CHAPTER-I
THE ORGANIZATIONAL PROFILE

Chapter Design
This chapter explains a brief profile of the sample co-operative sugar factory and its organizational history and there by-products departments and sugar factory production performance.

1.1 Introduction:

Indian sugar industry is an important and big share in agriculture processing industry. It has very strong impact on our rural development and it provides successful rural development and it provides successful rural economy. In our country nearly 50 million farmers and equivalent labors are engaged in sugarcane cultivation. The Indian sugar industry currently has about 535 operational sugar mills, sugar output 251 lakh tons in the year of 2012-13.

The sugarcane is grown in 21 various States of India on 50 lakh hectare area. Out of total sugarcane production, 60-65% is utilized for production of white sugar and remaining is used for manufacture for gur, kandasari, seed and chewing purpose. Maharashtra, Uttar Pradesh, Tamil Nadu, Karnataka and Gujarat are the major sugar producer of the country with production share of 85%. There are wide fluctuations in production of sugarcane due to sugar cycle.

In other countries sugar is a byproduct, but in India sugar is the main product produced by sugar mills. India is producing large quantity of sugar because of our own needs, but now a days only sugar production is not profitable for sugar mills. Sugar industry needs to increase their capacity in by-products like alcohol, chemicals, paper, co-generation and ethanol etc.

1.2 The Study Area:

The present study is, “An Analytical Study of By-products of Sugar Industry With Reference To Kolhapur District.(Maharashtra)”

In order to understand the concepts of the study, It is imperative area of study which is Kolhapur District in Maharashtra and in India. A brief on the sugar industry, and its by-products, importance of study area is given below.

Sugarcane is grown widely in India. The sugar industry is the largest among the processing industries next only to cotton textile. There are total 535 operating
sugar factories in India in which 235 are co-operative sugar factories. Total sugar production as 251 lakh metric tons is in the year 2012-13. Such industries create more employment opportunities in the rural part of the country, where the sugar factories are usually located. Such industries improve the economic status of thousands of sugarcane growers and the overall financial viability of the sugar factories, thereby making the working of sugar factories much more successful.

With the gradual decline in price of sugar in India and increase in cost of production of sugar, the working of many sugar factories is not comfortable. This is therefore the right time to launch some by-product industry to make the sugar industry financially viable. Sugar industry may works as raw material supplier to many by-product industries. In India there are number of molasses based distillery units near about 400.

These distillery produced alcohol and ethanol can be used as fuel. Bagasse is used for power generation as well as paper production. The total ethanol producers are near about 143 projects and sugar mills having co-generation project 211. To make sugar industry profitable the industry is now planning to have various other industries which are oriented by the co-product of sugar industry.

Maharashtra is one of the major sugars producing State in the country that contributes are 30-35% of the total nation’s sugar production. In the year of 2012-13 the total sugar production of State was 79.91 lakh tones. In Maharashtra 2012-2013 sugar crushing season 118 co-operative sugar factories and 51 private sugar factories has crushed the sugarcane. In Maharashtra By-products of sugar industry is also important. In Maharashtra total Distilleries Affiliated to Co-operative sugar industry for the year of 2011-12 was 67. These plants total Rectified Sprite production 4416.17lakh litters. In that year Ethanol production plant 33 and ethanol produced 608.18 lakh liters. Also Extra Neutral Alcohol production plant was 40 and produced ENA 728.26 lakh liter. Recently in Maharashtra co-generation project 21, total units produced power 417 M.W.

Kolhapur is one of the Historical Capital of Maharashtra. It is situated in the Southwest corner of Maharashtra in India. Kolhapur serves as the headquarters of the Kolhapur District. It is the 6th most industrialized city in Maharashtra. It’s sugarcane industry contributes to over 5% of the sugarcane production in the country and account to a significant share of sugar factory and its by-products industries i.e. distillery, ethanol, co-generation plants and composting plants etc.
Table No.1.1 Number of Sugar Factories and By-Product Industries in Kolhapur District:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Co-operative</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar Factories</td>
<td>17</td>
<td>04</td>
</tr>
<tr>
<td>Distillery Project</td>
<td>08</td>
<td>01</td>
</tr>
<tr>
<td>Ethanol Project</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>ENA Project</td>
<td>04</td>
<td>-</td>
</tr>
<tr>
<td>Co-generation</td>
<td>03</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Field work

The total numbers of sugar factories in Kolhapur District are 21 out of which 17 sugar factories are in co-operative sector researcher is selected 5 co-operative factories. It is also considered that of geographical location, area, size, age, crushing capacity, nature of production of by-products etc. The following co-operative sugar factories selected for research study.

1. **East**: Shri. Datta Sahakari Sakhar Karkhana Ltd. Datanagar, Taluka : Shirol.
2. **West**: Kumbhi Kasari sahakari Sakhar Karkhana Ltd. Kuditre Taluka : Karveer.
3. **South**: Appasaheb Nalwade Gadhinglaj Taluka: Sahakari Sakhar Karkhana Ltd. Harli, Taluka : Gadhingalaj.
4. **North**: Shree Tayasaheb Kore Warana Sahakari Sakhar Karkhana Ltd. Warananagar, Taluka: Panhala.

1.3 **Name and Address**: Shri. Datta Sahakari Sak Ltd. Datanagar, Taluka : Shirol, and Organizational Profile.

- Reg. No. of the factory : KPR/PRG(A)-1 Dated 9th June 1969
- Industrial Licenses No. : IL/25/N-233/70/LC, Dated 9th June 1970
- Multi State co-operative Law
- First/Trial Crushing Season : 1971-72
- Age of the factory : 42 Years
- Initial capacity : 1250 TCD.
- Present Crushing Capacity : 7000 TCD.
### By-Products Units:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distillery (Batch type Old Project)</td>
<td>Capacity 30,000 Liter Per Day</td>
<td>Dated 10(^{th}) Sept. 1982</td>
</tr>
<tr>
<td>DGTD Reg. No.</td>
<td>DGTD/HQ/D/S-19/R-10056/C-31(I) NU/82,</td>
<td>Dated 10(^{th}) Sept. 1982</td>
</tr>
<tr>
<td>Modernization Distillery Plant</td>
<td>Capacity 60,000 Liter Per Day</td>
<td>Dated 10(^{th}) Sept. 1982</td>
</tr>
<tr>
<td>Ethanol Project</td>
<td>Capacity 30,000 Liter Per Day</td>
<td>Dated 6(^{th}) Aug. 2001</td>
</tr>
<tr>
<td>License No.</td>
<td>LI:DYS/112000/44588/56/4</td>
<td>Dated 6(^{th}) Aug. 2001</td>
</tr>
<tr>
<td>Co-generation Plant(old)</td>
<td>Capacity 11.5 M.W.</td>
<td></td>
</tr>
<tr>
<td>Project Started</td>
<td>1990-91</td>
<td></td>
</tr>
<tr>
<td>New Co-generation Plant (On BOOT Basis)</td>
<td>Capacity 36 M.W.</td>
<td></td>
</tr>
<tr>
<td>Project Started Under Construction</td>
<td>03(^{rd}) July 2008</td>
<td></td>
</tr>
<tr>
<td>Actual Generation Started</td>
<td>Year 2011-12</td>
<td></td>
</tr>
<tr>
<td>Composting Fertilizer</td>
<td>As Working</td>
<td></td>
</tr>
</tbody>
</table>

### The main speciality or highlights of sugar factory:

- It is large scale plant and diversified activity unit in the co-operative sugar factory.
- Best Financial Management sugar factory.
- Higher Sugar Exporter sugar factory in India.
- Factory started co-generation project from 1990-91 First project in Maharashtra and under new policy of State Government Co-generation project 36 M.W. on BOOT basis are successfully started in the sugar factory.
1.3.1 History:

Shri Datta Shetkari S.S.K. Ltd. was established by pioneer person as Late Shrimant V. S. Ghorpade Sarkar, Late. Shri. A.G.Kulkarni, Late. D. B. Yadave, and Late. Shri. Appasaheb alias S.R. Patil, Chairman and MLA.

A preliminary meeting was therefore held at Kurundawad in Shirol Taluka on 31st December 1960 for organizing a sugar factory. After collecting requisite amount of share capital, an application for Industrial License was forwarded to the Government of India.

The persistent efforts put forth by the promoters of the proposed Shri. Data Shetkari Sahkari Sakhar Karakhana Ltd. Shirol, ultimately proved to be successful and the Government of India issued a Letter of Intent in the month of May, 1969. The Karkhan was registered under the Maharashtra Co-operative Societies Act on 9th June 1969. The crone stone of the factory was ceremonially laid on 3rd September 1969. The project was completed within just 14-months. In collection of requisite amount of share capital, the formation procedure was started with a initial crushing capacity of 1250 M.T. of sugar cane per day. The factory First trial season was 1971-72.

1.3.2 Location of the factory:

Shri Datta SSK Ltd. Dattanagar, Shirol situated at Eastern part of Kolhapur District. Shirol Taluka in Kolhapur District is gifted by the presence of natural irrigation potential on account of five rivers viz. Krishna, Panchganga, Warna, Doodhganga and Vedganga and very fertile land of alluvial type soil. Very eager to have a Sugar factory so as to ensure all round development and economic prosperity to the higher to poor and marginal farmers.

