molasses. This also increases the proportion of the final molasses. This reduces the recovery of sugar. In order to remove the impact of the purity, boiling house recovery is calculated by taking the purity of juice as 85 units. This is called as the Reduced Boiling House Recovery. The Reduced Boiling House Recovery facilitates the comparison of the efficiency of different sugar factories and also of the efficiency of the boiler house of the same factory at different times. The standard norm for the same is as given below.
Boiler House Recovery: -88%
Reduced Boiler House Recovery: -93%

11) Moisture percentage in Bagasse: At the time of extraction of juice from the sugarcane in the crushing stage, water is to imbibe in the same in order to have maximum extraction. The result is that there is moisture in the bagasse and this moisture reduces the calorific value of the bagasse. More bagasse is to be consumed as a fuel for the steam generation and the bagasse savings is thus reduced. It is therefore advised that the bagasse should be dried before it is fed to the boiled. The standard norm for the moisture content in the bagasse is 49%. If the actual moisture content is more, it will result in higher consumption of bagasse resulting into higher cost of steam.

10) Duration of the season: The duration of the crushing season depends upon the availability of the sugarcane and also on the capacity utilisation of the factory. Though it is very difficult to lay down standard for the duration of the crushing season due to the uncertainty in the availability of the sugarcane, it is said that the duration of the crushing season should be at least 160 days. If the crushing season is prolonged for a longer duration, the recovery percentage is bound to come down as the sugar content in the sugarcane starts decreasing in the summer months. If the crushing season is too short, it indicates the underutilisation of the capacity and in that case also apart from the low recovery, the cost of production increases.

12) Total losses: One of the important parameter for measuring the efficiency of a sugar factory is the total sugar lost. The loss of sugar depends upon quality of the sugarcane, efficiency of the milling section and the boiler house, efficiency of the employees, design of the
machinery as well as the age of the machinery, and also on the capacity utilisation of the factory. The standard norm for the total losses is 2%.

It is very important for the sugar co-operatives to control the sugar losses in bagasse and molasses. The researcher has studied the sugar losses of sugar in both the by products and the observations are shown in the following tables.

Table 4.1
Actual loss of Sugar in Bagasse – factories with by products

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Loss</th>
<th>Actual Loss of Sugar in Bagasse</th>
<th>Factories with By-products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2001-2</td>
<td>0.65</td>
<td></td>
<td>0.590</td>
</tr>
<tr>
<td>2002-3</td>
<td>0.65</td>
<td></td>
<td>0.600</td>
</tr>
</tbody>
</table>

Table 4.2
Actual loss of Sugar in Bagasse – factories without by products

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Loss</th>
<th>Actual Loss of Sugar in Bagasse</th>
<th>Factories without By-products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.65</td>
<td></td>
<td>0.550</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.65</td>
<td></td>
<td>0.630</td>
</tr>
</tbody>
</table>

It is observed from the above tables that in case of most of the factories the actual losses of sugar in bagasse are less than the standard loss. In case of factories where actual losses are more than the standard losses, the amount of such losses is very huge and has affected the profitability of these factories.
Table 4.3  
Actual loss of Sugar in Molasses - factories with by products

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Loss</th>
<th>Actual Loss of Sugar in Molasses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factories with By-products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2001-2</td>
<td>1.2</td>
<td>1.080</td>
</tr>
<tr>
<td>2002-3</td>
<td>1.2</td>
<td>1.100</td>
</tr>
</tbody>
</table>

Table 4.4  
Actual loss of Sugar in Molasses - factories without by products

<table>
<thead>
<tr>
<th>Year</th>
<th>Standard Loss</th>
<th>Actual Loss of Sugar in Molasses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factories without By-products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2001-02</td>
<td>1.2</td>
<td>1.100</td>
</tr>
<tr>
<td>2002-03</td>
<td>1.2</td>
<td>1.070</td>
</tr>
</tbody>
</table>

In this case also some of the factories are incurring sugar losses in molasses more than the standard losses. The amount of sugar lost in molasses is also quite substantial and affects the profitability of the sugar factories.

13) Consumption of process chemicals and the lubricants:- Though there is absence of standards on the consumption of these consumables, as per the present system of reporting, all consumables are expressed in terms of percentage cane which does not bear a direct relationship to the conversion cost of the sugar. This system should be changed and all these should be expressed in relation to unit sugar, i.e. per quintal of sugar.
Thus, in the light of the above discussion, it can be concluded that in order to run the sugar co-operatives in an efficient and viable manner, the following things are extremely important,

1) Capacity utilisation of 100-110%
2) Minimum total losses of sugar.
3) High quality of sugar
4) Saving in energy and in other inputs
5) High level of overall efficiency.

In order to improve the efficiency, it is necessary to prepare a control report, which will show the standard performance and the actual achievement. An analysis of the difference should be made and reasons should be ascertained of the difference. A continuous effort to improve the performance should be made.

4.3 PARAMETERS FOR FINANCIAL PERFORMANCE: - In addition to the technical parameters for the appraisal of the technical performance, there are financial parameters for measuring the financial performance of the sugar co-operatives. These parameters are mentioned below.

TOOLS FOR MEASURING THE FINANCIAL PERFORMANCE: -

The tool used for the evaluation of the financial performance of any organization is the ‘Ratio Analysis” which is done with the help of the financial statements. The important ratios with the help of which the financial performance of any business is analysed are classified into the following types.

A) Ratios showing the profitability or Profitability Ratios
B) Ratios showing the financial position or Financial Ratios
C) Turnover or Activity Ratios
D) Leverage Ratios
E) Other Ratios

All these ratios are discussed in the subsequent chapter. Here the ratios, which are specially designed for the performance evaluation of a sugar co-operative, are discussed in brief.

1. Parameters indicating improvement in the financial health: - In this category, the following three ratios are calculated.

