CHAPTER II
REVIEW OF LITERATURE

INTRODUCTION

Regarding the available literature on sugar industry in India, it can be observed that most of the literature is confined to the production, procurement, pricing policies and marketing aspects of sugarcane. In this connection, the Sugar Enquiry Commission appointed by the Government of India studied the trends in the sugar production, sugar policy, problems of sugarcane development, the pricing and distribution policy of sugar and sugarcane and licensing policy. However, the Report of the Sugar Enquiry Commission did not touch the Cost Management in sugar industry.

A variety of independent studies have been devoted to the problem faced by the Indian sugar industry. Some of them provide a partial analysis of the Indian sugar scenario, while others have tried to cover various aspects. Some are regional studies. While others are attempted at All-India level. Provision of a full account of all these independent studies is not feasible, but an attempt is made to make a brief survey of some of the important studies.

Hence an attempt has been made in this chapter to present a review of various studies relating to sugar industries under four heads. They are summarized below.

2.1 Review of Articles
2.2 Review of Books
2.3 Review of Theses
2.4 Review of Committee Reports
2.1 REVIEW OF ARTICLES

Gopal Lallanji (1964)\(^1\) has undertaken the study on ‘Sugar making in Ancient India’ elaborates the origin of sugarcane cultivation, sugar manufacturing practices, various forms of sugar which were made from cane juice, its uses and various fruits as a source of sugar by the usance of Ancient documents like Atharva Veda, Charaka Samhita and Sushrutha Samhita.

Bhansder Lala (1972)\(^2\) highlighted the tangible results that can be achieved in sugar industry through direct link between cane growers and sugar factories.

Dutt V L (1979)\(^3\) conducted a study on problems and prospects of sugar industry and urged State Government to earmark the entire purchase tax for intensive cane development.

Vishwa Nath and Lalitha (1979)\(^4\) in their study revealed that State of Maharashtra ranks first among all the 9 states in sugar production. The other states in the series are Punjab, Karnataka, Gujarat and Tamil Nadu. The lowest rank is achieved by Bihar followed by Madhya Pradesh, Andhra Pradesh and Uttar Pradesh. One may wonder to note that states in first category which shown better performance in working of sugar factories have high proportion of co-operative sugar factories than those in second category. The proportion of co-operative sugar factories in the total sugar industry is 81% in Maharashtra, 67% in Punjab, 41% in Tamil Nadu, 47% in Karnataka, 45% in AP, 17% in MP and 11% in Bihar. This clearly indicates that efficiency of sugar industry in states is positively correlated with the high proportion of cooperative sugar factories and also implies that the co-operative sugar factories are more efficient than the joint stock sugar factories.
Gurupadaswamy M. S. (1979)\(^5\) in his article discussed the role of co-operative sugar units in rural reconstruction. Almost all co-operative sugar factories established in the country have more or less the same organizational and operational frame provided through their bye-laws, in practice, the results are not uniform everywhere. In some of the states, co-operatives have not reached optimum level of efficiency which would give them a strong and sound base for becoming self reliant. This may be due to lack of development in enterprise, lack of leadership, the texture of management, inadequate progress in farm development etc. All these deficiencies need to be looked into from time to time. The individual sugar factories and their federations need to devote their attention to this task patiently and persistently.

Krishnaiah J. (1981)\(^6\) has undertaken study to assess the cost composition in respect of labour (both human and bullock), seed, manures and fertilizers, irrigation and plant protection. In addition, input-output ratios when cane is sent to factory and converted to jaggery were also worked. On an average about 75% of the holdings is put to sugarcane, the average size of sugarcane farm being 1.33 hectare. The major inputs in orders of importance in sugarcane cultivation were labour (20.28%), seed (15.29%), manures and fertilizers (10.71%) and irrigation (5.99%). This study revealed that jaggery production is more profitable than sugar production. This resulted a large scale diversion of cane to jaggery production in 1979-80 season.

Manohar Rao P.J. (1983)\(^7\) studied ‘Bagasse – the promising raw material for the paper industry’. This study has concluded that the bagasse is a suitable raw material for the paper industry to replace the traditional raw materials like soft wood, hard wood, bamboo etc. Bagasse has many advantages, when used as raw material in the paper industry, and this will
improve the economies of the sugar industry as well as the paper industry and boost up the production of paper in every country.

