CHAPTER 1
INTRODUCTION

GENESIS OF THE TOPIC

Sugar industry is the largest among processing industries next only to textiles. It contributes significantly to the economy of rural India. The growth of sugar industry in Tamil Nadu has been very impressive, particularly in the co-operative sector and is one of the leading producers of sugar in the country and its contribution is about 10 per cent of country's total production. There are 37 sugar mills functioning in this state of which 16 are functioning in co-operative sector, 3 in public sector and 18 in private sector. The total crushing capacity of all these factories in 1997-98 was 94,500 tonnes per day and in the year 1999-2000 was about 99,500 tonnes per day. The crushing capacity of the co-operative and public sector mills alone is 42,400 tonnes per day and the crushing capacity of private sector sugar mills is 57,100 tonnes per day. From the above statistical figures, the importance and the significant contribution made by this industry could be well understood.

The production of sugar at all India level compared with the production of sugar in Tamil Nadu for the past ten years is furnished in Table 1.1.

<table>
<thead>
<tr>
<th>Year</th>
<th>All India</th>
<th>Tamil Nadu</th>
<th>Percentage of production %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>106.47</td>
<td>11.83</td>
<td>11.0</td>
</tr>
<tr>
<td>1991-92</td>
<td>134.05</td>
<td>12.40</td>
<td>9.2</td>
</tr>
<tr>
<td>1992-93</td>
<td>106.08</td>
<td>9.76</td>
<td>9.0</td>
</tr>
<tr>
<td>1993-94</td>
<td>98.33</td>
<td>10.85</td>
<td>11.0</td>
</tr>
<tr>
<td>1994-95</td>
<td>146.40</td>
<td>18.58</td>
<td>13.0</td>
</tr>
<tr>
<td>1995-96</td>
<td>164.00</td>
<td>16.24</td>
<td>10.0</td>
</tr>
<tr>
<td>1996-97</td>
<td>129.08</td>
<td>10.50</td>
<td>8.0</td>
</tr>
<tr>
<td>1997-98</td>
<td>128.52</td>
<td>12.29</td>
<td>9.6</td>
</tr>
<tr>
<td>1998-99</td>
<td>155.39</td>
<td>17.30</td>
<td>11.1</td>
</tr>
<tr>
<td>1999-2000</td>
<td>182.00</td>
<td>18.20</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Co-operative sugar, Nov 2001, Vol 33, No 3, p 266
PHYSICAL PERFORMANCE

The sugar industry in Tamil Nadu has achieved a high degree of stability and there has been a steady increase in sugar output in Tamil Nadu during the past one decade. The average number of crushing days is also higher than the all India level. The details of cane crushed, sugar produced, recovery obtained and capacity utilization for the last ten years are furnished in the table 1.2.