A) \( P_1 \) = Actual Crushing
\[
\frac{\text{Daily Crushing Capacity \times 160}}{\text{Actual Crushing}}
\]

B) \( P_{II} \) = Crushing from the area of operation
\[
\frac{\text{Crushing from the area of operation}}{\text{Total Crushing}}
\]

C) \( P_{III} \) = Actual Recovery of Sugar
\[
\frac{\text{Actual Recovery of Sugar}}{10}
\]

2. Parameter showing ability to increase profits in proportion to the crushing: - The logic behind this ratio is that if the crushing increases, there should be increase in the profits. In other words, if capacity utilisation increases, the profits should also increase. Whether this ability is there or not, is indicated by this ratio. The formula for this ratio is as given below.

\[
\frac{\text{Incremental value of production per ton}}{\text{Production value (Per ton)}}
\]

The above described parameters provide the insight of the strengths and weaknesses of sugar co-operatives. This will create a basis for scientific analysis of cost of the units with by-products and without
by-products. It will also throw light on the impact of by products on the overall profitability/surplus of the units under study.

4.4. A Typical cost structure: -

Cost of production of any organization can be divided into two parts, the first one is the material cost which consists of the raw material cost and the second one is the Conversion cost which consists of labour and overheads incurred for the conversion of the raw material into the finished product. The material cost consists of the direct material consumed in the production of the finished product while in the conversion cost the labour cost incurred is the direct cost and the overheads incurred are the indirect costs. In the overheads, there are further classifications made according to the functions, such as the Manufacturing overheads, Administrative overheads, Selling and Distribution overheads etc. The material cost plus the conversion cost is the total cost of production and it is compared with the selling price of the product for the calculation of the profit or loss. It has become of paramount importance that the cost should be analyzed to know the element wise cost in order to focus on the desired element for the purpose of cost control and cost reduction.

4.5. Cost Analysis of Selected Sugar Co-operatives: -

4.5.1. Manufacturing Process -

Manufacturing of sugar is a continuous process and it involves mainly three processes, viz. the first one is the sugarcane crushing and extracting of the juice, the second one is the clarification of the sugarcane juice and the third one is the crystallization where the sugar crystals are formed with the help of the centrifugal machines. The cost of production is divided into two parts, the first one is the raw material
cost and the second one is the conversion cost. The researcher has attempted to analyze the cost of production of sugar according to the main components of the same in the following paragraphs.

4.5.2. Method of Analysis: -
For the analysis of the cost of production of the co-operative sugar factories under study, the researcher has used the Cost Accounting Record (Sugar) Rules, 1997 as prescribed and made mandatory by the Ministry Of Finance, (Department of Company Affairs) Government of India, for the sugar industry vide their notification dated 15th July 1997.
The data taken from the Annual Accounts of the selected sugar factories was transferred in this format to calculate the cost of production. The salient features of these rules are given in the following paragraphs.

4.5.3 Maintenance of Records: -
The Cost Accounting Record Rules prescribes that a sugar factory should maintain certain records for the purpose of calculation cost of production in a scientific manner. Amongst the important records prescribed are, the records for raw material consumed, salaries and wages, the various utilities like steam, water, power, records for depreciation on the plant and machinery and other fixed assets, research and development expenses, captive consumption of the products, interest, expenses incurred for the affluent treatment, work in progress and the finished stock etc.
4.5.4 Pro-forma for calculation of cost of production: -

The Cost Accounting Record Rules have prescribed pro-forma for the calculation of the cost element wise and stage wise. The various pro-forma are given below.

a) Proforma A :- It is used for the calculation of the Cost of treated water/Effluent Treatment during the year. (Refer Annexure I)

b) Proforma B :- Used for showing the Cost of Steam raised/consumed during the year. (Refer Annexure I)

c) Proforma C :- Cost of the power generated, purchased and consumed during the year. (Annexure I)

d) Proforma D :- Cost of the sugarcane used for the production of sugar during the year (Refer Annexure I)

e) Proforma E :- Cost of the sugar produced during the year (Refer Annexure I)

f) Proforma F :- Cost of the sugar sold during the year. (Refer Annexure I)

Thus with the help of the proforma, it is possible to calculate the cost of the production in scientific manner and also stage-wise.

4.6 Profile of Selected Sugar Factories for the Study: –

For an in-depth analysis of the cost structure, the following sugar cooperatives were selected and component wise cost analysis was conducted. We give the profile of each factory indicating vital, information.
Table 4.3
Profile of Selected Sugar Co-operatives:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name &amp; Location</th>
<th>Year of Estab</th>
<th>Crushing Capacity (TPD)</th>
<th>Ancillary Units based on By-products</th>
<th>Founder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shri. Datta Shetkari SSK Ltd. Shirloe, Dist. Kolhapur</td>
<td>1969</td>
<td>7,000</td>
<td>Distillery</td>
<td>Late. Shri. B. B. Yadav</td>
</tr>
<tr>
<td>2</td>
<td>Tatyasaheb Kore Warna Co-op Sugar Factory Warna Nagar, Dist. Kolhapur</td>
<td>1955</td>
<td>5,000</td>
<td>Paper Mill Distillery</td>
<td>Late. Shri. Tatyasaheb Kore</td>
</tr>
<tr>
<td>3</td>
<td>Vasant Dada Shetkari SSK Sangli</td>
<td>1956</td>
<td>5,000</td>
<td>Distillery Fertilizer</td>
<td>Late. Shri. Vasant Dada Patil</td>
</tr>
<tr>
<td>4</td>
<td>Malegaon SSK Malegaon, Dist. Pune</td>
<td>1955</td>
<td>4,000</td>
<td>Distillery Chemicals</td>
<td>Shri. S.R. Shembekar</td>
</tr>
<tr>
<td>5</td>
<td>Krishna SSK Karad, Dist. Satara</td>
<td>1955</td>
<td>5,000</td>
<td>Distillery Fertilizers</td>
<td>Shri. J. Bhosale</td>
</tr>
<tr>
<td>6</td>
<td>Kisan Veer SSK Bhuinj, Dist. Satara</td>
<td>1968</td>
<td>4,000</td>
<td>Distillery Fertilizer</td>
<td>Late. Shri. K.M Veer</td>
</tr>
<tr>
<td>7</td>
<td>Shrigonda SSK At Shrigonda, Dist. A’Nagar</td>
<td>1965</td>
<td>3,500</td>
<td>Distillery Fertilizer</td>
<td>Shri. S.N. Nagavade</td>
</tr>
<tr>
<td>8</td>
<td>Sant Tukaram SSK Mulshi, Dist. Pune</td>
<td>1988</td>
<td>2,500</td>
<td>---------</td>
<td>Shri. Nanasaheb Navle</td>
</tr>
<tr>
<td>10</td>
<td>Bhogawati SSK Parite, Dist. Kolhapur</td>
<td>1955</td>
<td>4,000</td>
<td>---------</td>
<td>Late. Shri. D. K. Patil</td>
</tr>
</tbody>
</table>
The factories were divided into two control groups, the first group consisted of the factories having ancillary units based on the by-products and the second group consisted of the factories who do not have any ancillary units for the utilization of their by-products. For analyzing the cost, the same was analyzed according to the following key elements. For each cost component average weightage in the form of percentage to total cost is given and on the four years data simple average was worked out.