Raju V T and Ramesh M V (1989) have undertaken a study related to cost of production in jaggery on per hectare basis of sugarcane cultivated. The cost of production of jaggery worked out to be Rs.28,417 per hectare of sugarcane area. About 70 per cent of the total cost accounted for the production of sugarcane. The other major items of cost were wages paid to labour, rent paid for the use of crushers and chemical ingredients. The jaggery production from one hectare of sugarcane worked out to be 93.28 quintals. The net returns of jaggery production per hectare sugarcane were estimated to be Rs.5,127 with a total return of Rs. 33,724.

Dagde A.H. " (2001) in his study proposed a new concept of right sizing of manpower in sugar industry and advocated that without restructuring, right sizing, downsizing or optimising Indian sugar industry may be private or co-operative sector would not survive. Right sizing of manpower does not mean reduction in manpower but does mean right person at right place at right time; avoiding duplication of work force; and reduction in salary and wage bills.

Sankariah C. (2004) analyzed economization and sustenance of sugarcane and sugar production in Karnataka with critical analysis. The cost of production of sugar in India is higher than that in other countries. The recommendations, inter-alia, include cost effective practices and improvement of sugar recovery. He attributed the higher cost of production of sugar to the reasons like higher cost of cane, low sugar recovery, low capacity of sugar mills, surplus working staff, lack of diversification of by-products and value addition. The main conclusion is that there is great potential of reducing cost of cane. Similarly, higher recoveries with quality
and sugar rich varieties of sugarcane will have added advantage on cost reduction of cane.

**Sirohi S.S. (2005)** examined the status of co-operative sugar industry in India past, present and future. This research article describes the status of co-operative sugar industry in India during 1936 to 1950, 1951 to 1985 and 1986 to 2005. During these periods sugar co-operatives underwent major changes. The author has given sixteen recommendations for improving the health of sugar industry.

**Chandrasekharmath S.S. (2005)** in his study compared the two phrases of corporate concept 'Co-operative Society' and 'Corporate Society' phonetically proximate but genetically too far. An in-depth understanding of the two concepts was discussed with the opinions of co-operative and corporate scholars. The author compared the concept with business ethics, traditions and present situation and concluded that the executives of both the societies had to think in the same direction for overall development of the society.

**Vinay Kumar (2005)** examined the sugar technology prospects and challenges with reference to the technical area of the sugar industry and the efficiency norms applicable to the industry and concluded with a remark that the productivity can be improved by developing sugar complexes with the help of professional management.

**Pitam Singh (2005)** in his work analyzed tuning of mill for optimum primary extraction. The optimum value of primary extraction can only be achieved by matching the values of the parameters, which can be matched by knowing their quantitative or qualitative effect on juice extraction. Preparatory Indexes (PI) and Fibre Loading (FL) are the governing factors. The Factorial Design Analysis (FDA) states that 16 sets
of observations required to decide the quantitative effect of these parameters. The study revealed that one could tune the mill for its optimum primary extraction at site by adopting the procedure started in the FDA method.

**Krishna A. (2005)** proposed the future sugarcane complex with an example of 2500 TCD mill. The study concluded with a notable remark that the distillery attached to a sugar mill will fetch five times more income than that of a sugar mill without distillery.

**Jadhav M.G. (2005)** made an attempt to analyze the sugar loss at various stages with the help of a parameter developed for this study known as 'Reduced Total Loss Ratio Concept'. The loss of sugar contents at all stages from harvesting to final sugar in bag is a serious economic problem in sugar industry. The study revealed that the reduced total loss ratio gives clear picture of losses at various stages, which could be studied and could be controlled.

**Niepoth Klaus (2005)** in his work examined the developments in falling film plate evaporator technology right from 1992 to 2004 in Germany. The said technology could be further improved to reduce the primary energy consumption, high process stability and high thermal efficiency.

**Sanjay Mohan Bhatnagar (2005)** has summarized many research works done by various institutions on co-generation of electricity from the huge quantity of bagasses. The studies conducted by Tata Energy Research Institute (TERI), indicated that 5200 MW of power could be generated through the use of co-generation in sugar factories in India. Hence, there was a need of modernization of Indian sugar industry.
Jahar Singh (2005)\textsuperscript{19} in his work collected sugar samples from ten different sugar factories in India, which followed Double Sulphitation Process (DSP) and found the presence and formation of colour in cane sugar crystals influenced by both macro and micro environmental factors and the sugar colours were acidic in nature.