<table>
<thead>
<tr>
<th>Year/sector</th>
<th>Sugarcane crushed (in lakh tonnes)</th>
<th>Sugar produced</th>
<th>Capacity utilization (in percentage)</th>
<th>Average recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>61.91</td>
<td>5.31</td>
<td>100</td>
<td>8.88</td>
</tr>
<tr>
<td>Private</td>
<td>68.16</td>
<td>6.32</td>
<td>107</td>
<td>9.28</td>
</tr>
<tr>
<td>Total</td>
<td>130.07</td>
<td>11.83</td>
<td>103</td>
<td>9.10</td>
</tr>
<tr>
<td>1991-92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>65.06</td>
<td>5.96</td>
<td>107</td>
<td>9.17</td>
</tr>
<tr>
<td>Private</td>
<td>70.36</td>
<td>6.64</td>
<td>105</td>
<td>9.48</td>
</tr>
<tr>
<td>Total</td>
<td>135.42</td>
<td>12.40</td>
<td>106</td>
<td>9.40</td>
</tr>
<tr>
<td>1992-93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>56.78</td>
<td>5.30</td>
<td>88</td>
<td>9.33</td>
</tr>
<tr>
<td>Private</td>
<td>47.09</td>
<td>4.46</td>
<td>72</td>
<td>9.48</td>
</tr>
<tr>
<td>Total</td>
<td>103.87</td>
<td>9.76</td>
<td>80</td>
<td>9.40</td>
</tr>
<tr>
<td>1993-94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>59.62</td>
<td>5.30</td>
<td>91</td>
<td>8.90</td>
</tr>
<tr>
<td>Private</td>
<td>61.45</td>
<td>5.55</td>
<td>89</td>
<td>9.03</td>
</tr>
<tr>
<td>Total</td>
<td>121.07</td>
<td>10.85</td>
<td>90</td>
<td>9.86</td>
</tr>
<tr>
<td>1994-95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>107.77</td>
<td>8.98</td>
<td>160</td>
<td>8.33</td>
</tr>
<tr>
<td>Private</td>
<td>106.33</td>
<td>9.61</td>
<td>153</td>
<td>9.03</td>
</tr>
<tr>
<td>Total</td>
<td>214.11</td>
<td>18.58</td>
<td>156.5</td>
<td>8.68</td>
</tr>
<tr>
<td>1995-96</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>87.41</td>
<td>7.23</td>
<td>120</td>
<td>7.93</td>
</tr>
<tr>
<td>Private</td>
<td>105.52</td>
<td>9.02</td>
<td>128</td>
<td>8.68</td>
</tr>
<tr>
<td>Total</td>
<td>192.93</td>
<td>16.25</td>
<td>124</td>
<td>8.34</td>
</tr>
<tr>
<td>1996-97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>35.70</td>
<td>3.99</td>
<td>65.3</td>
<td>8.90</td>
</tr>
<tr>
<td>Private</td>
<td>81.78</td>
<td>6.51</td>
<td>73.9</td>
<td>8.92</td>
</tr>
<tr>
<td>Total</td>
<td>117.48</td>
<td>10.50</td>
<td>69.6</td>
<td>8.94</td>
</tr>
<tr>
<td>1997-98</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>52.85</td>
<td>5.16</td>
<td>81.00</td>
<td>8.06</td>
</tr>
<tr>
<td>Private</td>
<td>93.08</td>
<td>7.13</td>
<td>87.35</td>
<td>8.24</td>
</tr>
<tr>
<td>Total</td>
<td>145.93</td>
<td>12.29</td>
<td>84.175</td>
<td>8.42</td>
</tr>
<tr>
<td>1998-99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>64.46</td>
<td>8.97</td>
<td>100.60</td>
<td>8.20</td>
</tr>
<tr>
<td>Private</td>
<td>131.48</td>
<td>8.33</td>
<td>114.35</td>
<td>8.51</td>
</tr>
<tr>
<td>Total</td>
<td>195.94</td>
<td>17.30</td>
<td>107.475</td>
<td>8.83</td>
</tr>
<tr>
<td>1999-2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-operative &amp; public</td>
<td>49.18</td>
<td>10.369</td>
<td>78.3</td>
<td>8.69</td>
</tr>
<tr>
<td>Private</td>
<td>137.75</td>
<td>7.830</td>
<td>97.05</td>
<td>8.95</td>
</tr>
<tr>
<td>Total</td>
<td>186.93</td>
<td>18.20</td>
<td>87.675</td>
<td>9.20</td>
</tr>
</tbody>
</table>

### TABLE 1.3

**FINANCIAL PERFORMANCE OF CO-OPERATIVE SUGAR MILLS IN TAMIL NADU - 1999 - 2000**

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>Gross Profit</th>
<th>Net Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>36273</td>
<td>1277</td>
<td>-4396</td>
</tr>
<tr>
<td>Average</td>
<td>3022</td>
<td>106</td>
<td>-366</td>
</tr>
</tbody>
</table>

(Rs in lakhs)

Source: Performance appraisal of Co-operative sugar mills – Co-operative Federation, Chennai – 35

The table 1.3 presented above reveals that the financial performance of co-operative sugar mills has reasonable performance of sales and gross profit during the study period, but the net profit is negative to the tune of -4396 lakhs followed by an average of -366 lakhs. Hence the present study makes an attempt to examine in detail and identify the factors behind the net loss sustained during the study period.