4.7. Key Cost Components for Cost Analysis :-

a) Raw Material Cost:- It has been observed that out of the total cost of production of sugar, a significant portion i.e. 65 – 70% is towards the material cost. It was therefore desired that analysis of the same should be made.

b) Conversion Cost with interest:- The conversion cost including the interest on loan amounts to about 30-35% if the total cost of production. Conversion cost of each of the factory under observation was therefore studied.

c) Conversion Cost without Interest:- The conversion cost without interest on an average comes to around 25%.

d) Interest:- An important element of the total cost of conversion is the amount of interest paid on loans. Interest incidence being the major component in conversion cost it was decided to show the conversion cost with interest and without interest with a view to assess the magnitude of interest incidence in the total cost. This item is worked out separately. In this regard also it has been observed that the amount of interest has shown an increasing trend over the years as the factories have been resorting to
borrowing for various purpose. It was though desirable that the incidence of interest from year to year should be studied.

e) Retained Surplus:- Apart from the above key variables, the surplus realized if any and the ploughing back of the same to the Reserves was also analysed according to years.

The Researcher was able to get the data for four years, ie. From 1998-99 to 2001-02 due to various difficulties encountered in the data collection. As the cost data is confidential, the factories are reluctant to part with the information and hence the available data was utilized for this study.

4.8. Component wise Analysis of the Cost Structure: -

The component wise analysis of the selected sugar factories is shown in the following tables and also presented in the form of graphs. The serial number given to each factory corresponds to the number given in the Table 3.3 for factories with by-products and 3.4 for the factories without by-products.
Table 4.6
COMPONENT WISE COST ANALYSIS OF FACTORIES WITH BY-PRODUCT CONTROL GROUP ONE
YEAR 1998-99

Rs. In lakhs

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1</th>
<th></th>
<th>2</th>
<th></th>
<th>3</th>
<th></th>
<th>4</th>
<th></th>
<th>5</th>
<th></th>
<th>6</th>
<th></th>
<th>7 Rs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>9803</td>
<td>64%</td>
<td>11563</td>
<td>74%</td>
<td>8372</td>
<td>69%</td>
<td>6407</td>
<td>72%</td>
<td>11556</td>
<td>70%</td>
<td>5472</td>
<td>67%</td>
<td>4381</td>
<td>66%</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>4397</td>
<td>29%</td>
<td>2911</td>
<td>19%</td>
<td>2595</td>
<td>21%</td>
<td>1949</td>
<td>22%</td>
<td>3667</td>
<td>xx%</td>
<td>1754</td>
<td>22%</td>
<td>1846</td>
<td>28%</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>1051</td>
<td>07%</td>
<td>1210</td>
<td>8%</td>
<td>1124</td>
<td>9%</td>
<td>486</td>
<td>5%</td>
<td>1280</td>
<td>8%</td>
<td>924</td>
<td>11%</td>
<td>364</td>
<td>6%</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>6.05</td>
<td>(85.79)</td>
<td>4.99</td>
<td>-----</td>
<td>5.34</td>
<td>-----</td>
<td>3.03</td>
<td>-----</td>
<td>2.39</td>
<td>-----</td>
<td>(43.1</td>
<td>(4)</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>6</td>
<td>ROCE(%)</td>
<td>-----</td>
<td>0.45</td>
<td>-----</td>
<td>-----</td>
<td>1.27</td>
<td>-----</td>
<td>0.53</td>
<td>-----</td>
<td>0.56</td>
<td>-----</td>
<td>0.67</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

NOTE: 1) For Item number six, dash indicates, losses and hence the ratio can not be calculated.
2) For Item number four, figures in the bracket indicate losses.
GRAPH NO. 4.1

COMPONENT WISE COST ANALYSIS (RS IN LAKHS) YEAR 1998-99 (CONTROL GROUP II)

COST (Rs. in Lakhs)

FACTORIES

Interest
Conversion Cost
Material
TABLE 4.7
COMPONENTWISE COST ANALYSIS OF FACTORIES WITHOUT BY-PRODUCT – CONTROL GROUP
SECOND YEAR 1998-99

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs.</td>
<td>%</td>
<td>Rs</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>2211</td>
<td>64%</td>
<td>6243</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>1025</td>
<td>30%</td>
<td>2189</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>203</td>
<td>6%</td>
<td>858</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(-).50</td>
<td></td>
<td>(-)69.92</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td></td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>ROCE (%)</td>
<td>-----</td>
<td></td>
<td>-----</td>
</tr>
</tbody>
</table>

Rs in Lakhs

FACTORIES WITHOUT BY PRODUCTS

87
WISE COST ANALYSIS (RS IN 1998-99 (CONTROL GROUP II))

FACTORIES

- Interest
- Conversion Cost
- Material
Table 4.8
COMPONENT WISE COST ANALYSIS OF FACTORIES WITH BY-PRODUCTS – CONTROL GROUP I
YEAR 1999-00

