1.1 INTRODUCTION

India is known to be the country of origin of sugarcane. Referred to as “Sweet Grass”, sugarcane exists in the ancient epics of India dates back to 3000 B.C. North Eastern India was regarded as the centre of origin from where sugarcane seems to have been carried to China by early travelers and nomads sometime between 1700 and 1800 B.C. Later, it has spread to Philippines, Jawa and other places including Caribbean islands. Sugarcane is the greatest contribution that India and China have gifted to the world.

Global sugar production exceeded 170 million tonnes (MT) in the year in 2011-12. Approximately 70% of the output was sourced from sugar cane, which is largely grown in tropical countries. The remaining 30% is produced from sugar beet, which is grown mostly in the temperate zones of the northern hemisphere. The 10 largest sugar producing nations represent roughly 75% of world's sugar production. Brazil alone accounts for almost 25% of world production. Though the industry was characterized by production deficits in 2008-09 and 2009-10, surplus output was seen in 2010-11 and 2011-12 as sugar crop areas expanded on the back of higher prices. World consumption of sugar has also grown at an average annual rate of 2.7% over the past 50 years, driven mostly by rising incomes, population growth and changes in diet in the developing economies.

1.2 FAST FACTS: GLOBAL SUGAR INDUSTRY

- More than 123 countries produce sugar worldwide, with 70% of the world’s sugar consumed in producer countries and only 30% traded on the international market.
• About 70% of global sugar production comes from sugarcane (which is grown in the tropics) and 30% comes from sugar beet (grown in temperate climates, including Europe).
• Around 170 MT of sugar was produced every year. The largest producers are Brazil (38.99%), India (24.79%) and the European Union (15.24%).
• About 20% of global sugarcane production was used for ethanol production in 2012.
• The top five consumers of sugar use 51% of the world’s sugar. They include India, EU-27, China, Brazil and US.
• Sugarcane productivity in Australia is highest in the world (87.8 tonnes per hectare).
• Average per day crushing capacity of Thailand's sugar factories is 10307 TCD and it is highest in world.
• Average sugar consumption per year increased by 34.91% during 1960-61 to 2010-11.
• Per capita consumption per year is expected to increase from 17.5 kg to 30 k.g.
• Australia secured 1st rank regarding per capita consumption. Whereas India's consumption is 28% of Australia, in the year 2012-13 India's per capita consumption is 24 kg and it is more than world average consumption.

The Indian Sugar Industry is cyclical in nature. The industry downtrend starts with improved mill profitability, prompt farmer payment resulting in higher sugarcane acreage and a bumper sugar output. This results in supply exceeding demand, leading to a decline in sugar prices which in turn leads to lower mill profitability, delayed payment to farmers, high sugarcane arrears, lower cane production, all culminating into higher
sugar prices. The sugar industry is one of the major agro-based industries in India next to cotton textiles, which occupies a place of pride in the global as well as national economy. The country consumes approximately 22 MT of sugar annually, with Maharashtra contributing over 60% of it while the rest of the output come from states like Tamil Nadu, Karnataka, Uttar Pradesh and Madhya Pradesh. The sufficient and well distributed monsoon rains, rapid population growth and substantial increases in sugar production capacity have made India the largest consumer and second largest producer of sugar in the world. With organized and unorganized players, the sector supports over 50 million farmers and their families, making significant contribution towards socio-economic development in the rural areas of the India. The contribution of sugar industry to Indian economy is of manifold. It plays a vital role in socio-economic development of rural areas by mobilising resources and generating employment, transport, banking and communication facilities.