Photo No. : 1 Datta Administrative Building

![Datta Administrative Building](source: Field Work)

1.3.3 Project Implementation:

The factory is situated in the industrially backward area of Kolhapur District near village Shirol. The project of 1250 TCD was implemented within a short span of
about 14-months and trial crushing season has been taken on the auspicious day of “VERSHA PRATIPADA” on 16th march 1972. Since the operational area extends in two States, and also this cooperative sugar factory is governed by the Multi State cooperative societies Act 2002. At present the factory crushing capacity is 7000 TCD.

1.3.4 Board of Directors and Management in Organization:

In this sugar factory Board of Directors is final Management authority who is elected from the share holder. Total numbers of Director are 22. After every five years elections are held and Chairman and Vice-Chairman are elected among the Board of Directors every year. Management Directors is responsible person to the Board of Directors and he is controlling activities of sugar factory. In the sugar factory Agriculture, Engineering, Manufacturing, Administration etc. are the various sub sections. The head of this department have to submit their department reports at the monthly meeting of Board of Directors.

1.3.5 Awards and Achievements:

1. Distillery in charge of the factory was awarded by “Best Distillery Manager” by Vasantadada Sugar Institute Pune in the year 2003-04.
2. In the year 2004-05 VSI, Pune has awarded Karkhana by “Best Financial Management Award.”
4. Honble Managing Director Mr. M.V. Patil has been awarded as “Best Managing Director” by VSI Pune for his contribution to this factory for the year 2006-07.
5. In the year 2006-07 for Cane Development Award, Karkhana first prize in South Maharashtra Awarded by VSI, Pune.
6. In the year 2008-09 VSI, Pune has awarded Karkhana as “Most Innovative Factory.”
9. For Highest Sugar Export in India, awarded First rank by National Federation of Co-operative Sugar Factories Ltd. New Delhi in 2010-11.
10. Karkhana received two top Prizes from VSI, Pune on 5\textsuperscript{th} January 2013 “Best Sugar Factory” for the year 2011-12 and “Best Financial Management” in the south region.

11. National Federation of Co-operative Sugar Factory Ltd, New Delhi has awarded the first place award categories “High Recovery Zone” in sugar extraction from sugarcane.

There are few other categories in which factory has received 40-plus other awards earlier. Some of those categories are best quality of sugar export, sugar development policy, best use of technology, best working directors, best chief agriculture officer, best chief engineer prize, best sugarcane development officer prize etc.

\textbf{Table No.1.2 Showing number of villages including operational area.}

<table>
<thead>
<tr>
<th>Name of State</th>
<th>Name of District</th>
<th>Name of Toluca</th>
<th>No. of village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
<td>Kolhapur</td>
<td>Shirol</td>
<td>50</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Kolhapur</td>
<td>Hatkanagle</td>
<td>32</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Kolhapur</td>
<td>Karveer</td>
<td>02</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Kolhapur</td>
<td>Kagal</td>
<td>03</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Belgaum</td>
<td>Chikodi</td>
<td>21</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Belgaum</td>
<td>Athani</td>
<td>07</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>115</strong></td>
</tr>
</tbody>
</table>

\textit{Source:-Annual Report of the factory (2012-13)}

\textbf{Table No.1.3 Showing number of member, shareholder and share capital}

<table>
<thead>
<tr>
<th>Particular</th>
<th>Number of Member</th>
<th>Number of shareholder</th>
<th>Share Capital Net paid up Rs.in Lakh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{Productive member- A Class}</td>
<td>30269</td>
<td>47493</td>
<td>3982.72</td>
</tr>
<tr>
<td>\textit{Nominal member- B Class}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) (Personal</td>
<td>1855</td>
<td>1944</td>
<td>147.41</td>
</tr>
<tr>
<td>2) Cooperative society</td>
<td>88</td>
<td>124</td>
<td>10.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32,212</strong></td>
<td><strong>49,661</strong></td>
<td><strong>4,140.60</strong></td>
</tr>
</tbody>
</table>

\textit{Source:-Annual Report of the factory (2012-13)}
1.3.6 By-Products Units of the Sugar Factory:

1. Distillery Plant:

The sugar factory is closely associated with each other. Distillery has a little control over quality improvement of molasses. Karkhana was set up two plants of distilleries. Old plant of distillery batch type 30000 litter per day was set up 10\textsuperscript{th} September 1982. Modernization distillery plant was set up 19\textsuperscript{th} October 2000. These additional plants of 30,000 liters per day capacity based on continuous fermentation and multi pressure vacuum distillation technology has been installed and commissioned from 27\textsuperscript{th} February 2002.

2. Ethanol Plant:

An ethanol plant of 30,000 Litters per day capacity based on Molecular Sieve Technology has been installed and successfully commissioned on 25\textsuperscript{th} May 2002 the plant and machinery of ethanol plant has been supplied by M/S Praj Industries, Pune.

3. Co-generation:

This Co-operative Sugar Factory to go in for co-generation and produce extra power which will be supplied to State Electricity Board so as to overcome the short supply of power to some extent. Factory started co-generation project from 1990-91, the capacity of this project 11.5 M.W. In that project factory uses 8 M.W. electricity own and 3.M.W. Electricity Providing to the MSEB grid from 2003-2004 season. A minimum return from the Co-generation is Rs.3.00 to 3.50 Cores per season.

The Management of factory considered present scenario of electricity and decided to go in co-generation project of 36 M.W. The project under construction on BOOT Basis with masers Urge Anker Nithi Trust Government of Maharashtra and will be completed before ensuring crushing season i.e. 2010-2011.

4. Composting Department:

The factory management has established a separate Environmental Management cell to look after all the related issues of pollution control. It has a task to look after the effluent treatment of sugar factory and distillery. The distillery effluent is one of the most polluted items. The factory management has adopted composting technique for the treatment and disposed of spent wash.

Press mud, Bagasse and Ash are mixed in definite proportion with the spent wash and aerated for about 21 days to get good quality of compost. The ready compost is distributed to the member farmers at a rate of Rs.125 per ton. The compost is good in Humus content and bacterial content. The application of compost has
helped to improve the yield of compost has helped to improve the yield of crop along with soil quality.

1.3.7 Other Development SCHEME:

- Horticulture development Scheme:

  In the year 1982 management of factory started Horticulture development scheme due to increase in the number of trees it had help in Environmental Balancing and also created a source of income to the factory.

  Table No.1.4 Showing Trees Types and Number of Trees Supply

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Types of Trees</th>
<th>No. of Trees Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coconut</td>
<td>5995</td>
</tr>
<tr>
<td>2</td>
<td>Betel nut</td>
<td>955</td>
</tr>
<tr>
<td>3</td>
<td>Mango</td>
<td>271</td>
</tr>
<tr>
<td>4</td>
<td>Saputo</td>
<td>63</td>
</tr>
<tr>
<td>5</td>
<td>Guava</td>
<td>319</td>
</tr>
<tr>
<td>6</td>
<td>Pomegranate</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>Drumstick</td>
<td>32</td>
</tr>
<tr>
<td>8</td>
<td>Forest Trees</td>
<td>11950</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24050</td>
</tr>
</tbody>
</table>

  Source: Annual report 2012-2013

- Socio Economic Activities:

  The aim and object of the co-operative Sugar Factory is to secure social justice and impart modern technology in agricultural operations. Our co-operative Industrial complex has undertaken various socio-economic activities for improving the economic conditions and standard of living of the villagers in the area of operation of our factory as under –

  1. The cultivator members are encouraged to construct Gobar Gas Plants of various capacities and are provided with a subsidy amount equal to the Village cottage Industries Commission. The subsidy ratio is based on installed capacity.

  2. The management of the sugar factory with a view to procure sizeable sugarcane and to provide subsidiary work to the agriculturist members has implemented Datta Oos VAHATUK YOJANA. Through this scheme the sugar factory has distributed trucks, tractors, and trailers and bullock carts.
3. The factory has also established a Workers Co-operative Credit Society. This society is functioning very smoothly by rendering to the extent of Rs.1.00 Lakh.

4. The management of the Karkhana has taken the initiative to establish a consumer co-operative stores viz: Shree Datta Shetkari Shakari Grakhak Sanstha Ltd. Dattanagar with a view to have a big consumer departmental stores to make available required consumable items such as cloths, readymade cloths, food-grains, utensils electrical items, sewing machines, bicycles etc. at reasonable prices.

- **MEDICAL CENTER:**

  As a part of its social obligation, the management of the factory has established a Medical Center in the premises of the factory with modern building and equipped with all instruments and facilities to render the medical needs not only to its workers and staff but also to the population residing in the surrounding of this complex. The prime object of this venture is to extend the medical facilities to the weaker section at nominal charges, at present the medical Center is having four well qualified doctors with vast experience in the line. Medical Center has X-ray machine, Physiotherapy Section well-equipped operation theater. Karakhana has Heart Specialist, Ortho specialist, E.N.T. Specialist, Dentist on honorary basis. Eye checkup and operations, all type of body checkup, family planning programs are conducted by the medical center, Medical center is totally implemented by financial support by our cane growers.

- **Industrial Training Center:**

  Considering the fast growth of small and large scale industries in the nearby towns, the management has started Government recognized Industrial Training Center, incorporating trades viz. 1) Fitter 2) Mechanic Motor Vehicle 3) Electrician 4) Mechanic Agriculture Machinery 5) Information Technology and Electronic System 6) Computer Operating and Programming Assistant, which will facilitate the participant trainees the job surety as also they can have individual workshop of the subject matter.
• **Data Polytechnic College:**

Management has started polytechnic college from academic year 2010-2011. The Polytechnic is recognized by AICTE, New Delhi and Director of Technical Education Govt. of Maharashtra. It has five faculties Viz. 1) Mechanical Engineering 2) Civil Engineering 3) Electrical Engineering 4) Electronic and Telecommunication 5) Computer Engineering.