Jenekar G.M. and Gabadi R.V. (2005)\textsuperscript{20} have studied on kinetics of crystallization of sugar, effect of manganese and cobalt salts. The study deals with the role of manganese and cobalt salts on the rate of crystallization of sugar, which plays an important role in the economics of sugar industry. Many methods and procedures have been developed to get enhanced the rate of crystallization, of these manganese and cobalt salt were found to have beneficial role for pan boiling in sugar factories.

Thangavely S. (2005)\textsuperscript{21} explained twenty methods of estimating the presence of iron in sugarcane juice, jaggery and sugar. The analytical methods were collected from various sources right from 1970 to 2005. At the end, the author advised that the said methods might be tested and compared for their relative efficiency.

Jasbir Singh (2005)\textsuperscript{22} examined the benefits of adopting co-generation system in sugar mills, trends of steam generation per MT cane and power consumption pattern in sugar factories. The study revealed that the appropriate standards to be adopted by the sugar mills as per their capacity so as to gain the highest benefits of energy consumption.

Raghavendra Kumar (2005)\textsuperscript{23} examined the role of Energy Service Companies (ESCOS) in saving energy and how it could be beneficial to the sugar Industry. The ESCOS at global levels and National levels have been discussed and concluded with a remark that the development of energy efficiency business in general and ESCOS business in particular has not yet...
taken place up to a desired level in our country for which collective action needs to be taken immediately.

**Panet D.K. (2005)** examined various process and economics of refined sugar production followed by the Indian sugar industry and also made an attempt to explain the efficient manner of by-products utilization. The concluding remark was if the by-products of the industry were utilized efficiently the sugar production cost could be reduced.

**Sivaraman M. (2005)**, the author explained various sections in the Act and Amendments of Intellectual Property Rights effecting Indian agriculture. The Agriculture related issues in WTO Treaty; Indian Patent Law and Agriculture; Biological Diversity Act and Agriculture; Plant Varieties Protection Act and the provisions of these Acts affecting traditional knowledge of Indian farmers have been discussed. The study concluded with some meaningful suggestions to modify the said Acts.

**Monohar Rao P.J. (2005)** has compared the performance of seven countries viz., Brazil, India, Thailand, Mexico, Australia, South Africa and Argentina during the year 2002-04. The study revealed that India was the world's largest producer of all the sweetening agents (Sugar, Gur, Khandsari) and has the largest number of sugar mills.

**Dietmar Achilles (2005)** discussed the German position on EU reform proposal for sugar market regime. The German government generally supports the EU reform proposal for the EU sugar market regime but warns that the proposed quota reduction might not be sufficient to meet the reduction requirement resulting from the ongoing WTO negotiations and the WTO panel decisions on EU sugar exports. Farmers and the industry requested full compensation for income losses resulting from price
and quota reductions. The author studied the cause and effect of EU reform proposal on sugar producing countries.

Daxa Gohil (2005)\textsuperscript{28} has examined the transaction cost vis-a-vis financial performance of sugar industry in India. The study was based on secondary data of the private sugar mills working in India during the period from 2000-01 to 2002-03 with a sample size of 44 private sector sugar mills. The main objectives behind the study were to examine the role of transformation vis-à-vis transaction cost in economic and financial performance (was tested based on regression model) of the Indian private sugar industry; and to bring out the policy implication of transaction cost approach for future development of sugar industry.

Patil N.S. (2005)\textsuperscript{29} studied the unique and successful rehabilitation of Satpuda Tapi Parisar SSK Ltd. Purushottam Nagar, Maharashtra. The research paper was based on case study and the true story of Tapi Parisar SSK Ltd. pioneered by Mr.P.K. Annu Patil in 1969. The step-by-step achievements of the mill explained till the season 2005-06. The study concluded with an advice to the low performing mills to follow the action plan so as to achieve the success.

Subhadra D. (2005)\textsuperscript{30} explored the footsteps of sugarcane right from 1923 to 2003. The data was compiled from various sources and presented to give conclusion. The researcher says that sugarcane cultivation cannot be increased beyond a certain limit but the left out way before us was `Better Variety' and 'Better Cultivation Practices'.

Ramaswamy C. (2006)\textsuperscript{31} in his study used secondary data to analyse the effective utilization of by-products. Indian sugar industry produces by-products in the forms of Bagasse (45 Million MT), Press mud (5 Million MT) and Molasses (7.5 Million MT) per year. There were 285
distilleries produced 2.7 billion liters of ethanol by utilizing 7.5 million MT of molasses during 2005-06. The author gave a concluding remark that the large quantity production and higher amount of sugar export on regular basis may provide incidental added value to the sugar sector.