1.3 FAST FACTS: INDIAN SUGAR INDUSTRY

- 2nd largest producer of sugar in the world.
- 5 million hectares & 60 million cane farmers are dependents.
- Large number of installed sugar factories – 740 as on 31.03.2018.
- Estimated cane price payment for 2011-12 is `550 billion (Paid to farmers directly without involvement of any middlemen)
- Located in rural heartland, directly contributes to rural economic development and employment.
- In India sugar production was just 3.021 Million tonnes. During the span of 50 years it was increased by 8 times from 1963 to 2012. India's share in world sugar production increased from 4.95% to 15% during the same period.
• Sugar factories are seasonal nature industry. Average crushing season is mostly dependent on availability of sugarcane. The total season period is fluctuating and is maximum for 166 days.

• Average crushing capacity is only 3744 MT and it is less as compared to major sugar production countries.

• Average sugar recovery from sugar cane is 9.85 % only.

• 21.5 million hectares agricultural land used for cane cultivation. 60 million farmers are sugarcane growers.

• 78% to 80% sugar is consumed by bulk consumers. Levy sugar percentage is 10% and price Rs. 1905 per quintal. This price is less than cost of production.

• In the year 2012 Rangarajan committee (Chairman, Economic Advisory Council to the Prime Minister. Govt. of India) submitted their report on Regulation of sugar sector in India. Committee suggested that 70% of sugar price should be paid to the cane growers, 10% levy sugar should be abolished, decontrol regarding selling and storage of sugar. The below figure shows about the major recommendations of Rangarajan Committee.

**Fig.1.1 Recommendations of Rangarajan Committee**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Removal of levy sugar obligation from industry</td>
</tr>
<tr>
<td>2</td>
<td>Abolishing the regulated release mechanism for sugar sales</td>
</tr>
<tr>
<td>3</td>
<td>Export-import policy—no quantity and time restrictions</td>
</tr>
<tr>
<td>4</td>
<td>Rationalisation of cane pricing policy</td>
</tr>
<tr>
<td>5</td>
<td>Linkage of cane price to value realised from sugar &amp; by-products</td>
</tr>
<tr>
<td>6</td>
<td>Phasing out cane area reservation</td>
</tr>
<tr>
<td>7</td>
<td>Dispensing with &quot;minimum distance criteria&quot; between mills</td>
</tr>
<tr>
<td>8</td>
<td>Removal of controls on molasses &amp; free up power sales</td>
</tr>
<tr>
<td>9</td>
<td>Removal of jute packing restrictions on sugar</td>
</tr>
</tbody>
</table>

*Source: googleimages*
Above figure shows the various recommendations made by the Rangarajan committee. The sugar industry in India is dominated by the co-operative sector. Although the industry attained tremendous growth during the last four decades, but all is not well with the industry. At present, Indian sugar industry is at crossroads as a result of uncondusive sugar policy of the government on one hand and liberalised economic reforms on the other. It has unfortunately encountered with several operational and financial problems. The performance of the sugar factories in the co-operative sector is still more disastrous. Many sugar factories have become financially unsound and economically unviable. The study of cost management in these factories would throw some light on the poor performance of the industry. It would help to probe the causes and suggest some useful guidelines for the industry.

1.4 REGULATIONS ON SUGAR INDUSTRY IN INDIA

The Govt. of India monitors sugar and sugarcane. The industry is controlled by a variety of regulation imposed by the Central and State government. Sugar & sugarcane are covered under "Essential Commodities Act 1955". There are various controls of the Government on formation of sugar mill, jurisdiction, crushing season, selling of sugar, levy sugar and its price, i.e. Fair and Remunerative Price (FRP) and all other activities.

The brief information about various regulation is listed below.