### NEED FOR THE PRESENT STUDY

The sugar industry has been performing well in the early 1980’s and beginning of 1990 with the help of surplus production and recovery. There was abundant sugarcane in 1995-96 seasons. In the 1996-97 season, the sugar mills had just sufficient cane to achieve a total cane crush of 117.40 lakh tonnes. Due to the low realization from free sale sugar, high interest cost and fall in recovery in the coastal belt, the mills continue to face financial difficulties.

During 1997-98 the sugar industry went through a crisis which resulted in steep fall in about 12.6 million metric tonnes and carry forward surplus of 5 million M T was quite adequate to meet the requirements of both the public
distribution system and the open market requirements in the country, the Government of India resorted to import of sugar. Sugar was freely allowed to be imported under 1 million M T of sugar into India. This led to a tremendous pressure on the price of open market sugar depressing it below the cost of production.

This has obviously affected the financial viability of the sugar mills, in all the three major producers i.e., public co-operative and private sector leading to huge losses and arrears of sugarcane price. The government of Tamil Nadu has helped the sugar mills to overcome the crisis by extending financial help to the tune of Rs 76.41 crores as ways and means advance to clear the cane price dues.

The co-operative and public sector sugar mills staff went on strike initially demanding increasing bonus and later demanding new wage settlement. The strike continued for a period of 49 days, which resulted in dislocation of overhauling schedule of co-operative and public sector mills, which in terms may extend the crushing season.

The sugar industry is facing lot of problems such as payment of statutory minimum price, surplus production, reduced sugarcane price for higher recovery, incentive problems, indiscrimination in sugar release and dual pricing problem. In the face of these problems it is interesting to study whether it maintains its level of operational efficiency coupled with financial performance. The study is therefore quite relevant and called for under the above circumstances.
OBJECTIVES OF THE STUDY

General Objective

The broader objective of the present analytical study are to verify whether the physical cum financial efficiency of co-operative sugar mills in Tamil Nadu continue to be significant in spite of problems faced by them.

Specific Objectives

The specific objectives of the study are as follows:

i. To review the growth and development of co-operative sugar mills in Tamil Nadu

ii. To study the physical performance of co-operative sugar mills in Tamil Nadu and to focus a detailed study of different aspects of physical performance

iii. To investigate into the problems faced by the co-operative sugar mills

iv. To compare the performance of co-operative sugar mills in Tamil Nadu with select all India Mills

v. To make a detailed study of different aspects of financial performance of co-operative sugar mills in Tamil Nadu and

vi. To empirically test the significance of association and differences with select financial and cost variables with suitable statistical tools

HYPOTHESIS

The present study also makes an attempt to test the following hypothesis:

1. NULL HYPOTHESIS (Ho)

There is no significant association between sugarcane production and cane crushed during the study period

ALTERNATIVE HYPOTHESIS (Ha)

There is significant association between sugarcane production and cane crushed during the study period

2. NULL HYPOTHESIS (Ho)

There is no significant relationship between production of sugarcane and consumption of sugarcane during the study period
ALTERNATIVE HYPOTHESIS (Ha)

There is significant relationship between production of sugarcane and consumption of sugarcane during the study period

3. NULL HYPOTHESIS (Ho)

There is no significant difference between Tamil Nadu sugar mills and all India sugar mills with regard to growth rate

ALTERNATIVE HYPOTHESIS (Ha)

There is significant difference between Tamil Nadu sugar mills and all India sugar mills with regard to growth rate

4. NULL HYPOTHESIS (Ho)

There is no significant association between all India sugar mills and Tamil Nadu sugar mills with regard to production of sugar

ALTERNATIVE HYPOTHESIS (Ha)

There is significant association between all India sugar mills and Tamil Nadu sugar mills with regard to production of sugar

5. NULL HYPOTHESIS (Ho)

The sugar recovery rates of co-operative sugar mills and public sector mills do not significantly differ

ALTERNATIVE HYPOTHESIS (Ha)