Balwant Kumar (2006)\textsuperscript{32} analysed the fifteen sugarcane clones of different maturity groups, which were grown under eight different environments, such as autumn and spring crops for two consecutive years during 1999-2000 to 2000-2001 at Pusa Farm, Bihar. It was found that the B0128 clone suitable for autumn crop whereas, B0110 and B0109 were suitable for spring crop.

Bhite B.R (2006)\textsuperscript{33} studied different sugarcane varieties for post harvest effect. Advancement in agro genetic management technique significantly increased yield of sugarcane. However, the sugar recovery rates till today have not shown any significant improvements. This study focused on post harvest inversion of sucrose in different ten varieties of sugarcane was conducted at Padegaion and Satara. Uniformly matured canes of ten varieties of sugarcane were harvested from the experimental plot during 2003-04. It was found that the two varieties viz. COM 7125 and C092020 showed variable response to post harvest storage.

Tanguvelu S. and Chiranjivi Rao K. (2006)\textsuperscript{34} conducted field work to assess reasons for reduction in sugar contents in top and bottom portions of sugarcane genetic stocks and its associations with other quality characters. In a replicated field trial 30 clones were planted to study the sugar content in juice at 9,10,11 and 12 months in top and bottom portions of the early maturing and late maturing clones. The study revealed that the variations of reducing sugar between clones, sugar and portions.
Pandey Adya Prasad (2007)\textsuperscript{35} in his study concluded that sugar industry, is the second largest agro-based processing industry after the cotton textiles industry in country, has a lion's share in accelerating industrialization process and bringing socio-economic changes in under developed rural areas.

Pagar S.K'S. (2011)\textsuperscript{36} the study is related to the sugar co-operative in Maharashtra State which has become a catalyst for all round development in rural area. Many co-operative sugar factories have made a greater contribution to the economic and social development of their areas according to the regional requirement. The under developed character of the rural area covered by the co-operative sugar factories is undergoing tremendous change.

Khan Y.S and Nimbargi S.A (2011)\textsuperscript{37} in their study entitled "Socio-economic Impact of Shri Siddheshwar Co-operative Sugar Factory on North Solapur Tahsil: A Geographical Analysis" concluded that the region under study has experienced tremendous change in socio economic development during the last four decades of 1971 to 2007. The socio-economic conditions of the people concerned in the region have improved a lot and people have benefited in all sectors of the economy by the Shri Siddheshwar cooperative sugar factory. It is believed that most of the people are improving their socio-economic conditions in day to day life.

Kamble Balaji (2011)\textsuperscript{38} in his work analysed an agro based sugarcane and sugar beet are the main sources of sugar in the world. Out of total sugar produced in the world 60 percent is obtained only from sugarcane. Asia is the largest producer of sugar followed by Europe. Sugarcane provides the cheapest form of energy giving food (Sucrose) with the lowest unit of land area per unit of energy produced.
Todkari G.U. (2011)\(^3\) has opined that Sugar industry occupies an important position on the industrial map of the State of Maharashtra. These factories played a major role in the socio-economic development of rural areas in Maharashtra. The growth of various urban centres are helping to solve the problem of unemployment by providing employment in the growing industries.

Shinde Udaykumar's (2011)\(^4\) study highlights that, India is leading sugar producing country. Maharashtra is one of the major contributors of national sugar production. The study revealed that State sugar industry is dominated by co-operative sector.

Ingale B.D. (2011)\(^5\) in his research paper discussed that the development of sugar industry in the state is progressive but after globalization support of state government is declining. So, sugar industry in Maharashtra is suffering from so many problems. Currently, sugarcane price is a burning problem in Maharashtra State. For the season 2009-10 the central government fixed ‘Fair and Remunerative Price’ of Rs.129.84 per quintal and for 4 percent incremental recovery rate F.R.P. will be 9.5 percent means, recovery rate is a base of Fair and Remunerative price.

2.2 REVIEW OF BOOKS

Gandhi M. G. (1934)\(^6\), has reviewed the development of sugar industry in India. It is suggested that the sugar industry has the potentialities to bring out the changes in rural economy. They must be established in the co-operative sector to uphold the principle of co-cooperativeness.