2. Sugar (Control) Order. 1966- Regulate production and selling of sugar.
3. Sugar (Control) Order. 1966- Fixation of Statutory Minimum Price and payment of 1st instalment to sugarcane farmers in a 14 days after harvesting of sugarcane.
4. Levy Supply (Control) Order. 1979- Provides Powers for fixation of levy sugar percentage and its price presently proportion of levy sugar is 10% and price is Rs.1905 per quintal.
5. Sugar (packing and marketing) order 1970.
6. Sugar Cess Act 1982 for the development of sugar industry and for matters connected there with.
7. Sugar Development Fund Act 1982. Sugar development fund is applied for the purpose of rendering financial assistance through loans at concessional rates for rehabilitation and modernization of sugar factories as well as sugarcane development.
8. Sugarcane (Purchase Tax) Act. 1961 Impose a tax on the purchases of sugarcane by the owner of a sugar factory. A sugar mill is not allowed to remove sugar without payment of sugarcane purchase tax. At present the rate of purchase tax is Rs.3% of sugarcane price.
9. Molasses Control Order restricts on selling of molasses. Ban on interstate transfer, restriction end use etc.

1.5 SUGAR PRODUCTION IN INDIA

According to the Indian Sugar Mills Association (ISMA), India’s sugar production till April of the 2016-17 marketing year, is 24.79 MT, due to lower recovery of 9.85% across states. Barring Uttar Pradesh, productivity declined in most sugar producing states like Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh. During the on-going cane crushing season, Indian sugar factories are reported to have crushed about 243 MT\(^1\).

Indian sugar industry is highly regulated by the Government of India (GoI). The industry believes that any positive development on this front
would also benefit the farmer as they would be adequately remunerated on sugarcane sales. In a major reform, the Indian government partially decontrolled the Rs.80,000 Crore sugar sector by giving freedom to millers to sell in the open market a decision that will help the industry save about 3,000 Crore annually. This partial decontrol has raised hopes that the financial health of the industry will improve and new investments will start to flow into the sector - from Indian as well as foreign investors.

- Firstly, several states like Uttar Pradesh, Bihar, Punjab, Haryana and Uttarakhand are still free to fix a state-administered price for sugarcane every year. This keeps the door open for political interference in the business, given the large community of sugarcane farmers in these states.
- Secondly, the state governments retain the power to allocate "cane area" to sugar factories.
- Thirdly, the guidelines for minimum distance of 15 km between two factories remain intact.
- Fourthly, Jute Packaging Materials (Compulsory Use in Packing Commodities) Act, 1987, mandates that sugar can be packed only in jute bags.

### 1.6 FAIR AND REMUNERATIVE PRICE

With the amendment of the Sugarcane (Control) Order, 1966 on 22.10.2009, the concept of Statutory Minimum Price (SMP) of sugarcane was replaced with the ‘Fair and Remunerative Price (FRP) of sugarcane for 2009-10 and subsequent sugar seasons. The cane price announced by the Central Government is decided on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP) after consulting the State Governments and associations of sugar industry. The amended
provisions of the Sugarcane (Control) Order, 1966 provides for fixation of FRP of sugarcane having regard to the following factors:

- Cost of production of sugarcane;
- Return to the growers from alternative crops and the general trend of prices of agricultural commodities;
- Availability of sugar to consumers at a fair price;
- Price at which sugar produced from sugarcane is sold by sugar producers;
- Recovery of sugar from sugarcane;
- The realization made from sale of by-products viz. molasses, bagasse and press mud or their imputed value (inserted vide notification dated 29.12.2008).
- Reasonable margins for the growers of sugarcane on account of risk and profits (inserted vide notification dated 22.10.2009).

Under the FRP system, the farmers are not required to wait till the end of the season or for any announcement of the profits by sugar factories or the Government. The new system also assures margins on account of profit and risk to farmers, irrespective of the fact whether sugar factories generate profit or not and is not dependent on the performance of any individual sugar mill. In order to ensure that higher sugar recoveries are adequately rewarded and considering variations amongst sugar factories, the FRP is linked to a basic recovery rate of sugar, with a premium payable to farmers for higher recoveries of sugar from sugarcane.

Accordingly, FRP for 2017-18 sugar season has been fixed at Rs.255 per qtl. linked to a basic recovery of 9.5% subject to a premium of Rs.2.68 per qtl. for every 0.1 percentage point increase above that level.
The FRP of sugarcane payable by sugar factories for each sugar season from 2009-10 to 2017-18 is tabulated below.