Rs. In Lakhs

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Particulars</th>
<th>1</th>
<th>%</th>
<th>2</th>
<th>%</th>
<th>3</th>
<th>%</th>
<th>4</th>
<th>%</th>
<th>5</th>
<th>%</th>
<th>6</th>
<th>%</th>
<th>7</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Material</td>
<td>11354</td>
<td>62%</td>
<td>12403</td>
<td>68%</td>
<td>10916</td>
<td>67%</td>
<td>8743</td>
<td>76%</td>
<td>13755</td>
<td>70%</td>
<td>7746</td>
<td>69%</td>
<td>3763</td>
<td>66%</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>5554</td>
<td>30%</td>
<td>4570</td>
<td>25%</td>
<td>4105</td>
<td>25%</td>
<td>2291</td>
<td>20%</td>
<td>4108</td>
<td>21%</td>
<td>2393</td>
<td>21%</td>
<td>1653</td>
<td>29%</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>1431</td>
<td>8%</td>
<td>1256</td>
<td>7%</td>
<td>1340</td>
<td>8%</td>
<td>533</td>
<td>5%</td>
<td>1680</td>
<td>9%</td>
<td>1086</td>
<td>10%</td>
<td>268</td>
<td>5%</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(97.97)</td>
<td>-----</td>
<td>31.79</td>
<td>-----</td>
<td>3.09</td>
<td>-----</td>
<td>5.31</td>
<td>-----</td>
<td>1.39</td>
<td>-----</td>
<td>5.33</td>
<td>-----</td>
<td>(210.30)</td>
<td>-----</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
</tr>
<tr>
<td>6</td>
<td>ROCE(%)</td>
<td>-----</td>
<td>-----</td>
<td>1.87</td>
<td>-----</td>
<td>7.88</td>
<td>-----</td>
<td>0.15</td>
<td>-----</td>
<td>0.12</td>
<td>-----</td>
<td>0.82</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

NOTE: 1) For Item number six dash indicates, losses and hence the ratio can not be calculated.
       2) For Item number four figures in the bracket indicate losses.
COMPONENT WISE COST ANALYSIS (RS IN LAKHS) YEAR 1999-00 (CONTROL GROUP I)
### TABLE NO 4.9  COMPONENT WISE COST ANALYSIS OF FACTORIES WITHOUT BY-PRODUCTS-CONTROL GROUP II YEAR-1999-00

Rs in lakhs

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1</th>
<th></th>
<th>2</th>
<th></th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs.</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>3771</td>
<td>58%</td>
<td>7130</td>
<td>66%</td>
<td>7053</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>1973</td>
<td>30%</td>
<td>2612</td>
<td>24%</td>
<td>2343</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>766</td>
<td>12%</td>
<td>1017</td>
<td>9%</td>
<td>1112</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(-)125.70</td>
<td></td>
<td>0.69</td>
<td></td>
<td>81.6</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>ROCE</td>
<td>-----</td>
<td>-----</td>
<td>.0062</td>
<td>-----</td>
<td>2.03</td>
</tr>
</tbody>
</table>

**NOTE:**

1) For Item number six dash indicates, losses and hence the ratio cannot be calculated.

2) For Item number four figures in the bracket indicate losses.
COMPONENT WISE COST ANALYSIS (RS IN LAKHS) 
YEAR 1999-00 (CONTROL GROUP II)
Table 4.10 COMPONENT WISE COST ANALYSIS OF FACTORIES WITH BY-PRODUCTS- CONTROL GROUP I YEAR 2000-01

Rs. In Lakhs

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1</th>
<th></th>
<th>2</th>
<th></th>
<th>3</th>
<th></th>
<th>4</th>
<th></th>
<th>5</th>
<th></th>
<th>6</th>
<th></th>
<th>7</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
<td>%</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>14064</td>
<td>65%</td>
<td>11943</td>
<td>63%</td>
<td>10879</td>
<td>67%</td>
<td>10004</td>
<td>75%</td>
<td>12837</td>
<td>70%</td>
<td>7786</td>
<td>69%</td>
<td>7159</td>
<td>73%</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>5508</td>
<td>26%</td>
<td>5128</td>
<td>27%</td>
<td>3926</td>
<td>24%</td>
<td>2508</td>
<td>19%</td>
<td>3727</td>
<td>20%</td>
<td>2372</td>
<td>21%</td>
<td>1969</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>1961</td>
<td>9%</td>
<td>1895</td>
<td>10%</td>
<td>1456</td>
<td>9%</td>
<td>772</td>
<td>6%</td>
<td>1833</td>
<td>10%</td>
<td>1117</td>
<td>10%</td>
<td>715</td>
<td>7%</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(492.26)</td>
<td>(1.33)</td>
<td>5.1</td>
<td>-----</td>
<td>6.4</td>
<td>-----</td>
<td>4.5</td>
<td>-----</td>
<td>3.32</td>
<td>-----</td>
<td>(190.75)</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>ROCE</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>5.34</td>
<td>-----</td>
<td>0.45</td>
<td>-----</td>
<td>0.72</td>
<td>-----</td>
<td>0.53</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COMPONENT WISE COST ANALYSIS (RS IN LAKHS) YEAR 2000-01 (CONTROL GROUP I)
Table No.4.11 COMPONENTWISE COST ANALYSIS OF FACTORIES WITHOUT BY-PRODUCTS-
CONTROL GROUP II YEAR-2000-01

Rs. In Lakhs

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>5902</td>
<td>68%</td>
<td>6947</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>1798</td>
<td>21%</td>
<td>2605</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>956</td>
<td>11%</td>
<td>1114</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(-)135.65</td>
<td>-----</td>
<td>0.78</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>ROCE</td>
<td>-----</td>
<td>-----</td>
<td>0.0062</td>
</tr>
</tbody>
</table>