The sugar recovery rates of co-operative sugar mills and public sector mills significantly differ

6. NULL HYPOTHESIS (Ho)

Tamil Nadu sugar production $X_1$, consumption growth rate $X_2$, per capita consumption rate $X_3$, and population growth rate ($Y$) are independent of each other

ALTERNATIVE HYPOTHESIS (Ha)

Tamil Nadu sugar production $X_1$, consumption growth rate $X_2$, per capita consumption rate $X_3$, and population growth rate ($Y$) are dependent upon each other
METHODOLOGY AND RESEARCH DESIGN

I. DATA DESIGN

This study is an analytical review of co-operative sugar mills in Tamil Nadu. In Tamil Nadu there are 16 sugar mills, out of which 12 sugar mills are having sufficient data to conduct the present study. Therefore the present study has considered 12 sugar mills to overview their physical and financial performances during the study period. The list of sugar mills are enumerated as under

II. SAMPLE DESIGN

1. Ambur Sugar Mills Limited
2. Amaravathi Sugar Mills Limited
3. The Cheyyar Sugar Mills Limited
4. Chengalvarayan Sugar Mills Limited
5. Dharmapur District Sugar Mills Limited
6. Kallakurichi Sugar Mills Limited
7. Maduranthagam Sugar Mills Limited
8. N P K R Ramasamy Sugar Mills Limited
9. The Salem Sugar Mills Limited
10. The Subramaniya Siva Sugar Mills Limited
11. Tiruppathur Sugar Mills Limited
12. Vellore Sugar Mills Limited

The present study utilizes both primary and secondary data. The primary data were gathered by the researcher through the officials of Sugar Directorate, South Indian Sugar Mills Association as well co-operative Sugar Federation, Nandanam, Chennai. The secondary data needed were gathered from published annual reports and production records provided by the officials of co-operative Sugar Federation and Directorate of Sugar, Chennai.
III. ANALYTICAL DESIGN

i) Statistical Analysis

Trend line by the method of least squares has been used to study the improvement in performance. Year to year ratio and percentage has been worked out to notice the trend. Moving average has also been employed.

Correlation analysis has been used between factors involved and over all production as a measure of physical performance. Percentage of sugar extracted per tonne of sugarcane has been used as a measure of operational performance efficiency. Again, correlation analysis is used to measure the production of sugarcane between Tamil Nadu and all India and further it was tested with a suitable hypothesis.

The regression analysis has been used to measure the relation between cane crushed and sugar produced which was further analyzed to test the hypothesis.

Normality test has been carried out to know whether distribution is normal, after ensuring that the distribution is symmetrical.

Students t-test has been applied to verify whether there is any significant difference in performance between Tamil Nadu and all India growth rate with regard to area under sugar cane.

Multiple regression analysis is employed in order to measure the significance of association between various variables such as sugar production, consumption growth rate, per capita consumption growth rate in Tamil Nadu. Here also a hypothesis has been tested.

ii) Financial Analysis

The financial performance is being analyzed and evaluated with ratio analysis. It is to be mentioned here that standardization of data has been done wherever necessary. Appropriate projection with suitable techniques have been made wherever lack of information was encountered by the researcher.
The ratio used in the study are illustrated as under

1) Return on net worth
   \[
   \frac{\text{Net profit}}{\text{Net worth}}
   \]

2) Return on equity
   \[
   \frac{\text{Net profit}}{\text{Equity}}
   \]

3) Return on total assets
   \[
   \frac{\text{Gross profit}}{\text{Total assets}}
   \]

4) Gross profit ratio
   \[
   \frac{\text{Gross profit}}{\text{Sales}} \times 100
   \]

5) Net profit ratio
   \[
   \frac{\text{Net profit}}{\text{Sales}} \times 100
   \]

6) Profit per employee
   \[
   \frac{\text{Net profit}}{\text{No. of employees}}
   \]

ASSUMPTIONS

The present analytical study makes the following assumptions

It is assumed that the data given by the various mills are factual. The study is also based on the assumptions that yield of sugarcane, cane crushed and sugar production is directly correlated.