**Table-1.1: Fair and Remunerative Price Paid from 2009-10- to 2017-18**

<table>
<thead>
<tr>
<th>Sugar Season</th>
<th>FRP (Rs. per quintal)</th>
<th>Basic Recovery Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>129.84</td>
<td>9.5%</td>
</tr>
<tr>
<td>2010-11</td>
<td>139.12</td>
<td>9.5%</td>
</tr>
<tr>
<td>2011-12</td>
<td>145.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2012-13</td>
<td>170.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2013-14</td>
<td>210.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2014-15</td>
<td>220.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2015-16</td>
<td>230.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2016-17</td>
<td>230.00</td>
<td>9.5%</td>
</tr>
<tr>
<td>2017-18</td>
<td>255.00</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

*Source: Department of Food and Public Distribution.*

The position of cane price payment and arrears for sugar season 2017-18, as on 04.05.2018 on FRP basis is as under:

**Table-1.2: Cane Price Payable, Paid and Arrears as on 04.05.2018**

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Rs. in Crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cane Price Payable</td>
<td>64,391</td>
</tr>
<tr>
<td>Cane Price Paid</td>
<td>52,018</td>
</tr>
<tr>
<td>Cane Price Arrears</td>
<td>12,373</td>
</tr>
</tbody>
</table>

*Source: Department of Food and Public Distribution website*

1.7 **ROLE OF COST IN SUGAR INDUSTRY.**

Cost plays a significant role in determining efficiency of manufacturing concern as the higher cost indicates loss to the company and the low cost indicates the profitability prospectus to the company. Especially for the sugar factories, cost per ton of sugar produced is utmost
important because it play vital role in fixing selling price. The decision pertaining to selling price is not in the hands of sugar company, but it is controlled by the concerned State Government. The sugar company can control and reduce the cost of production of sugar. The basic aim of cost management is to cost control and cost reduction. It is chain of interrelated sequences. The cost control involves a detailed examination of each cost in the light of advantage received from the incurrence of the cost. Thus, we can state that cost is analyzed to know whether cost is not exceeding its budgeted cost and whether further cost reduction is possible or not².

Cost control aims at reducing inefficiencies and wastage and setting up of predetermined costs and in achieving them. The cost reduction aimed to achieve real and permanent reduction of cost without reducing the quality of product. The productivity of the sugar company totally lies on the cost reduction³. Proper management of cost leads to decrease in manufacturing cost, which leads to increase in profit, it further leads to high productivity and value of the firm. Every sugar company should focus on to minimize the cost of production without compromising the quality of sugar⁴. The quality is most essential thing that everyone always want at cheaper cost.

Cost management identifies, collects, measures, classifies and reports information that is useful to managers and other internal users in cost ascertainment, planning, controlling and decision making⁵. Cost management aims to produce and provide information to internal users and personnel working in the organization.

Cost management is the process of planning and controlling the budget of a business. Cost management is a form of management accounting that allows a business to predict expenditures to help reduce the chance of going over budget⁶. Many business employ cost management
plans for specific projects, as well as for the over-all business model. When applying it to a project, expected costs are calculated while the project is still in the planning period and are approved beforehand. During the project, all expenses are recorded and monitored to make sure they stay in line with the cost management plan. After the project is finished, the predicted costs and actual costs can be compared and analyzed, helping future cost management predictions and budgets. Implementing a cost management structure for projects can help a business keep their over-all budget under control.

1.8 COST MANAGEMENT IN SUGAR INDUSTRY

Effective management of cost makes an organization more strong, more stable and helps in improving the potentials of a business. The organization calls for a system that would monitor the full economic impact of the business, on resource acquisition and consumption. This provides supplying of information to the top management for exploring various alternatives by which cost effectiveness can be improved. Cost management also helps in optimizing resources which will improve overall efficiency of the organization and help the firm to achieve its objectives.