Prof. Gadgil D. R. (1950)\(^7\) studied the co-operative movement in India. He actively involved in establishing first co-operative sugar factory in India in the year 1950. The study mainly related to impact of sugar
factories on modernization of agriculture with its overall development and on expansion of transport facilities.

**Devekar P.N. (1951)** studied “the sugar industry in Bombay division. In his study he explained the development of sugar industries and their problems. He also explained economics of sugarcane and sugar with reference to the irrigation, transport, manufacturing etc. The study points out the necessity and importance of sugar co-operative in the Indian economy.

**Shrimal W.C (1962)** observed that justice Rande, Gokhale and Lokamanya Tilak pursued the matter of granting protection to sugar industry as a result British Govt. granted protection in 1932 on recommendations of Enquiry Commission 1930-31. Here it is observed that it was a matter of luck that eminent economist Prof Gadgil D.R who contributed much acting as first chairman of Pravara Co-operative Sugar factory.

**Paul Pigors (1969)** collected original contributions of Douglas M C Gregor, Rensis Likert and other eminent American writers on management and personal administration. They have touched the aspects of organization planning and management development and the need for development of cost management practice with the emphasis on cost control and cost reduction. This is commendable work on the cost management practices from the American point of view however the strategies can be made applicable to the Indian sugarcane industrial environment.

**Puranik A.D (1976)** highlighted on professionalization of management in co-operative sugar industry and clearly stated that until and unless technical and financial factors given top priority professionalization of management can't be motivated. He also indicated that there is a practice
to appoint IAS officers as Managing Director of sugar factories in Tamil Nadu and Karnataka. In the study much importance was given on protecting the interest of members, customers and public using better technical efficiency making unit profitable.


studied the problems of sugar industry in India with special reference to four selected sugar mills and 72 sugarcane growers during the period 1960-61 to 1989-90. The main objectives were to study cane suppliers, the related changes in production and price, and to identify the various price and non-price factors responsible for fluctuations. The findings of the study were the major sugar growing states showed the similarities in their growth, the compound growth rates showed increasing trend and the coefficient of variation showed that all the variables were subject to a wide fluctuations.

**Ram Vichar Sinha (1998)**

studied the agricultural economics of Sugarcane, problems of cane marketing and transport, technical performance, utilization of by-products, labour relations and policies on sugar economy. Simple tabulation method is used to analyse the data for the period from 1979-80 to 1983-84. The outcome of the study is sugarcane development activities were not efficient, effective plant modernization and effective infrastructure developments were not under taken.

**Cooper's (2000)**

study is related to cost control applications of complex business requires frequent information about operations in order to plan for the future, to control present activities and to evaluate the past performance of managers, employees and related business segments. To be successful, management guides the activities of its people in the operation of the business according to pre-established goals and objectives. Management’s guidance takes two forms of controls; the management and
supervision of behaviour, the evaluation of performance. It is further discussed that behavioural management deals with the attitudes and actions of employees. While employee’s behaviour ultimately impacts on success, behavioural management involves certain issues and assumptions not applicable to accounting control function. On the other hand, performance evaluation measures outcomes of employees’ actions by comparing the actual results with expected results. The process of evaluation and remedy is called cost control.

Lockyer K.(2002)\textsuperscript{51} has undertaken the study related to cost control as a practice of comparing the cost of a business activity with the original cost in order to ascertain if the cost is as planned. Costing System and Cost Control further noticed that cost control and costing systems are synonymous with common characteristics. Costing system comprises of an organization's control, plans and structures which has three phases i.e. the setting; the operation and the feedback phases. The setting phase: in setting a control system, establishment of standards is a criterion for performance and can be stated in quantitative terms in unit of products, unit of service, man hour, speed, volume or expressed in value such as volume of sales, cost of capital expenditure or profits etc. The operation phase: this is the part of the organization in which the prevailing technology is applied to raw material inputs which are converted into finished output which the organisation provides as a service or a product. The success and failure in this respect depends on the set standards. If the standard is vaguely defined, the result will be failure, and if rightly defined, the operation will bring forth good result; The feedback phase: this phase provides information for decision that adjusts the system. As plans are implemented the system is monitored in order to ascertain whether or not performance is on the right target and whether objectives are being met. In a close system, feedback is received by human beings who process it and decide an appropriate action.
In order to be efficient, actual performance is measured against standard and deviations analysed. The feedback can form the beginning of the whole process until a desired standard is achieved.