• **Late Dattajirao Kadam Kamgar Kalyan Manadal and Labour Welfare :**

Management of the factory is always trying to give the job to the people in the area of operation. Relations between employees and management are very harmonious due to the harmonious relations development of Industrial complex is achieved. Late Dattajirao Kadam Kamgar Kalyan Manadal and Labour Welfare Dattanagar implement various schemes for workers families. Workers and family members can receive up to Rs. 10,000/- Medical Aid. It major operation has taken place. Mandal has Gymbasium, Akhada, Library, Balwadi. Also Recreation Hall is constructed for various functions. Beside these facilities, factory provides 50% Medical expenditures for the employees suffering from Heart Diseases, Paralysis, Cancer a pawed leave up to 6 months. Mandal has started its activities through Gymnasium, Akhada and athletics. It is proud to mention here that some our players of our mandal are rating at the top of District, State and National level.

• **Sugarcane Development Activity:**

Shree Datta S.S.K. Ltd. Shirol has set up a separate wing of cane Development in 1987.Tthe cane development activities within the area of operation. For the saved work we have appointed qualified 79 Agri Personnel.

The various cane development activities implemented by the factory are as Soil Testing Laboratory, Proper Tillage Operation, Green Manuring, Supply of Sugarcane Seed Material, Supply of Chemical Fertilizers, and Supply of Bio-Fertilizers, Supply of Organic Manure.
Table No.1.5 Showing Datta sugar factory production performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Crushing capacity TCD</th>
<th>Crushing days</th>
<th>Sugarcane Crushing M.T.(in Lakh)</th>
<th>Sugar Production in Quintals (in Lakh)</th>
<th>Sugar Recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2005-06</td>
<td>7000</td>
<td>111</td>
<td>8.31</td>
<td>10.3</td>
<td>12.4</td>
</tr>
<tr>
<td>2006-07</td>
<td>7000</td>
<td>138</td>
<td>10.25</td>
<td>12.65</td>
<td>12.32</td>
</tr>
<tr>
<td>2007-08</td>
<td>7000</td>
<td>148</td>
<td>11.0</td>
<td>14.26</td>
<td>12.95</td>
</tr>
<tr>
<td>2008-09</td>
<td>7000</td>
<td>115</td>
<td>8.74</td>
<td>11.14</td>
<td>12.73</td>
</tr>
<tr>
<td>2009-10</td>
<td>7000</td>
<td>170</td>
<td>12.65</td>
<td>15.66</td>
<td>12.37</td>
</tr>
<tr>
<td>2010-11</td>
<td>7000</td>
<td>182</td>
<td>13.44</td>
<td>16.42</td>
<td>12.21</td>
</tr>
<tr>
<td>2011-12</td>
<td>7000</td>
<td>164</td>
<td>12.29</td>
<td>15.21</td>
<td>12.37</td>
</tr>
<tr>
<td>2012-13</td>
<td>7000</td>
<td>156</td>
<td>11.96</td>
<td>15.12</td>
<td>12.63</td>
</tr>
<tr>
<td>Total</td>
<td>1184</td>
<td>88.64</td>
<td>110.76</td>
<td></td>
<td>99.98</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>148.00</td>
<td>11.08</td>
<td>13.85</td>
<td>12.50</td>
</tr>
<tr>
<td>S.D.</td>
<td></td>
<td>25.41</td>
<td>1.86</td>
<td>2.23</td>
<td>0.25</td>
</tr>
<tr>
<td>C.V.</td>
<td></td>
<td>17.17</td>
<td>16.75</td>
<td>16.13</td>
<td>1.99</td>
</tr>
</tbody>
</table>

Source: Annual report 2012-2013 and field work

Graph No.1.1 shows sugarcane crushing M.T. in lakh and sugar production in quintals.

![Graph showing sugarcane crushing M.T. in lakh and sugar production in quintals.](image-url)
The duration at season largely depends on availability of cane. The table no. 1.5 shows that the mean value of crushing days during this eight years 148.00 days. The duration of crushing days during these eight years ranged between 111 days as minimum during the year 2005-06 and 182 days as maximum during the year 2010-2011. For economic working of any mill the duration of the crushing season should be around 160 days. The high C.V. value (17.17) indicates more flections in the length of season during study period.

It is observed from the table no.1.5 the mean value of cane crushed during this eight years is 11.08 lakh tones. The quantity of cane crushed ranged between 8.31 lakh tones during 2005-06 and 13.44 lakh tones maximum during the 2010-11 season. The C.V. (16.75) value indicate more fluctuation in the quantity of the cane crushed during this period.

The mean value of the sugar production by this sugar factory during the study period comes to 13.85 lakh quintals. The sugar production ranged between 10.30 lakh quintals as minimum during 2005-06 and 16.42 lakh quintals as maximum during the year 2010-11. The high C.V. value (16.13) indicate more variation in the quantity of sugar produced during this period.

The table no.1.5 also shows the mean value of the sugar recovery percentage comes to 12.50 percent. This sugar factory operates in the high sugar recovery zone of the Maharashtra state. During 2011-12 season, the state average sugar recovery 11.66 percentage. But the mean value of this sugar factory sugar recovery 12.50 percent. The lower C.V. (1.99) value indicates there was more uniformity in the sugar recovery percentage during this period.

1.4 **Name And Address:** Kumbhi Kasari Sahakari Sakhar Karkhana Ltd. Kuditre, Tal-Karveer and Organizational Profile

<table>
<thead>
<tr>
<th>Reg. No. of the factory</th>
<th>G/-282 / 20-06-1960</th>
</tr>
</thead>
<tbody>
<tr>
<td>First/ Trial Crushing Season</td>
<td>1963-64</td>
</tr>
<tr>
<td>Age of the factory</td>
<td>51 Years</td>
</tr>
<tr>
<td>Initial capacity</td>
<td>1000 TCD.</td>
</tr>
<tr>
<td>Present Crushing Capacity</td>
<td>3000 TCD.</td>
</tr>
<tr>
<td>Clarification process used</td>
<td>Double sulpuitation for white sugar</td>
</tr>
<tr>
<td>Sugar production grades</td>
<td>M-30, s-30, SS-31</td>
</tr>
</tbody>
</table>
By-Products Units:

Distilleries Department

Establishment Year: 1992
First Season: 1993
Installed Capacity: 30,000 Liters Per Day
Alcohol Production: Rectified Sprit, special denatured Sprit, Ordinary Denatured spirit and Fusil Oil

New Plant of ENA

Establishment Year: 2011-12 (Under Construction)
Bio-composting Plant: Used press mud + Culture + Spent wash = Compost
Co-generation Plant: 19.5 M.W. (Under Construction 2012-2013)

The main speciality or highlights of sugar factory:

- It is medium scale plant in the co-operative sugar factory.
- Higher Sugarcane recovery zone area.
- Factory started co-generation project and extra natural alcohol project from the year 2013-14, apply the new policy in sugar factory.
- Because of co-generation project factory capacity increased 3000 TCD to 5000 TCD.

1.4.1 History:

Kumbi Kasari Sahakari sakhar Karkhana Ltd. Kuditre is located 14 kms to the west of Kolhapur city. Bhogawati, Tulsi, Kumbhi, and Kasari rivers surround the factory on all sides, so this surrounding area is full of water for 12 months. Due to this the sugarcane crop is produced in abundance in this region. In fact in this region there was really extreme need of sugar factory in those days.

Under the versatile, polite and firm leadership of Mr. D.C. Narke, Mr. S.B. Khade, Mr. B.B. Patil (Koge) and Mr. Y.R. Atigare (Koge) and colleagues made a proposal for co-operative sugar factory in the year 1954. The licence was obtained in 1960, under the registration No. G- 282-1960. For this factory 70% of the machinery had been taken by M/S Textile Machinery corporation Ltd. Calcutta and 30% import. This factory started production in 1963.
At that time of the registration the permission was given to only 1000 M.T. cane crushing a day of standard. In view of increasing cane availability, the factory was expanded to 1750 M.T. a day in 1977. In 1979 the management to another expansion application to the central Government for permission of 3500 M.T. per day but the permission was issued 3000 M.T. a day in 1980. In the current year 2012-13 establishment of cogeneration plant of 17.5 M. W. and plant moderations is in final stage because the coming season per day crushing will be increased up to 5000 TCD.

1.4.2 Location:

Kumbhi Kasari sahakari Sakhar Karkahana Ltd. has been located about 14 Kms. to the west of Kolhapur city. All sides of the factory the river Bhogawati, Tulshi, Kumbhi and Kasari water shed area is surrounded. Because of these rivers soil become fertile in this area. Due to this fertility sugarcane is main crop.

**Photo No. 2 : Kumbhi Administrative Building**

![Source : Field Work](image)

Table No.1.6 showing No. of Villages, No. of Members, No. of Shareholders, Total Sugarcane M.T. supply of the factory.