Once the best cost management practices, is adopted it leads to enhancement of cost efficiency of sugar industry. A study is required to find out present cost management loop-holes and find out most appropriate modern cost management practices. The present study is mainly focused on to identify the cost management practices followed by Co-operative sugar factories in Bidar.

1.9 NEED FOR THE STUDY

From the existing review of literature done in chapter II it is evident that, many research works are identified on the various aspects of
production, marketing, finance, technology and the rest of other aspects of sugar industry by the number of researchers. But a little attention has been devoted to the internal structure, cost management policies and practices followed by these industries. Such an analysis relating to cost management policies & practices in sugar industry, would help in understanding and analyzing the cost management policies and practices adopted by the sugar industries. The study is most helpful and gives needed suggestion for the improvement of existing cost management philosophy. Application of proper cost management techniques are needed in co-operative sugar industries to maximize its productivity. There is a need for effective cost management concept development in co-operative sugar industry. The present study has been undertaken to analyze the cost management policies and practices in sugar industry.

1.10 STATEMENT OF THE PROBLEM
Sugar industry is the second largest agro based industry in India, which is next to textiles industry. In 2017-2018, there were 740 sugar production units in India, a large part of rural population depends on sugar industry. Proper application and evaluation of cost management practices is must to decrease cost per ton of sugar production in India. It is essential for productivity of the sugar industry, which in turn results in economic development of the nation. So, a study is required to evaluate the cost management practices followed by Co-operative sugar factories. Therefore, the present study entitled “COST MANAGEMENT IN SUGAR INDUSTRY: "A Study with reference to the co-operative Sugar Factories of Bidar District in Karnataka” has been carried out.
1.11 OBJECTIVES OF THE STUDY
The study is designed to meet the following specific objectives;
1. To study the progress of sugar factories in India in general and Bidar district in particular.
2. To examine the working efficiency of sugar factories selected for the study.
3. To study the cost structure of co-operative sugar factories in Bidar district.
4. To identify general cost management practices.
5. To analyze material, labour and overhead cost management practices.
6. To give useful suggestions for better cost management and proper working of co-operative sugar factories

1.12 HYPOTHESES OF THE STUDY
Based on the above objectives of the study, the following hypotheses have been formed and tested with suitable statistical tools.

- $H_{01}$: There is no significant difference between the manufacturing cost among the sugar factories understudy.
- $H_{02}$: There is no significant difference between the conversion cost among the sugar factories understudy.
- $H_{03}$: There is no significant difference between the administration cost among the sugar factories understudy.
- $H_{04}$: There is no significant difference between total cost among the sugar factories understudy.
- $H_{05}$: There is no significant difference between the sugar productions among the sugar factories understudy.
1.13 **RESEARCH METHODOLOGY**

The present study is based on both primary and secondary data. The required primary data relating to cost management practices have been collected through direct personal interviews with the officials of the co-operative sugar factories with the help of structured questionnaire. The secondary data have been collected from the annual financial reports of the factories under study for the purpose of analyzing the cost elements. In addition, personal discussions were also held with the officials concerned of the sugar factories for collection of information to support the questionnaire and annual reports. Besides, other important information has been collected from the relevant research works, books, journals, magazines, research papers of various conferences and seminars, reports of expert committees, etc.

1.14 **SCOPE OF THE STUDY**

The purpose or aim of this research is to appraise the application of cost management techniques as a powerful tool used in sugar factories to evaluate their decision making in order to achieve the predetermined objective of the factory. However, due to large population of co-operative sugar factories in Karnataka, the topic has been narrowed down to co-operative sugar factories of Bidar District which serves as a case study for the research. The following sugar factories are operated in Bidar district. Namely-

1. Bidar Sahakari Sakkare Karkhane Limited Hallikhed (B) , Bidar. (BSSK) (Co-operative)
4. Bhalkeshwar Sugars Limited at Bajola Village Tq. Bhalki (Unlisted Public Ltd)
5. Bhavani Khandsari Sugar Ltd. at Baroor Village Tq. Dist: Bidar. (Unlisted Public Ltd).