The presumption that the machines are uniformly efficient becomes necessary. The assumption that the effects of agricultural, chemical, technical and other aspects of production remain a constant is quite warranted. Also the assumption that no drastic climatic changes have taken place during the period of study is required.
SCOPE OF THE STUDY

This study applies to co-operative sugar mills in Tamil Nadu. Sugar industry at the all India level is referred to only for the purpose of comparison. Any operational performance analysis based on fertilizers or any other chemical is not within the purview of the study. It is not within the scope of the study to look at the technical aspects of machinery connected to operational performance. The physical and financial performance of the present study probes into the co-operative sugar mills individually as well as sector-wise analysis and its evaluation is to form findings and conclusions of the present study. The individual physical performance of the sugar mills are studied along with cost analysis in order to form ranking in terms of its performance.

The cost analysis appraise cost factors like material cost, overhead cost, conversion cost and cost of production.

LIMITATIONS OF THE STUDY

The study is not a rigorous analysis of operational performance. It is only an overall study of the operational performance so far as it is linked to sugarcane yield, cane crushed and sugar production and other non-technical factors.

The study is restricted to the period of ten years comprising 1990-91 to 1999-2000 generally. Wherever data is available for a restricted period, it is taken as such.

It is not possible to study all the effects of government's policies.

Similarly, price or tax is studied only through the visible movements in production. The physical and financial performance of private sector and public sector sugar industry are not taken up as they do not fall within the purview of this study.

The study does not include any aspect of labour as it is not within the scope of the examination.

In this study, four sugar mills are excluded for want of sufficient data which forms part of the limitations of this study.
STRUCTURE OF THE THESIS

The thesis is organized into seven chapters

Chapter – I Introduction

Chapter – II Review of Literature

Chapter – III deals with Structure and Growth of Sugar Mills in Tamil Nadu.

Chapter – IV is devoted to Financial implications and Problems of Sugar Mills in Tamil Nadu.

Chapter – V deals with Physical Performance of Sugar Mills in Tamil Nadu.

Chapter – VI Contains Financial Performance of Sugar Mills in Tamil Nadu.

Chapter – VII Reveals Finding, Summary and Conclusion and Suggestions.

Chapter – I Introduction: This chapter deals with the genesis of the topic and highlights physical performance and narrates the need for the present study. This chapter also incorporates the hypothesis of the study. Towards the end of this chapter the arrangement of chapters, objectives of the study, methodology and finally the scope and limitations of the study are given.

Chapter – II Review of Literature: This chapter examines the literature in terms of origin of the sugar industry, sugar industry and sugarcane growers, sugar industry in different periods, development of sugar industry and finally it reviews the general literature on sugar industry.
Chapter – III  Sugar mills in Tamil Nadu: This chapter narrates and highlights organizational structure, origin and growth of sugar mills in Tamil Nadu

Chapter – IV  Financial Implication and Sugar Mill's Problems in Tamil Nadu: This chapter highlights the problems of sugar industry in Tamil Nadu with the help of issues statutory minimum price and surplus production, state advised cane prices, discrimination in sugar release and problem with dual pricing.

Chapter – V  Physical Performance of Sugar Mills in Tamil Nadu: This chapter reviews the physical performance of sugar mills in terms of sugar cane production, sugar produced, and sugar recovery wherein all India performance and sugar mills performance are tested with the help of hypothesis.

Chapter – VI  Financial Performance of Sugar Mills in Tamil Nadu: In this chapter the financial performance of sugar mills are studied with the help of profitability and cost analysis. The individual performance of sugar mills operating performances and cost performances are studied. This chapter has tested hypothesis on profitability and cost performances.

Chapter – VII  Finding, Summary and Conclusion and Suggestions: This chapter summarises the findings on physical and financial performances and based on that it has drawn conclusions of the present study. Finally various suggestions, based on the analysis have been put forth for implementation and follow-up action for the promotion and betterment of the sugar mills in Tamil Nadu.

REFERENCES:


2  Sugar – Nov 2001, Vol 33, No 3, p 263