<table>
<thead>
<tr>
<th>Name of Taluka</th>
<th>No. of Villages</th>
<th>No. of Members</th>
<th>No. of Shareholders</th>
<th>No. of M.T. Sugarcane Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karveer</td>
<td>42</td>
<td>14,001</td>
<td>14,581</td>
<td>3,12,752</td>
</tr>
<tr>
<td>Panahala</td>
<td>59</td>
<td>7,649</td>
<td>8,097</td>
<td>7,79,372</td>
</tr>
<tr>
<td>Gaganbawada</td>
<td>06</td>
<td>733</td>
<td>770</td>
<td>37,009</td>
</tr>
<tr>
<td>Radanagari</td>
<td>01</td>
<td>711</td>
<td>720</td>
<td>11,273</td>
</tr>
<tr>
<td>Shauwadi</td>
<td>01</td>
<td>561</td>
<td>596</td>
<td>15,692</td>
</tr>
<tr>
<td>Out area but Maharashtra</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>28,001</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>109</strong></td>
<td><strong>23,655</strong></td>
<td><strong>24,764</strong></td>
<td><strong>5,84,099</strong></td>
</tr>
</tbody>
</table>

*Source: Annual report (2012-2013)*
At present the factory has ‘A’ and ‘B’ class share holders. The sugarcane grower farmers from area of operation of factory are considered as ‘A’ class shareholders. The per share value share is Rs.10, 000/-. The total number of ‘A’ class shareholders up to 31st March 2013 is 24,764 shares and subscribed amount Rs.2172.51 lakh and ‘B’ class shareholders is 395 shares subscribed amount Rs.33.02 lakh and shares deposit Rs.1.69 lakh, total amount of subscribed capital is Rs.2207.22 lakh.

1.4.3 Objectives of the Factory:

The main objective of factory is to offer maximum profit to farmers for their agricultural production by adopting high technology in agriculture and this sugar factory is run under co-operative principles and objectives which are provided in tie by-laws.

- Promoting shareholders to become self dependent, reluctant and co-operative among themselves.
- To publish the advanced agricultural practices among shareholders to publish.
- Production of fertilizers, agricultural implements or their supply, promotion for agricultural training to shareholders.
- To start by-product industries for development and benefit of organization.
- To develop irrigation schemes, agricultural development schemes, agro industries schemes.
- To construct and maintain roads for sugarcane transportation with the help of Zillah Perished and State Government.
- To meet the cultural, educational and overall development of members, Workers and peoples under area of operation.

1.4.4 Awards and Prizes:

Kumbhi Kasari S.S.K. has good reputation in Kolhapur district as well as in the Maharashtra. The factory good performance in respect of crushing, sugar recovery, production, plant utilization etc. this sugar factory has been awarded following different awards.

- State Level: 3rd Rank for utilizing Higher Technical Efficiency in south Maharashtra zone from VSI, Pune. In the year 1992-93
• State Level :- 2\textsuperscript{nd} Rank for utilizing Efficiency in south Maharashtra Zone from VSI, Pune in the year 2000-01
• Second Prize from VSI, Pune for Best Technical Efficiency in the year 2000-01 on state level.
• Third Prize from VSI Pune, for overall best Technical efficiency in 2004-05 on state level.

1.4.5 Organization Chart:

1. Board of Directors:

Kumbhi Kasari S.S.K. is a co-operative organization and as per cooperative rules Board of Directors is final, management authorities who are elected from shareholders of class ‘A’ and ‘B’. After every five years elections are held and chairman and vice-chairman are elected among the Board of Directors every Year. Total numbers Directors are 24 and one is managing directors, one Regional Depute Directors of state and two are Workers Representative.

2. Management In Organization :

Managing Directors is responsible person to the Board of Directors and he is controlling activities of the sugar factory. In the sugar factory various department worked i.e. agriculture, engineering, Manufacturing, administration, account, Civil, Store, watch and Ward, vehicle and Garage, Godown, Labor and Welfare, Medical, Sanitation and Distillery.

1.4.6 By Product department:

1. Distillery Plant :

A major portion of the molasses produced in India is used for the production of alcohol from molasses by fermentation. This sugar factory started these own distillery of 30,000 liters per day capacity in 1993. Distilleries and sugar factory are closely associated with each other; distilleries have little control over quality improvement of molasses. By adopting proper techniques both at the sugar factory and distillery level, much can be done to improve the molasses quality for increased alcohol production. Distillery used alcohol the production of special denature sprit (SDS). Ordinary Denature Sprit and Fusil Oil.

2. Compost Fertilizer Plant :

Composting has comes to be accepted as one of the good solution to the problem of distillery effluent treatment. Scientifically operated bio-composting can
result in to zero effluent discharge. The factory stated composting plant at Satareda village near to factory side. These plant using distillery spent wash and press mud cake has to carry out in surface windows with the help of an aero tiller machine for spraying, mixing, turning and aerating of compost material. Addition of special blend of cultures or cow dung provides bacterial culture required for composting. The finished product can be sold to farmers and substantial amount of income can be generated.

3. Co-Generation Plant (Project):

Recently factory management has taken a decision of starting co-generation plant. The capacity of the co-generation plant would be 17.5 M.W. with modern technology. The entire design has been sent through VSI, Pune to the sugar Commissioner for approval. Post approval of design loan from N.C.D.C. has been approved. 5% self investment, 5% State government to fund, 40% from Sugar Development fund (SDF) and remaining from National Co-operative Development Corporation (NCDC) will provide.

Project expected total cost is approximately Rs. 136 crores. Out of this amount Rs.21 crores tax amount will be refunded by government. Therefore the net cost of the project is Rs. 115 crores, 96 crores is as estimated cost of the co-generation plant and remaining amount will be kept for modernization of sugar factory to increase capacity to 5,000 TCD.

1.4.6 Other Development scheme:

1. Sugarcane Development Scheme:

The factory has a agricultural development department office local name called as “Shetakari Office” a separate department. This department provides necessary technical assistance to the sugarcane farmers and helps them by way of providing suitable guidance when necessary and also provides –

1. Supply of fertilizers and micronutrients as based dose for planting on subsidies rate.
2. Distribution of good quality of seeds on subsidized rate.
3. Supply of good insecticides pesticides as well as bullock drown implements.
4. Supply of spraying material
5. Supply of Krishivator (Small Tractor) to the farmers.
6. Introduction of new verities of sugarcane like co-86032, co-92005. The sugar factory provides subside to sugarcane shareholder @ of Rs.10 per ton.
2. **Road construction and Development:**

Co-operative sugar factory have contributed towards development by way of providing the necessary infrastructure. The Kumbhi Kasari S.S.k. was played an important role in the field of construction and repairs of roads in the operation area.

3. **Bio-Gas scheme:**

The factory has introduced a Bio-gas scheme to their members with the help of the central Government on the basis of subsidies grant. 225 units @ Rs. 2500 each total amounted Rs. 5, 62,500 these subsidies were provided from factory in the year 2012-13.

4. **Social Responsibility:**

The sugar factory has been taking several steps for the development of area in and around its area of operation as its obligation to the society. It actually supports and encourages academic, sports, cultural and religious activities under this program it runs a school, hospital, a gymnasium, a cultural hall and also a Kusti (Wrestling hall) Sankool.

5. **Kumbhi Kasari Pratishthan (Trust):**

In 1993, a trust was established and registered in the name of Kumbhi Kasari Pratishthan. Which is in line with the factory in a view to uplift the social, economical, cultural level of the people in and around the functional area of the factory. The trust aims at imparting education and providing necessary helps to small and medium size entrepreneurs. The trust has extended its hand to individuals and organizations it has started a spate independent institute for sports, education and arts. Accordingly it has stated secondary school ‘Kumbhi Kasari Vidyaniketan’ with the constant of the Maharashtra Government from 1st July 2002.

The trust believes that words of the sugarcane growers, members, factory staff members and poor and needy farmers should get quality and state of the art education at factory site at reasonable cost. The trust aims at providing residential accommodation, financial assistance for education, educational scholarships, awards, free ships along with school to all students irrespective of their cast and religion.

6. **Shetkari Sanskrutic Bhavan (Cultural Hall):**

Factory has its own cultural hall for farmers. This hall is utilized for various cultural programs, marriages and religious functions. The hall is proved to be very convenient and economical for people in and around the functional area of factory.
Every year wrestling competitions is organized by wrestlers in functional area of the factory, on a factory site. Encouraged sportsmen by providing them financial support and coaching to participate in various state and national level tournaments.

Table No.1.7 Showing Kumbhi sugar factory production performance.

<table>
<thead>
<tr>
<th>Year</th>
<th>Crushing Capacity TCD</th>
<th>Crushing days</th>
<th>Sugarcane Crushing M.T.(in Lakh)</th>
<th>Sugar Production in Quintals (in Lakh)</th>
<th>Sugar Recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2005-06</td>
<td>3000</td>
<td>147</td>
<td>5.25</td>
<td>6.69</td>
<td>12.74</td>
</tr>
<tr>
<td>2006-07</td>
<td>3000</td>
<td>135</td>
<td>5.14</td>
<td>6.61</td>
<td>12.88</td>
</tr>
<tr>
<td>2007-08</td>
<td>3000</td>
<td>145</td>
<td>5.49</td>
<td>7.23</td>
<td>13.16</td>
</tr>
<tr>
<td>2008-09</td>
<td>3000</td>
<td>117</td>
<td>4.47</td>
<td>5.93</td>
<td>12.96</td>
</tr>
<tr>
<td>2009-10</td>
<td>3000</td>
<td>179</td>
<td>6.27</td>
<td>7.98</td>
<td>12.73</td>
</tr>
<tr>
<td>2010-11</td>
<td>3000</td>
<td>159</td>
<td>5.83</td>
<td>7.42</td>
<td>12.74</td>
</tr>
<tr>
<td>2011-12</td>
<td>3000</td>
<td>128</td>
<td>4.61</td>
<td>5.98</td>
<td>12.98</td>
</tr>
<tr>
<td>2012-13</td>
<td>3000</td>
<td>138</td>
<td>5.84</td>
<td>7.83</td>
<td>13.43</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1148</td>
<td>42.9</td>
<td>55.67</td>
<td>103.62</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td></td>
<td>143.50</td>
<td>6.96</td>
<td>12.95</td>
</tr>
<tr>
<td>S.D.</td>
<td></td>
<td></td>
<td>19.12</td>
<td>0.62</td>
<td>0.24</td>
</tr>
<tr>
<td>C.V.</td>
<td></td>
<td></td>
<td>13.33</td>
<td>11.61</td>
<td>1.88</td>
</tr>
</tbody>
</table>

Source: Annual report 2012-2013 and field work

Graph No.1.2 shows Kumbhi sugar factory production performance.
The duration of season largely depends on availability of cane. The table no1.7 shows the mean value of crushing days 143.50. The duration of crushing season ranged between 117days as minimum during the year 2008-09 and 179 days as maximum during the year 2009-10. The high C.V.(13.33) value indicate more fluctuations in the length of season during this period.