1.15 SAMPLING DESIGN

Among the six sugar factories all co-operative sugar factories have been selected which are working during the study period i.e. 2005-06 to 2014-15. Therefore, the scope of the study restrict itself to three co-operative sugar factories in Bidar district i.e. BSSK, NSSK and MGSSK.

1.16 TIME SPAN

The present study is descriptive in nature and aimed to analyze the cost management practices followed by co-operative sugar factories. It covers a decade period from 2005-06 to 2014-15. Field survey was conducted from October to December 2016 during crushing season.

1.17 STATISTICAL TOOLS USED

The data has been collected through various sources. The data thus collected have been properly classified, analyzed and interpreted with the help of effective statistical and accounting tools such as ratio, percentage, average, standard deviation, etc. In order to find out the consistency among the various sugar factories Co-efficient of Variation (C.V) has been used. Similarly, one-way ANOVA has been used to compare the variation in various cost components among the selected sugar factories. Diagrammatic and graphical presentation has also been made to make the data easily assailable. The relevant methodology adopted by the researcher for
achieving the main objectives of the study has been spelt out at appropriate places in respective chapters of the study.

1.18 LIMITATIONS OF THE STUDY

For the purpose of present study cost of production has been ascertained by drawing the cost figures from annual financial statements and analyzed with the help of percentage, ratio and trend analysis techniques. These techniques do not evince the efficiency and effectiveness of cost components as exactly as they are. There is also question of judgment as to what significance should be assigned to the data. Therefore, the limitations associated with the study are as follows:

1. It is difficult to ascertain exact cost of production in the absence of cost accounting record.
2. Possibility of hiding the real position by the sugar factories by window dressing their financial statements.
3. The study is limited to Bidar district of Karnataka State.
4. The information provided by the sugar factories may likely to be not reliable or fabricated.
5. The study is limited to three co-operative sugar factories only.
6. The study focuses on the various aspects of cost management practice. Other related issues are beyond the purview of the present study.
7. The personal limitations are also going to influence on the study.
1.19 CHAPTER SCHEME

The present study is organized into seven chapters. The contents of these chapters are briefly presented below.

CHAPTER-I: INTRODUCTION AND RESEARCH DESIGN

It covers the need for the study, statement of the problem, objectives of the study, research hypotheses, a detailed research methodology and limitations of the study.

CHAPTER-II: REVIEW OF LITERATURE

It covers a detailed review of existing literature and presents the review of various articles, books, theses and committee reports of previous studies carried out on sugar industry.

CHAPTER-III: COST MANAGEMENT: THEORETICAL FRAMEWORK.

A detailed conceptual framework on cost management such as cost management system, cost management model, factors affecting cost management, strategic cost management and various techniques of cost management is presented in this chapter.

CHAPTER-IV: SUGAR INDUSTRY: A PRESENT SCENARIO.

The history and progress of sugar industry in India and Karnataka is presented in detail in this chapter.

CHAPTER-V: ANALYSIS OF COST IN CO-OPERATIVE SUGAR INDUSTRY.

It is analytical in nature and covers a detailed analysis of information on various aspects of cost components of co-operative sugar factories understudy.
CHAPTER-VI: COST MANAGEMENT PRACTICES IN CO-OPERATIVE SUGAR INDUSTRY

It is also analytical in nature and covers a detailed analysis of data on the different aspects of cost management practices followed by co-operative sugar factories.

CHAPTER-VII: SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

It is concluding in nature and gives summary of findings, suggestions and conclusion of the study.
REFERENCES:


5. Govt. of India, New Delhi. High Level Committee on “The Cost Structure of the Sugar Industry” Chairman Sri L.Kumar), 1980.