NOTE: 1) For Item number six dash indicates, losses and hence the ratio can not be calculated.
2) For Item number four figures in the bracket indicate losses.
Graph No.4.5

COMPONENT WISE COST ANALYSIS (RS IN LAKHS)
YEAR 2000-01 (CONTROL GROUP II)

COST (RS IN LAKHS)

FACTORIES

- Interest
- Conversion Cost
- Material
Table 4.12
COMPONENT WISE COST ANALYSIS OF FACTORIES WITH BY-PRODUCTS- CONTROL GROUP I
YEAR 2001-02
Rs in lakhs

<table>
<thead>
<tr>
<th>Sr.NO</th>
<th>Particulars</th>
<th>1 Rs</th>
<th>1 %</th>
<th>2 Rs</th>
<th>2 %</th>
<th>3 Rs</th>
<th>3 %</th>
<th>4 Rs</th>
<th>4 %</th>
<th>5 Rs</th>
<th>5 %</th>
<th>6 Rs</th>
<th>6 %</th>
<th>7 Rs</th>
<th>7 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Material</td>
<td>12798</td>
<td>65%</td>
<td>13824</td>
<td>63%</td>
<td>8293</td>
<td>59%</td>
<td>7256</td>
<td>71%</td>
<td>11941</td>
<td>69%</td>
<td>5359</td>
<td>62%</td>
<td>4475</td>
<td>66%</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>4311</td>
<td>22%</td>
<td>5673</td>
<td>26%</td>
<td>3840</td>
<td>27%</td>
<td>2155</td>
<td>21%</td>
<td>3645</td>
<td>21%</td>
<td>2218</td>
<td>26%</td>
<td>1485</td>
<td>22%</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>2611</td>
<td>13%</td>
<td>2436</td>
<td>11%</td>
<td>1874</td>
<td>13%</td>
<td>865</td>
<td>8%</td>
<td>1837</td>
<td>11%</td>
<td>1012</td>
<td>12%</td>
<td>822</td>
<td>12%</td>
</tr>
<tr>
<td>4</td>
<td>Surplus (-)350.76</td>
<td>-----</td>
<td>57.13</td>
<td>-----</td>
<td>3.1</td>
<td>-----</td>
<td>2.41</td>
<td>-----</td>
<td>5.75</td>
<td>-----</td>
<td>5.68</td>
<td>-----</td>
<td>(-)195.80</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>Nil</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>6</td>
<td>ROCE (%)</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>0.554</td>
<td>4.12</td>
<td>-----</td>
<td>0.12</td>
<td>-----</td>
<td>0.51</td>
<td>-----</td>
<td>0.49</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>

NOTE: 1) For Item number six dash indicates, losses and hence the ratio can not be calculated.

2) For Item number four figures in the bracket indicate losses.
Graph No. 4.7

COMPONENT WISE COST ANALYSIS (RS IN LAKHS) YEAR 2001-02 (CONTROL GROUP I)

COST (RS IN LAKHS)

FACTORIES

- Interest
- Conversion Cost
- Material
Table No. 4.13
COMPONENT WISE COST ANALYSIS OF FACTORIES WITHOUT BY-PRODUCTS - CONTROL
GROUP II YEAR 2001-02 FOR
(Rs. In lakhs)

<table>
<thead>
<tr>
<th>Sr. NO.</th>
<th>Particulars</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs</td>
<td>%</td>
<td>Rs</td>
</tr>
<tr>
<td>1</td>
<td>Material</td>
<td>3078</td>
<td>59%</td>
<td>6054</td>
</tr>
<tr>
<td>2</td>
<td>Conversion Cost</td>
<td>1208</td>
<td>23%</td>
<td>2522</td>
</tr>
<tr>
<td>3</td>
<td>Interest</td>
<td>891</td>
<td>17%</td>
<td>1288</td>
</tr>
<tr>
<td>4</td>
<td>Surplus</td>
<td>(134.72)</td>
<td></td>
<td>0.84</td>
</tr>
<tr>
<td>5</td>
<td>Retained Profit</td>
<td>Nil</td>
<td></td>
<td>Nil</td>
</tr>
<tr>
<td>6</td>
<td>ROCE</td>
<td>------</td>
<td></td>
<td>------</td>
</tr>
</tbody>
</table>

FACTORIES WITHOUT BY PRODUCTS
COMPONENT WISE COST ANALYSIS (RS IN LAKHS) YEAR 2001-02 (Control Group 2)
4.6 Element wise Analysis of Cost:

From the above analysis of the cost structure the following observations are made.

4.6.1 The raw material cost is seen as the major portion of the total cost of production and its percentage to the total cost works out to be on an average 65% of the total cost in the case of the factories from both the control group. The trend shown in this cost fluctuating and it had varied from 60% to 73% in case of factories from control group one and from 60% to 69% in case of the factories from the control group second. The following analysis shows the number of factories falling under the different range of the material cost percentage to the total cost.

TABLE 4.14
NUMBER OF FACTORIES IN DIFFERENT RANGE OF THE MATERIAL COST-FACTORIES WITH BY-PRODUCTS- CONTROL GROUP I

<table>
<thead>
<tr>
<th>Year</th>
<th>55-60%</th>
<th>61-65%</th>
<th>66-70%</th>
<th>71% &amp; above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>-------</td>
<td>01</td>
<td>04</td>
<td>02</td>
<td>07</td>
</tr>
<tr>
<td>1999-00</td>
<td>-------</td>
<td>01</td>
<td>05</td>
<td>01</td>
<td>07</td>
</tr>
<tr>
<td>2000-01</td>
<td>-------</td>
<td>02</td>
<td>03</td>
<td>02</td>
<td>07</td>
</tr>
<tr>
<td>2001-02</td>
<td>01</td>
<td>02</td>
<td>03</td>
<td>01</td>
<td>07</td>
</tr>
</tbody>
</table>