Effective and efficient working of any sugar factory depends on a large extent of the abundant supply of quality sugarcane. The table no.1.7 depicts ups and downs in the quality of cane crushed during the study period. In the study period mean value of cane crushed 5.36 lakh tones. During the eight years the quality of cane crushed ranged between 4.47 lakh tones in 2008-09 as minimum and 6.27 lakh tones in 2009-10 as maximum. The high C.V. (11.61) indicates there was more variations in the quantity of the cane.

The mean value of the sugar production by this factory during the study period comes to 6.96 lakh quintals. The sugar production ranged between 5.93 lakh quintals as minimum during 2008-09 and 7.98 lakh quintals as maximum during the year 2009-10. The high C.V. (11.26) value indicates more variations in the quantity of sugar production during this period.

This sugar factory operates in the high sugar recovery zone of the Maharashtra state. During 2011-12 season, the state average sugar recovery 11.66 percentage. But the mean value of this sugar factory, is 12.95 percent. The lower C.V. (1.88) value indicates there was more uniformity in the sugar recovery percentage during this period.

1.5 Name And Address : Appasaheb Nalawade Gadhinglaj Taluka Shakari Sakhar Ltd. Harali, Tal:- Gadhinglaj, and Organizational Profile

Reg. No. of the factory : KPR/PRG(A)-6(s) dated 12.02.1971
Industrial license No. : I.L.S -61/1974 dated. 27.02.1974
First/ Trial Crushing Season : 1978-79
Age of the factory : 34 Years
Initial capacity : 1250 TCD
Present Crushing Capacity : 2000 TCD
Sugar production grades : M-30, S-30,
Clarification process used : Double sulpuitation
Distilleries Department : 24.03.1986
Establishment Year
First Season : 31.03.1987
Installed Capacity : 25,000 Liters Per Day
Alcohol Production : Rectified Sprit, special denatured Sprit,
Ordinary Denatured sprit and Fusil Oil
Bio-composting Plant : Used press mud + Culture + Spent wash =
Compost

The main speciality or highlights of sugar factory:
- It is small scale plant in the co-operative sugar factory.
- It is financial crises sugar factory.

1.5.1 History:
Appasaheb Nalwade Gadhinlgaj Taluka Sahakari Sakhar Karkhana Ltd. Harli has been located about 7 Kms. to south of Gadhinlgaj city and from Kolhapur 85 Kms to the south. Late Appsaheb Nalwade, Late Kaka Shahapurkar and colleagues made a proposal for the co-operative sugar factory in the year 1969. And the license was obtained in 1971 under the Registration No. KPR/PRG (A)-6(s) dated 12.02.1971 and Industrial Licenses No. I.L.S -61/1974 dated. 27.02. 1974. At the time of registration the permission was given to only 1250 M.T. cane crushing per day of standard.

1.5.2 Location:
The sugar factory is located about 7 kms to south of Gadhinlgaj city near Harli Budruk. The area of operation of this factory 89 villages in Gadhinlgaj and 12 in Ajara Taluka. In view of increasing sugarcane availability the factory was expanded to 2000 M.T. a day in 1987. At present the factory has ‘A’ and ‘B’ class shareholders. The sugarcane growers’ farmers from area of operation of the factory are considered as ‘A’ class shareholders. The cooperative credit societies are considered as ‘B’ class shareholders. The value per share Rs. 5000/- each.
Table No.1.8 Numbers of members and shareholders and subscribed and paid up capital

<table>
<thead>
<tr>
<th>Particulars</th>
<th>No.of. Members</th>
<th>No. Of. Shareholders</th>
<th>Subscribed and paid up capital Rs. In lakh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane Produced Members</td>
<td>24,289</td>
<td>24,574</td>
<td>1904.00</td>
</tr>
<tr>
<td>Co-operative Members</td>
<td>191</td>
<td>257</td>
<td>30.05</td>
</tr>
<tr>
<td>Total</td>
<td>24,480</td>
<td>24,831</td>
<td>1934.05</td>
</tr>
</tbody>
</table>

1.5.3 Board of Directors:

Appasaheb Nalwade Gadhinglaj Taluka S.S. K. is a co-operative organization and as working co-operative rules. Board of directors is final management authority who are elected from shareholders of ‘A’ and ‘B’ class. Total numbers of directors is 22. After every five year elections are held and chairman and vice-chairman are elected among the Board of directors every year.
1.5.4 Management in Organization:

Managing Directors is responsible person to the Board of Directors and he is controlling activities of sugar factory. In the sugar factory Agriculture, Engineering, Manufacturing, Administration and head of the section is a managing the activities of that section.

1.5.5 Awards:

The sugar factory unit has been awarded following different awards:

**National Level:** National productivity council New Delhi awarded in 1988-89, second prize in Technical performance of the sugar factory

**State Level:** 3rd Rank for Utilizing higher technical efficiency from VSI, Pune in the year 1990-91. And 2nd Rank for utilizing higher technical efficiency from VSI, Pune in the year 1995-96.

1.5.6 By-Product Department:

1. **Distillery plant Erection**:

   In 1984 Government of Maharashtra approved the distillery plant. From 1987 distillery plant was brought in force, daily production capacity is 25,000 liters. In the year 2011-12 The distillery plant was actually working 120 days and production of Rectified sprite 40. 23 lakh liters and average recovery is 280.02 liters per M.T. of molasses.

2. **Compost Fertilizer Plant**:

   By using distillery waste and press mud as raw material has started a compost fertilizer plant on factory site. The factory sales the fertilizers to their members at reasonable prices in cash or in credit facility. In the year 2011-12, to production of the compost fertilizers 7308 M.T.

1.5.7 Other Development scheme:

1. **Bio-Gas Scheme**:

   The sugar factory has introduced a Bio-Gas scheme to their members with the help of the Government on basis of subsidies grant. In the year 2010-11, 143 Bio-gas plant were constructed in this regions. The factory gives Rs. 2000 per plant as subsidy to the farmers.
2. **Rajashri Shahu Memorial Hospital:**

The factory has stated Hospital to provide service to poor farmers and workers at cheap rates. All workers are provided free check up camp. There are various modern facilities to serve the cane growers and reasonable rates. The hospital provided X-ray machines, laboratory, ECG machine etc. and many operations facility available in the hospital i.e. family planning operation, appendix operation etc.

3. **Workers Welfare programme:**

In any organization, human resources is the most important in the development of the organization. The factory taking workers Accident Insurance policy. Also the workers of factory library facility also provided and loan facility provided to the workers their needs of T.V. and Motor cycle, Housing Loan etc.

4. **Sugarcane development scheme:**

The stated sugarcane development scheme to the famers. This department provides necessary technical assistance to the sugarcane farmers and help them by way of providing suitable guidance whenever necessary

**Table No.1.9 Showing Gadhingalaj sugar factory production performance**

<table>
<thead>
<tr>
<th>Year</th>
<th>Crushing capacity TCD</th>
<th>Crushing days</th>
<th>Sugarcane Crushing M.T.(in Lakh)</th>
<th>Sugar Production in Quintals (in Lakh)</th>
<th>Sugar Recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>2000</td>
<td>136</td>
<td>3.21</td>
<td>4.09</td>
<td>12.4</td>
</tr>
<tr>
<td>2006-07</td>
<td>2000</td>
<td>166</td>
<td>3.78</td>
<td>4.70</td>
<td>12.13</td>
</tr>
<tr>
<td>2007-08</td>
<td>2000</td>
<td>170</td>
<td>3.9</td>
<td>4.91</td>
<td>12.5</td>
</tr>
<tr>
<td>2008-09</td>
<td>2000</td>
<td>108</td>
<td>2.52</td>
<td>2.99</td>
<td>11.8</td>
</tr>
<tr>
<td>2009-10</td>
<td>2000</td>
<td>161</td>
<td>4.07</td>
<td>4.79</td>
<td>11.75</td>
</tr>
<tr>
<td>2010-11</td>
<td>2000</td>
<td>176</td>
<td>4.34</td>
<td>5.06</td>
<td>11.66</td>
</tr>
<tr>
<td>2011-12</td>
<td>2000</td>
<td>129</td>
<td>2.3</td>
<td>2.84</td>
<td>12.33</td>
</tr>
<tr>
<td>2012-13</td>
<td>2000</td>
<td>99</td>
<td>1.75</td>
<td>2.05</td>
<td>11.81</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1145</strong></td>
<td><strong>25.87</strong></td>
<td><strong>31.43</strong></td>
<td></td>
<td><strong>96.38</strong></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>143.13</td>
<td>3.23</td>
<td>3.93</td>
<td></td>
<td>12.05</td>
</tr>
<tr>
<td><strong>S.D.</strong></td>
<td>29.46</td>
<td>0.94</td>
<td>1.15</td>
<td></td>
<td>0.33</td>
</tr>
<tr>
<td><strong>C.V.</strong></td>
<td>20.59</td>
<td>29.22</td>
<td>29.18</td>
<td></td>
<td>2.76</td>
</tr>
</tbody>
</table>

*Source: Annual report 2012-2013 and field work*
The duration of the season largely depends on availability of cane. The table no.1.7 shows the mean value of crushing days 143.13. The duration of crushing season ranged between 99 days as minimum during the year 2012-13 and 176 days as maximum during the year 2010-11. The high C.V. (20.59) value indicate more fluctuations in the length of season during this period.

In the study period mean value of cane crushed 3.23 lakh metric tons. During the seven years the quantity of cane crushed ranged between 1.75 lakh tones in 2012-13 as minimum and 4.34 lakh tones in 2010-11 as maximum. The high C.V. (29.22) indicates there was more variations in the quantity of the cane crushed.

The mean value of the sugar production by this factory during the study period comes to 3.93 lakh quintals. The sugar production ranged between 2.05 lakh quintals as minimum during 2012-13 and 5.06 lakh quintals as maximum during the year 2010-11. The high C.V. (29.18) value indicates more variations in the quantity of sugar production during this period.

This sugar factory operates in the high sugar recovery zone of the Maharashtra state. During 2011-12 season, the state average sugar recovery 11.66 percentage. But the mean value of this sugar factory, is 12.05 percent. The lower C.V. (2.76) value indicates there was more uniformity in the sugar recovery percentage during this period.
1.6 **Name And Address:** Shri.Tatyasaheb Kore Warna Sahakari Sakhar Karkhana Limited, Waranagar, Tal.-Panhal, and Organizational Profile

Reg. No. of the factory : G-271, Dated 27\textsuperscript{th} September 1955 under the Maharashtra co-operative societies Act,1960

Industrial Licenses No. : Govt. of India under, no.L. 25 N.215-69 LC dated 11-9-1959

First/ Trial Crushing Season : 1959-60

Age of the factory : 53 Years

Initial capacity : 100 TCD.

Present Crushing Capacity : 7500 TCD.

**By-Products Units:**

**Bagasse based Pulp-paper** : In the year 1983

Mill establishment

Capacity : 20 Metric Tons per day production of white cream wove paper of 45,60 gram mage.

**Distillery (Batch type Old Project)**

Capacity 30,000 Liter Per Day

Establishment : In the year 1983

**Expansion and Modernization Distillery Plant**

Capacity 60,000 Liter Per Day

License No. : 2497/SIA/IMO/2000,Dated 19\textsuperscript{th} Oct.2000

**Ethanol Project** : Capacity 30,000 Liter Per Day

**Extra Neutral Alcohol** : Capacity 55,000 Liter Per Day

**New Co-generation Plant**

(On BOOT Basis) : Capacity 36 M.W.

Project Started Under Construction : 03\textsuperscript{rd} July 2008

Actual Generation Started : Year 2011-12

Composting Fertilizer : As Working
The main speciality or highlights of sugar factory:

- It is large scale plant and diversified activity unit in the co-operative sugar factory.
- Best Financial Management sugar factory.
- Award for maximum export of sugar in India.
- ISO-9001:2008 Certification from M/s TUV Management Service Gumbh, Unternehmensgruppe TUV Suddeutschlan. Warana sugar factory is only sugar factory who has achieved this certificate in first number and first attempt in the cooperative sugar sector of Asia.

“Warananagar was fortunate in having the leadership of the Late Tatyasaheb Kore, a great visionary, who was always very kneeling on two aspects 1) whatever constructive work taken in hand must finally prove to be better than the best and 2) the common man must be the main beneficiary.”

1.6.1 Historical Aspect:

Warana Valley owes its revolutionary socio-economic development to its Leader and founder of Warana Sahakari Sakhar Karakhana Ltd. Late. V. A. alias Tatyasaheb Kore, exactly 55 years back, Warna Valley was barren and hilly track, notorious for dacoit only. Under unavoidable circumstances, a common man could dare to enter the region.

Prior to the establishment of Warna Co-operative, the cane farmers in the area were producing Jiggery and were at mercy of the market rates for their produce. Many times, these rates used to be at the rock bottom making it uneconomical to produce Jiggery eventually compiling the farmers to burn down their standing cane. The Late Tatyasaheb Kore also had once setting up of WSC (Warana Sugar Co-operative) the farmers were saved from the vagaries of the said marked rates.

The word Warna is taken from the name of the river, a tributary of Krishna, which flows west to East forming the boundary of the district of Kolhapur and Sangli. The area of operation of Warana Sugar Co-operatives comprises 70 villages which are located on both the side of the river. With Warna factory on the scene, there was a sea change in the situation in the very short span and virtually a new life began for the villagers of the basin.
1.6.2 Location:

Shri. Tatyasaheb Kore Warana Sahakari Sakhar Karakhana Lt. Wrananagar, North from Kolhapur 33 Km. Warna is the name of river and on the bank Warna River, Wrananagar popularly known. Warna is the co-operative group of sugar factory, dairy, banking, agro processing unit, Bazaar, Micro and small scale women industries, educational institutions, medical and engineering institutions.

Photo No. 4 Warana Factory Administrative Building

Source: Annual Report

1.6.3 The sugar factory:

This dark picture is totally changed due to only vision of our totally changed due to only vision of our great Leader Late Shri Tatyasaheb Kore, Karkhana got industrial license from Government of India Under No. L. 25 N. 15-69 LC dated 11 September 1959. The Warana society was registered on 27th September 1955 under the Maharashtra Co-operative Societies Act, 1960.

The Warana Sugar co-operative was not engaged in just to manufacture the sugarcane allied products and to earn profit concern for the benefit of cane cultivators, but a nucleus of all round development of rural area of operation through its cooperative organization and to help for increasing economic growth of rural population, leading towards integrated Rural Development of India, in real sense.

Initially this sugar factory was started with 1000 TCD crushing capacity during 1959-60. Because of increased sugarcane production time to time the karkhana
expansion programme seven times implemented. Last expansion capacity increased from 5000 TCD to 7500 TCD in 2003-04.

Shri Tatyasheb Kore Warana Sahakari Sakhar Karkhana Ltd. is founded by Late Tayasaheb Kore and was leading the same since its inception to his demise in 1994. Thereafter, his name was incorporated in the title of the organization. The Warana Complex comprises several cooperatives, trusts etc.

Table no:1.10 Showing numbers of members, shareholders and share capital

<table>
<thead>
<tr>
<th>Particular</th>
<th>Number of members</th>
<th>Number of shareholders</th>
<th>Share Capital Rs. In Lakh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Productive member ‘A’-Class</td>
<td>20006</td>
<td>21,864</td>
<td>2043.75</td>
</tr>
<tr>
<td>Nominal member-’B’- Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal-</td>
<td>6</td>
<td>8</td>
<td>0.40</td>
</tr>
<tr>
<td>Cooperative society-</td>
<td>73</td>
<td>107</td>
<td>10.70</td>
</tr>
<tr>
<td>Total</td>
<td>20,085</td>
<td>21,979</td>
<td>2054.85</td>
</tr>
</tbody>
</table>

Source:-Annual Report 2012-13

The area of operation of karkhana is spread in Two Districts i.e. Kolhapur (Panahala-19 villages, Hataknagale-26 villages, Karveer-5 villages) and Sangli district (Shirala-7 villages, Walawa-23 villages) total villages including in that area is 80 villages and out of Maharashtra 267 villages in the year 2012-13.

1.6.4 Various Awards and Achievements:

1. Late Vasantdada Patil Award for best sugar factory in Maharashtra having revolving trophy and cash prize of Rs.25000 for the season 2005-06 from VSI, Manjari (Bk)

2. 2005-06:-“Oos Bhushan Puraskar” awarded to our member Mr. Chandrakant S. Patil, At Post-Ambap in South Zone by VSI, Pune for the highest yield of 224.43 metric tons/hater during the season 2005-06.

3. Efficiency award “Award for maximum export of sugar” in India to the sugar factory for the season 2006-07 from National Federation of Co-operative Sugar Factories Ltd. New Delhi.

4. “Best Financial Management Award” in the South Zone of Maharashtra for the season 2006-07 from VSI, Manjari (Bk).
5. “Best Cooperative Society” Award given on 7th March 2008 by District Deputy Registrar Cooperative Societies, Kolhapur on the eve of cooperative movement Centenary.

6. Efficiency Award “Award for maximum export of sugar” in India to the sugar factory for the season 2007-08 from National Federation of Co-operative Sugar Factories Ltd. New Delhi.

7. First Award in 38th Flower Show and competition organized by Garden Club, Kolhapur to the sugar factory for Shetkari office garden in the category “Gardens (Societies and Public) medium and another on is for Tatyasaheb Kore Smruti Van (Warananagar) in the category “Garden” (sugar factories) small.

8. “Oos Bhushan Puraskar” awarded to factory member Mr. Balasaheb S. Jadhav, At Plost-Yelur, Taluka-Walwa, Dist-Sangli in South Zone by VSI, Pune for the highest yield of 86032 pre seasonal variety 325.590 M.T./ha. During the season 2008-09.

9. Ward and Memento from Industry Ministry, Government of Maharashtra for Excellent work done in Maximum Sugar Export during the year 2007-08 and 2008-09.