The Table showing the number of factories in different ranges of the material cost from Control Group Number 2 are shown in the following table on the next page.
**TABLE 4.15**

NUMBER OF FACTORIES IN DIFFERENT RANGE OF THE MATERIAL COST- FACTORIES WITHOUT BY-PRODUCTS- CONTROL GROUP II

<table>
<thead>
<tr>
<th>Year</th>
<th>55-60 %</th>
<th>60-65 %</th>
<th>66-70 %</th>
<th>71-75 %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>--------</td>
<td>01</td>
<td>02</td>
<td>--------</td>
<td>03</td>
</tr>
<tr>
<td>1999-00</td>
<td>01</td>
<td>--------</td>
<td>02</td>
<td>--------</td>
<td>03</td>
</tr>
<tr>
<td>2000-01</td>
<td>--------</td>
<td>01</td>
<td>02</td>
<td>--------</td>
<td>03</td>
</tr>
<tr>
<td>2001-02</td>
<td>01</td>
<td>02</td>
<td>--------</td>
<td>--------</td>
<td>03</td>
</tr>
</tbody>
</table>
4.8 Observations Of Factories With By-Product Control Group I

Thus it is seen that the number of factories having the material cost between the range of 61-65% has increased from 1 to 2 in the last four years while the number of factories in the range of 66-70% has gone down in the last two years from 5 to 3. There are some factories in the range of 71% and above and their number is showing a fluctuating trend while it is heartening to note that one factory has the material cost within the range of 55-60%.

While investigating the reasons of the fluctuations, the managements of the factories informed the researcher that the fluctuations are mainly due to the number of sugarcane crushed in these years. While the cane price paid has shown an increasing trend continuously, the sugarcane purchased and crushed has been fluctuating from year to year due to the availability of the sugarcane. In certain years the sugarcane was available in short supply and hence the price paid for the same also decreased though the per ton price of sugarcane increased in that year.

It was revealed from the Managements of the factories also informed that the high cost of the sugarcane is due to the Government policy relating to the Statutory Minimum Price linked to a specific recovery percentage and the factories have to pay according to the same. It was also observed that India is the only country in the world where the Statutory Minimum Price is payable by the factories. In other countries like Australia, though the Government fixes the minimum price, the difference between the price actually paid and the minimum price prescribed by the Government, is borne by the Government is the price actually paid is less than that of the price fixed by the Government.
4.9 Observations On Factories Studied From Control Group No. 2

It is seen from the factories from the Control Group no 2 that there is not a single factory having the cost of materials more than 71% of the total cost of production in any of these years under observation. In the year 2001-02, all the factories in this group have material cost between 60-65% and thus a reduction in the cost of materials has been registered. Similar to the factories in the control group no 1, the Managements of these factories also cite the same reasons behind the high cost of material consumed.

Considering the above scenario, it is of paramount importance that there should be strict control over the material cost and it should be ensured that to reduce the cost of production, it is necessary to extract maximum sugar from the juice, i.e. to improve the recovery percentage of sugar by minimizing the sugar losses.

4.10 Conversion Cost: -

The conversion cost consists of the salaries and wages, production overheads including the power, steam and water cost, administrative overheads, selling and distribution overheads and other costs like packing cost. The analysis of the conversion cost according to the range of percentage to the total cost is shown in the following tables.
### TABLE 4.16
NO OF FACTORIES WITH BY-PRODUCTS IN DIFFERENT RANGES OF PERCENTAGES OF THE CONVERSION COST.- CONTROL GROUP 1

<table>
<thead>
<tr>
<th>Year</th>
<th>15-20 %</th>
<th>21-25 %</th>
<th>26-30 %</th>
<th>31 % &amp; above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>02</td>
<td>03</td>
<td>02</td>
<td></td>
<td>07</td>
</tr>
<tr>
<td>1999-00</td>
<td>01</td>
<td>04</td>
<td>02</td>
<td></td>
<td>07</td>
</tr>
<tr>
<td>2000-01</td>
<td>02</td>
<td>03</td>
<td>02</td>
<td></td>
<td>07</td>
</tr>
<tr>
<td>2001-02</td>
<td>--------</td>
<td>04</td>
<td>03</td>
<td></td>
<td>07</td>
</tr>
</tbody>
</table>

### TABLE 4.17
NO. OF FACTORIES WITHOUT BY-PRODUCTS IN DIFFERENT RANGES OF PERCENTAGES OF THE CONVERSION COST-CONTROL GROUP 2

<table>
<thead>
<tr>
<th>Year</th>
<th>15-20 %</th>
<th>21-25 %</th>
<th>26-30 %</th>
<th>31 % &amp; above</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>--------</td>
<td>02</td>
<td>--------</td>
<td>01</td>
<td>------</td>
</tr>
<tr>
<td>1999-00</td>
<td>--------</td>
<td>02</td>
<td>--------</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>2000-01</td>
<td>--------</td>
<td>03</td>
<td>--------</td>
<td></td>
<td>03</td>
</tr>
<tr>
<td>2001-02</td>
<td>--------</td>
<td>03</td>
<td>--------</td>
<td></td>
<td>03</td>
</tr>
</tbody>
</table>
4.10.1 Observations Of Factories With By-Products- Control Group I

It is observed from the factories from the control group no 1 that the conversion cost of all the factories is below 30% of the total cost of production. Majority of the factories are in the range of 21-25% though there are about 28% of the factories from this group who are having the conversion cost in the range of 26-30%. Significantly, there are some factories in the range of 15-20% but in the year 2001-02 there are no factories in this range. As explained above, the conversion cost consists of various items of overhead expenses. It has been observed that the conversion cost in amount has been showing a consistently rising trend, while its percentage to the total cost is fluctuating as in some of the years the total cost has also increased substantially.