10. Warana Complex Best Executive Award to Shree. Vasantrao Shivling Chanvan (Managing Director) its sugar factory at the auspicious hands of his Excellency Bharat Ratna Dr. APJ Abdul Kalam, Former President of India on eve of Golden Jubilee Celebrations of the sugar factory.

11. ISO-9001:2008 Certification from M/s TUV Management Service Gumbh, Unternehmensgruppe TUV Suddeutschlan. Warana sugar factory is only sugar factory who has achieved this certificate in first number and first attempt in the cooperative sugar sector of Asia.

12. National Federation of Co-operative Sugar Factories Ltd. New Delhi has awarded the “Maximum Sugar Export” in the season 2011-12.

1.6.5 By-products Units:

1. Bagasse based pulp and paper mill:

For getting benefits from by-products karakhana has installed bagasse based pulp and paper mill in 1983 with capacity of 20 metric tons per day production of white cream wove paper of 45,60 gram mage. Now karakhana has installed and commissioned 8 TPD Sodium Lignosulphonate Unit. Sodium Lignosulphonate is
produced from black liquor of sugar factory with some other chemicals. This chemical is used in cement and paint Industries like oil and natural gas corporation and leather industry.

2. **Distillery Plant:**

In the year 1989 factory has installed and started Distillery plant to utilize the by-product molasses with 30000 lit. Per day capacity producing Industrial Alcohol and Rectified spirit. Now the karkhana has modernization and increased the capacity of distillery up to 60000 lit. Per day.

3. **Bio-composting plant:**

The factory distillery effluent is one of the most polluted item. The factory management has adopted composting technique for the treatment and disposal of spent waste, press mud, bagasse and other culture are mixed in definite proportion with the spent wash and aerated for about 21-days to get good quality of compost. The ready compost is distributed to the member farmers at a reasonable rate.

Composting is a biological process in which the organic matter is degraded under controlled condition. It involves microbial degradation of organic matter leading to complete mineralization. The Warana distillery applied Bio-Earth composting process. In this process press cake is arranged in windrows of 6th fit high and 14 fit wide at the base. Boiler ash and if available bagasse are also mixed. Spraying of the effluent on the windrows is carried out a specific interval. Another special feature of this system is the use of an equipment known as Aero tiller. This machine traverses windrows thoroughly aerating and agitating the composting mixture and grinding and shredding lumps to a uniform size. Bio-Earth composting include the contains nitrogen, phosphorus and less calcium. Because of Bio-Earth composting advantages to the farmers in surrounding area. Bio-Earth composting increasing soil resistance, soil fertility and productivity capacity. Also this method many advantages to the sugar factory i.e. zero pollution, high product value, and quick payback, dry bag gable product, easy to handle and transport.

4. **Warana Cogeneration Project (Projected):**

44 M.W. capacity bagasse based cogeneration power plant in construction on factory site. This plant has been prepared for implementation on Build, Own, Operate, and Transfer (BOOT) principles and will be transferred back to Warana sugar factory after 7 to 8 years. The Government of Maharashtra provides Urjankur Nidhi (Fund) a scheme under Urjankur Trust.
1.6.6 Other Development Project in Warana complex:

1. The Warana Dairy:

The other major economic activity is that of the Warana Dairy which is registered as a cooperative society established in the year 1968. It daily collects about five lakh liters of milk and annual sales have now surpassed Rs.600 corer. It sells milk and various milk products and also exports the same. Warana is the largest selling brand of Shrikhand in our country. The dairy also produced skimmed milk and ghee. Cadbury gets some of their products manufactured here.

2. The Warana Bazar:

The Warana Bazar is the first super bazaar in the rural India. Registered as Shree Warana Vibaga Sahaklari Grahak Mandal Lit. The Warana bazaar started its operations in 1978. It has now two big departmental stores, 55 branches, and three franchisee. With 550 employees this year the annual sales are likely to cross Rs. 125 crore. This consumer cooperative has proved to be a grand success because of several innovative ideas put into action. Customer gets goods cheaper at the warana Bazar than anywhere else. The consumer cooperative movement in these States gets active help from the warana bazaar.

3. Warana Sahakari Bank Ltd.:

Established in 1966, the Warana Sahakari Bank Ltd. is a primary cooperative bank with 25 branches now mostly in the rural area. This bank is playing a pivotal role in the overall development of Warana area by creating the banking mind to mobilize deposit and advancing loans to its customers. The deposits with this bank have now reached 500 corer.

4. Educational activities:

All the educational activities in Warananager from KG to PG are managed by Warana Vibhag Shikshan Mandel in its 100 acre sprawling campus. After Warana sugar factory came into operation the Late Tatyasaheb Kore realized that the immediate need of the area of operation is a college and so even before the primary and secondary educational facilities were set up at Warananager also the college was established. Now the campus of the Shikshan Mandal comprises schools and colleges.
teaching Arts, Science, Commerce and Engineering, Technology, Pharmacy and also Sainik School.

5. Warana Bhagini Mandal:

Warana Bhagini Mandal registered as a trust provides gainful employment to hundreds of ladies in various trades. A notable programme undertaken by this trust is providing training to girls who have failed to their SSC examination. The Warana Bhagini Mandal gives them training of a very short duration in several trades enabling them to become self employed and making them confident of face the life.

6. Irrigation Schemes:

Various new irrigation schemes started in the area of operation under the management of sugar factory and increased the sugarcane production about three lakh sugarcane Per year and thus saved the transportation costs in corer of rupees.

Table No. 1.11 Showing Warana sugar factory Production Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Crushing capacity TCD</th>
<th>Crushing days</th>
<th>Sugarcane Crushing M.T. (in Lakh)</th>
<th>Sugar Production in Quintals (in Lakh)</th>
<th>Sugar Recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2005-06</td>
<td>5000</td>
<td>149</td>
<td>11.6</td>
<td>15.88</td>
<td>12.62</td>
</tr>
<tr>
<td>2 2006-07</td>
<td>7500</td>
<td>158</td>
<td>12.55</td>
<td>15.45</td>
<td>12.26</td>
</tr>
<tr>
<td>3 2007-08</td>
<td>7500</td>
<td>170</td>
<td>12.4</td>
<td>15.84</td>
<td>12.7</td>
</tr>
<tr>
<td>4 2008-09</td>
<td>7500</td>
<td>137</td>
<td>10.75</td>
<td>13.44</td>
<td>12.2</td>
</tr>
<tr>
<td>5 2009-10</td>
<td>7500</td>
<td>169</td>
<td>11.84</td>
<td>16.44</td>
<td>12.35</td>
</tr>
<tr>
<td>6 2010-11</td>
<td>7500</td>
<td>193</td>
<td>13.69</td>
<td>16.49</td>
<td>11.94</td>
</tr>
<tr>
<td>7 2011-12</td>
<td>7500</td>
<td>169</td>
<td>13.9</td>
<td>17.58</td>
<td>12.65</td>
</tr>
<tr>
<td>8 2012-13</td>
<td>7500</td>
<td>161</td>
<td>13.34</td>
<td>16.05</td>
<td>12.01</td>
</tr>
<tr>
<td>Total</td>
<td>1306</td>
<td>100.11</td>
<td>127.17</td>
<td>98.73</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>163.25</td>
<td>12.51</td>
<td>15.90</td>
<td>12.34</td>
<td></td>
</tr>
<tr>
<td>S.D.</td>
<td>16.57</td>
<td>1.10</td>
<td>1.18</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>C.V.</td>
<td>10.15</td>
<td>8.75</td>
<td>7.42</td>
<td>2.37</td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual report 2012-2013 and field work
The table no. 1.4 shows that the duration of crushing days ranged between 137 days as minimum during the year 2008-09 and 193 days as maximum during the year 2010-11. The mean value of the crushing days as 163.25 it was compared expected norms 160 number of crushing days of the State it show that these factory completed the expected norms. The high C.V. (10.15) value indicates more fluctuations in the duration of the crushing days.

It is observed from the table no. 1.4 the mean value of sugarcane crushing during this study period is 12.51 lakh metric tons. The quantity of sugarcane crushed ranged between 10.75 Lakh metric tons during the year 2008-09 and 13.90 lakh metric tons during the year 2011-12. The C.V. (8.75) value indicate more fluctuations in the quantity of the cane crushed during this period.

The mean value of the sugar production by this sugar factory during the study period comes to 15.90 lakh quintals. The sugar production ranged between 13.44 lakh quintals as minimum during the year 2008-09 and 17.58 lakh quintals as maximum during the year 2011-12. The high C.V. (7.42) value indicate more variation in the quantity of sugar produced during this period.

The table no. 1.4 also shows the mean value of sugar recovery percentage comes to 12.34 percent. This sugar factory operates in the high sugar recovery Zone of the Maharashtra State. During the year 2011-12 season the State average sugar
recovery 11.66 percent. But the mean value of this sugar factory sugar recovery 12.34 percent, it was more than State average. The lower C.V.(2.37) value indicates there was more uniformity in the sugar recovery percentage during this period.

1.7 **Name and Address of the factory:** Shree Chha. Rajaram Sahakari Sakhar Karkhana Ltd. Kasaba Bavada, Tal-Karveer, and Organizational Profile


First crushing season : 1985-86.

Age of the factory : 26

Initial capacity : 2200 TCD.

Present crushing capacity : 2200 TCD.

**The main speciality or highlights of the sugar factory:**

- It is small scale plant in the co-operative sugar factory.
- It is not started any other by-products units.
- First example in Maharashtra Joint Stock sugar factory was converted into a fully fledged cooperative sugar factory under the cooperative management.

1.7.1 **Brief history:**

The Kolhapur Sugar Mills Pvt. Ltd. was established in 1932-33. In the year 1973 sugar undertaking of the company was separated and renamed as “The Kolhapur Cane sugar Works Ltd.” The Kolhapur Cane sugar works ltd. defaulted payment of cane price of the season 1982-83 to the tune of Rs. 2.51 crores and deposit with interest from 1978-79. The total dues amounted to around Rs. 7.00 crores. The management of the company was reluctant to pay the dues of cane growers.

1.7.2 **Location:**

Shri. Chha. Rajaram Sahakari Sakhar Karkhana Ltd., Kasaba Bawada location on 7 Kms. North from Kolhapur city. Kolhapur is gifted by the presence of Natural irrigation potential on account of Panchganga River due to this the sugarcane crop is produced in abundance in this region. Because of in this region there was really extreme need of sugar factory in those days.
1.7.3  Uskari Shetakari Sanghathana (Sugarcane Farmers Organization)

The Uskari Shetakari Sanghathana under the leadership of Shri. Bhagawanrao Pawar agitated with the management of the company, for getting arrears of cane payment and deposit. With the keen interest and help rendered by the Government of Maharashtra and the relentless efforts of the Sanghathana, the ownership of Sugar factory was handed over to the Cooperative sugar factory Shri Chha. Rajaram Sahakari Sakhar Karkhana Ltd. formed by the Sanghathana in lieu of the cane dues. Thus the Joint Stock sugar factory was converted into a fully fledged cooperative sugar factory under the cooperative management.

1.7.4  About the factory:

The assess the value of the Kolhapur Cane sugar Works Ltd. the valuation committee was appointed by the Government of Maharashtra under the Chairmanship of the Director of Sugar, Maharashtra State. The valuation committee had valued the entire unit at Rs.6.66 crores

Shri. Chha. Rajaram Sahakari Sakhar Karkhana Ltd. was registered on 11th April 1984. An agreement was executed between the Kolhapur Cane sugar Works Ltd. and Shri. Chha. Rajaram Sahakari Sakhar Karkhana Ltd, 31st October 1986 to
the effect that the latter had taken full responsibility of payment of all dues the former had to pay to the cane growers.

Regarding the liabilities of cane price dues which are accepted by the karkhana. We have paid all the dues in the month of March 1987. The liabilities of the deposits are also paid for Four years. The total amount of payment amounted to Rs.450 lakhs. The above mentioned amount is paid by taking medium term loan from the Maharashtra State Cooperative Bank Ltd.

This is a unique case of its kind in our Country i.e. conversion of a sick Joint Stock sugar factory onto a cooperative sugar factory to pay all the cane arrears to all the cane growers and revive their aspirations, majority of whom are small and marginal cane growers.

1.7.5 Modernization and Rehabilitation:

The machineries assembled before 50 to 60 years and working till today seem to be changed in the factory. It has become essentials to change the machineries. That is why the management has undertaken the task of reassembling of the machinery in the factory. For this purpose some machineries and tools are being purchased. This programme Kohapur District Cooperative Bank has provided Rs.138 Lakh for five years on the basis medium term loan in the year 2008-09. Some of the amount is repaid by the factory.

The cogeneration plant was sectioned by the members of the factory in the annual general meeting. The factory management cogeneration plant design has been sent thru V.S.I. to Commissioner of Sugar for the approval.

Table No.1.12 showing number of member and number of shareholder

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Number of Member</th>
<th>Number of shareholders</th>
<th>Subscribed Share capital in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>‘A’ Class productive</td>
<td>15,700</td>
<td>17,396</td>
<td>12,41,29,467</td>
</tr>
<tr>
<td>‘B’ Class cooperative</td>
<td>136</td>
<td>272</td>
<td>11,76,000</td>
</tr>
<tr>
<td>Govt. of Maharashtra</td>
<td>1</td>
<td>11500</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14862</strong></td>
<td><strong>28223</strong></td>
<td><strong>12,53,05,467</strong></td>
</tr>
</tbody>
</table>

*Source: Annual Report:-2012-13*
1.7.6 Sugarcane development scheme:

The various cane development activities implemented by the factory for the benefit of farmers. In this scheme supply of sugarcane seeds, chemical fertilizers, bio-fertilizers, organic manure, at consenal rate is as follows.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Distributed amounted to members Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar cane seeds</td>
<td>17,19,483</td>
</tr>
<tr>
<td>Chemical fertilizers</td>
<td>54,89,396</td>
</tr>
<tr>
<td>Bio fertilizers</td>
<td>4,51,044</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>76,59,893</strong></td>
</tr>
</tbody>
</table>

Source: Annual Report:-2012-13

Table No.1.13 showing Rajaram sugar factory Production Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Crushing capacity TCD</th>
<th>Crushing days</th>
<th>Sugarcane Crushing M.T.(in Lakh)</th>
<th>Sugar Production in Quintals (in Lakh)</th>
<th>Sugar Recovery %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2005-06</td>
<td>2200</td>
<td>97</td>
<td>2.87</td>
<td>3.58</td>
<td>12.47</td>
</tr>
<tr>
<td>2006-07</td>
<td>2200</td>
<td>126</td>
<td>3.75</td>
<td>4.5</td>
<td>12.01</td>
</tr>
<tr>
<td>2007-08</td>
<td>2200</td>
<td>147</td>
<td>4.1</td>
<td>5.26</td>
<td>12.79</td>
</tr>
<tr>
<td>2008-09</td>
<td>2200</td>
<td>99</td>
<td>2.86</td>
<td>3.32</td>
<td>11.6</td>
</tr>
<tr>
<td>2009-10</td>
<td>2200</td>
<td>160</td>
<td>3.77</td>
<td>4.32</td>
<td>11.5</td>
</tr>
<tr>
<td>2010-11</td>
<td>2200</td>
<td>163</td>
<td>4.23</td>
<td>4.83</td>
<td>11.47</td>
</tr>
<tr>
<td>2011-12</td>
<td>2200</td>
<td>141</td>
<td>3.81</td>
<td>4.71</td>
<td>11.65</td>
</tr>
<tr>
<td>2012-13</td>
<td>2200</td>
<td>131</td>
<td>4.03</td>
<td>5.00</td>
<td>12.39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1064</strong></td>
<td><strong>29.43</strong></td>
<td><strong>35.52</strong></td>
<td><strong>95.88</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>133.00</strong></td>
<td><strong>3.68</strong></td>
<td><strong>4.44</strong></td>
<td><strong>11.99</strong></td>
<td></td>
</tr>
<tr>
<td><strong>S.D.</strong></td>
<td><strong>25.05</strong></td>
<td><strong>0.53</strong></td>
<td><strong>0.68</strong></td>
<td><strong>0.51</strong></td>
<td></td>
</tr>
<tr>
<td><strong>C.V.</strong></td>
<td><strong>18.84</strong></td>
<td><strong>14.41</strong></td>
<td><strong>15.28</strong></td>
<td><strong>4.24</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual Report:-2012-13 and field work
The duration of season largely depends on availability of cane. The table shows the mean value of crushing days 133. The duration of crushing season ranged between 97 days as minimum during the year 2005-06 and 163 days as maximum during the year 2010-11. The high C.V. (18.84) value indicate more fluctuations in the length of season during this period.

In the study period mean value of cane crushed 3.68 lakh Metric tons. During the seven years the quantity of cane crushed ranged between 2.86 lakh tones in 2008-09 as minimum and 4.23 lakh tones in 2010-11 as maximum. The high C.V. (14.41) indicates there was more variations in the quantity of the cane crushed .

The mean value of the sugar production by this factory during the study period comes to 4.44 lakh quintals. The sugar production ranged between 3.32 lakh quintals as minimum during 2008-09 and 5.26lakh quintals as maximum during the year 2007-08. The high C.V. (15.28) value indicates more variations in the quantity of sugar production during this period.

This sugar factory operates in the high sugar recovery zone of the Maharashtra state. During 2011-12 season, the state average sugar recovery 11.66 percentage. But the mean value of this sugar factory is 11.94 percent. The lower C.V. (4.36) value indicates there was more uniformity in the sugar recovery percentage during this period.
1.8. Conclusion:

It is concluded from the sample sugar factories studied the production performance of sugar factory in last eight years. In that production performance analysis shows sugarcane crushing, duration of season, sugar production and sugar recovery of cane. It shows sugarcane crushing, duration of season and sugar production is always wide fluctuation. These fluctuations are due to variations in the area under sugarcane, climatic conditions, water availability during the crop growth period. The duration of season largely depends on availability of cane. For economic working of any factory the duration of the crushing season should be around 160 days. The Warana sugar factory is the highest average the duration (163-days) of crushing season and Datta sugar factory second rank in sample sugar factory in relation to duration of crushing season. The Warana sugar factory is the highest average sugarcane crushing (12.51 lakh M. T.) and the highest average sugar production (15.51 lakh in quintals) in all the sample units in the study period. Sugar recovery is the most vital economic indicator of any sugar factory. The sugar recovery mainly depends on the quality of cane which also includes types of cane varieties their maturity at the time of harvest and total sugar losses during processing. The highest average recovery (12.95%) in the Kumbhi sugar factory and all the sample sugar factory average recovery near about (12%) in the study period. During the study period all the sample sugar factory the continuous crushing of cane through out crushing period is one the important factors to achieve optimum technical performance.

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