4.10.2 Observation Of Factories Without By-Products- Control Group II

In this category it has been observed that there are is one factory having conversion cost of more than 30%, which is not a very desirable state of affairs. However in the year 2001-02, no factory has reported the conversion cost of more than 30%, which is positive development. Majority of the factories are having the conversion cost range between 21-25%

A significant observation is that according to the norms prescribed by the Government of Maharashtra, the standard conversion cost should be Rs. 250 per ton of the sugar produced and in all the cases under observation it has been reported to be more than the same. The actual conversion cost including interest for the factories under observation is shown in the following tables.
conversion cost including interest for the factories under observation is shown in the following tables.

**TABLE 4.18**
THE CONVERSION COST PER TON OF SUGAR PRODUCED BY FACTORIES WITH BY-PRODUCTS CONTROL GROUP ONE (Rs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Factory 1</th>
<th>Factory 2</th>
<th>Factory 3</th>
<th>Factory 4</th>
<th>Factory 5</th>
<th>Factory 6</th>
<th>Factory 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>526</td>
<td>534</td>
<td>484</td>
<td>500</td>
<td>522</td>
<td>587</td>
<td>524</td>
</tr>
<tr>
<td>1999-00</td>
<td>608</td>
<td>588</td>
<td>594</td>
<td>510</td>
<td>533</td>
<td>578</td>
<td>577</td>
</tr>
<tr>
<td>2000-01</td>
<td>643</td>
<td>623</td>
<td>689</td>
<td>575</td>
<td>586</td>
<td>653</td>
<td>667</td>
</tr>
<tr>
<td>2001-02</td>
<td>698</td>
<td>689</td>
<td>780</td>
<td>624</td>
<td>654</td>
<td>683</td>
<td>735</td>
</tr>
</tbody>
</table>

**TABLE :- 4.19**
THE CONVERSION COST PER TON OF SUGAR PRODUCED BY FACTORIES FROM CONTROL GROUP II-

(Rs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Factory 1</th>
<th>Factory 2</th>
<th>Factory 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>605</td>
<td>499</td>
<td>555</td>
</tr>
<tr>
<td>1999-00</td>
<td>797</td>
<td>518</td>
<td>569</td>
</tr>
<tr>
<td>2000-01</td>
<td>902</td>
<td>645</td>
<td>614</td>
</tr>
<tr>
<td>2001-02</td>
<td>1008</td>
<td>725</td>
<td>690</td>
</tr>
</tbody>
</table>

(Source for both the Tables :- Annual Reports of factories for the respective years )

From the above tables, it is absolutely clear that the conversion cost has shown consistently increasing trend in the four years under study.
4.11 Interest on loan :-

As seen from the above table, one of the important component of the cost is the interest. This item has been showing constantly an increasing trend over the last four years. In order to have further study, the interest paid by the sugar factories in the last four years has been analyzed in the following tables.

**TABLE 4.20**

AMOUNT OF INTEREST PAID BY SUGAR CO-OPERATIVES
CONTROL GROUP I WITH BY-PRODUCTS

<table>
<thead>
<tr>
<th>Factory</th>
<th>1998-99 Rs in lakhs (%)</th>
<th>1999-00 Rs in lakhs (%)</th>
<th>2000-01 Rs in lakhs (%)</th>
<th>2001-02 Rs in lakhs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory No 1</td>
<td>1050.85 (6.89)</td>
<td>1430.85 (7.80)</td>
<td>1960.91 (9.10)</td>
<td>2611.19 (13.24)</td>
</tr>
<tr>
<td>Factory No 2</td>
<td>1209.86 (7.71)</td>
<td>1256.35 (6.8)</td>
<td>1894.59 (9.98)</td>
<td>2435.54 (11.10)</td>
</tr>
<tr>
<td>Factory No 3</td>
<td>1123.84 (9.19)</td>
<td>1340.15 (8.19)</td>
<td>1456.12 (8.95)</td>
<td>1873.62 (13.37)</td>
</tr>
<tr>
<td>Factory No 4</td>
<td>485.62 (5.49)</td>
<td>533.39 (4.61)</td>
<td>772.27 (5.81)</td>
<td>864.89 (8.41)</td>
</tr>
<tr>
<td>Factory No 5</td>
<td>1280.44 (7.75)</td>
<td>1679.73 (8.59)</td>
<td>1833.33 (9.96)</td>
<td>1837.38 (10.68)</td>
</tr>
<tr>
<td>Factory No 6</td>
<td>923.83 (11.33)</td>
<td>1086.46 (9.49)</td>
<td>1116.78 (9.90)</td>
<td>1011.78 (11.43)</td>
</tr>
<tr>
<td>Factory No 7</td>
<td>364.33 (5.5)</td>
<td>268.10 (4.00)</td>
<td>714.80 (7.26)</td>
<td>821.84 (12.12)</td>
</tr>
</tbody>
</table>
### Table 4.21
INTEREST PAID BY FACTORIES WITHOUT BY-PRODUCTS - CONTROL GROUP II

<table>
<thead>
<tr>
<th>Factory</th>
<th>1998-99 Rs (%)</th>
<th>1999-00 Rs (%)</th>
<th>2000-01 Rs (%)</th>
<th>2001-02 Rs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory No 1</td>
<td>202.76 (5.89)</td>
<td>765.55 (11.75)</td>
<td>955.59 (11.03)</td>
<td>890.56 (17.20)</td>
</tr>
<tr>
<td>Factory No 2</td>
<td>857.62 (9.23)</td>
<td>1016.65 (9.44)</td>
<td>1113.74 (10.44)</td>
<td>1288.36 (13.06)</td>
</tr>
<tr>
<td>Factory No 3</td>
<td>1117.78 (11.63)</td>
<td>1112.34 (10.58)</td>
<td>1112.22 (10.37)</td>
<td>1382.48 (13.14)</td>
</tr>
</tbody>
</table>

The following table shows the number of factories in different ranges of the percentages of the interest paid to the total cost of production for both the control groups.

### Table 4.22
NO. OF FACTORIES WITH BY-PRODUCTS (CONTROL GROUP I) IN DIFFERENT RANGES OF PERCENTAGE OF INTEREST PAID TO THE TOTAL COST.

<table>
<thead>
<tr>
<th>Year</th>
<th>Less than 5 %</th>
<th>5-10 %</th>
<th>Above 10 %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>------</td>
<td>06</td>
<td>01</td>
<td>07</td>
</tr>
<tr>
<td>1999-00</td>
<td>02</td>
<td>05</td>
<td>-----</td>
<td>07</td>
</tr>
<tr>
<td>2000-01</td>
<td>-----------</td>
<td>07</td>
<td>-----------</td>
<td>07</td>
</tr>
<tr>
<td>2001-02</td>
<td>-----------</td>
<td>01</td>
<td>06</td>
<td>06</td>
</tr>
</tbody>
</table>
Thus it is evident from the above table that the number of factories having the interest cost more than 10% has been increasing and in the year 2001-02 nearly 95% of the factories under study from this control group are in this category.

Table showing the same classification from the factories from control group no 2 is shown on the next page.

**TABLE 4.23**

**NO. OF FACTORIES WITHOUT BY-PRODUCTS (CONTROL GROUP II) IN DIFFERENT RANGES OF PERCENTAGE OF INTEREST PAID TO THE TOTAL COST.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Less than 5%</th>
<th>5% - 10%</th>
<th>Above 10%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>--------------</td>
<td>02</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>1999-00</td>
<td>--------------</td>
<td>01</td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>2000-01</td>
<td>--------------</td>
<td>02</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>2001-02</td>
<td>--------------</td>
<td>---------</td>
<td>03</td>
<td>03</td>
</tr>
</tbody>
</table>

Note: - The figures given in the bracket indicate the percentage of interest to the total cost.

Comments: - It has been observed that in case of all the factories in the above control group, the interest paid on the loan has been constantly increasing in all the four years under study. The percentage of interest to the total cost has also shown an increasing trend with few
exceptional cases where the percentage has come down marginally in the years 1999-2000 and 2000-01, but in the year 2001-02 again it has increased.

The highest percentage of interest paid to the total cost of production has been recorded in case of Factory no 6 i.e. The H.Kisan Veer Co-operative Sugar Factory ltd., Bhuinj, Dist. Satara in the first three years under observation, while in the year 2001-02, the Dutt Shirol Co-operative Sugar Factory Ltd., Shirol, Dist. Kolhapur, has recorded the highest percentage of interest paid to the total cost of production.

On analyzing the reasons for the high interest cost, the following reasons were given by the Management of the Sugar Co-operatives:

4.11.1 Reasons For High Incidence Of Interest :-

A) Stock-piling :- Sugar industry is a seasonal industry by nature, which means that the crushing of sugarcane and the sugar production is carried out during the crushing season, which is normally from the month of October to March. However they have to carry the stock for the entire year which increases the holding cost of the inventory and at the same time the amount of working capital is blocked in the inventory. The problem is further aggravated due to the monthly release scheme of the Government, which prescribes the quantity of sugar to be sold per month by each sugar factory in the country. Hence the balance sugar is to be kept in the inventory, which again blocks the working capital in the same. However the sugar co-operatives are of the opinion that the monthly release scheme of the Government is actually helping the industry, otherwise large quantity of sugar will come in the market, which will result in declining the prices of sugar.

The Managements of the factories still recall that in the year 1978,
when the Government had abolished the Monthly Release Scheme, the supply of sugar exceeded the demand the prices slump to such a low level that the entire industry came in trouble. The Monthly Release Scheme then was restored by the Government. This suggests that the sugar industry wants the release mechanism to be regulated by the Government but there are no two opinions about the fact that it results in large inventory of sugar being built up at the factory level.

B) Levy Sugar :- Another reason cited by the sugar factories is that the levy sugar as prescribed by the Government is not lifted and paid for by the respective State Governments. For sugar, there is still a dual pricing policy prescribed by the Government and every factory has to sale the sugar to the Government at a price determined which is known as the levy price. The main difficulty faced by the sugar factories is that the levy sugar is not lifted by the State Governments and consequently the payment is delayed apart from the stockpiling of the sugar at the factory premises. This situation forces the sugar factories to borrow money for the purpose of working capital, which results in high interest burden on the sugar factories.

C) No Surplus Retention :- As per the prevailing practice in the co-operative sector, the available surplus resulting from the sale of sugar is distributed as cane price to the members. In other words, surplus remaining after deducting the expenses from the sales realization of the sugar is distributed to the members as cane price. This means that there is absolutely no plough back of profits to the reserves. It has been observed that in the last four years, none of the factory under study had ploughed back the available surplus. Even the profits from the by-products processing units such as Distillery has been utilized for the payment of the cane price. In case of one of the factory under
observation, it was found that the Investment Allowance Reserve was also utilized for the payment of the cane price. This situation forces the factories to resort to borrowings for various purposes like expansion, diversification, modernization etc. Heavy borrowings are made to satisfy the needs mentioned above and this results in a very high interest burden. It is therefore suggested that some amount of surplus should be transferred to the reserves so that in the event of any requirement in the future, the reserves can be utilized effectively.

D) Return On Capital Employed:- It has been observed that the factories have been earning a very small amount of surplus and the Return on Capital Employed is quite low from year to year. Two factories from the control group one are suffering from huge losses while from the control group second, one factory is suffering from loss. The reasons behind the losses are that the cost of production is increasing every year and in the sales realizations are not increasing in the same proportion. It is high time that the sugar co-operatives take urgent steps to control the cost of production and the overheads, otherwise it will be an invitation to the sickness.

5. Retained Earnings :- It has been observed that there has been no transfer at all to the Reserves and Surplus and the entire amount of surplus is distributed for the payment of the cane price. In some cases it has been observed that the surplus generated has been utilized for writing off the accumulated losses of the previous years. As there is no ploughing back of the surplus, the factories have to resort to borrowings in case of any additional requirement of financing for various purposes. This results in heavy burden of interest, which erodes the profit margin of these sugar co-operatives.
References for Chapter Four