Sikka T. K. (2003) explained that in cost control, the first step is to set up the target to be achieved, i.e. the goal or objectives to be attained, the cost control system guides the organization to reach that goal. For this purpose, budgets or standards are used to provide the yardstick against which the actual costs and performance may be compared. This guidance and regulation is by executive action or action taken by the executive, who is responsible for incurring the expenditure. It should be clearly understood that a cost accountant, by himself, does not control the expenses. He merely assists in the control of expenses since expenditure can be controlled only by the person who incurs it. The cost accountant brings to the notice of the executive concerned. Thus, cost control is the guidance and regulation through an executive action and this executive action is exercised in respect of all the expenses incurred in operating an undertaking. Cost control comprises all procedures to check and aims at ensuring that costs do not go beyond a certain level.

Jain S. L’S study is related to Indian sugar industry and discussed the development of the industry during the plans, the industry’s contribution to national economy and other related aspects of development and research in the area of sugarcane.

Anthony, (2005) discussed with regard to cost control and defined it as a broad set of cost accounting methods and management techniques with the goal of improving business cost efficiency, by reducing costs or at least restricting their rate of growth. Businesses use cost control methods to
monitor, evaluate and ultimately enhance the efficiency of specific areas, such as departments, divisions or product lines within their operations.

**Hamilton and Martha (2007)** in their study explained cost control reports need to provide an adequate amount of information so that management may determine the reasons for any cost variances from the original budget. A good control report highlights significant information of focusing management’s attention on those items in which actual performance significantly differs from the standard. In addition, accountant disseminates control reports in a timely fashion to give management adequate time to act before the issuance of the next report. They cannot predict the timing and volume of actual sales, but they can influence the cost side. Hence, the evaluation of management’s performance and its operations is cost control.

**Devaraja T S (2009)** in his book gives first record of detailed financial performance of sugar industries in Karnataka that covers several aspects of sugar production, problems and prospects of sugar industries in the state. The author has made genuine efforts to examine the financial performance of the sugar industry starting from the firm level to the state and national levels. The study also covers the current policy and policy options for improvement of the industry in Karnataka providing an overview of the sugar industry in India.

**Hritesh D (2012)** has discussed the reasons for location of sugar industry in Uttar Pradesh and Maharashtra. These regions produce plenty of sugarcane. Hence raw material is easily available and sugarcane should be quickly processed into sugar. The labour required for sugar industry is easily available in these regions. These are among the largest populated States of India. All means of transport and communications are available.
here. He discussed that the development of sugar industry in the state is progressive but after globalization support of state government is declining. So, sugar industry in Maharashtra is facing so many problems. Currently, sugarcane price is a burning problem in Maharashtra state.

**Martina. R. Noronha & Dilipsinh Thakor (2012)** in their study concluded that there is a tremendous scope for India to emerge as a significant player in the world sugar trade improvement. If we can make a fair degree of progress on agricultural efficiency as well as conversion efficiency, India will surely become a major exporter which will stabilize the industry and reduce its cyclicality significantly, as well as open up new vistas of growth for the Indian sugar industry.

### 2.3 REVIEW OF THESES

**Deodhar L.D. (1950)** has undertaken study on the labour problems in the sugar factories and suggested for improving the labour conditions in the sugar factories, and their standard of living.

**Kamat G.S. (1965)** reviewed the management aspect of the co-operative enterprises. The researcher covered the problems relating to finance, raw materials and personnel. The study has been concluded with a note that, the co-operative sugar factories could play important role in rural development if they managed properly.

**Shirodkar S.L. (1967)** in his work has analyzed the impact of co-operative sugar factories on the agriculture of the region. According to him, co-operative sugar factories have imparted stability to the agriculture income by paying reasonable and guaranteed price for a noticeable increase in the production of sugarcane. As the co-operative sugar factories are agents of rural economic development, the factories must be established in
the backward area so that the backward area can get a chance of its all round development.

Mrs. Vimala Ragharachari V (1973) has analyzed certain aspects of socio-economic impact of sugar co-operative in general. According to the study a sense of consciousness among people at all levels has been developed due to the co-operative sugar factories. The study considered the impact of sugar factories on the pattern of cultivation relating to sugarcane. The change in the other aspects like irrigation, mobilization of rural savings, employment in rural areas, labour welfare and growth of rural area are also studied in general. Whereas the impact on other factors such as agriculturists, non-agriculturists, transport, communication, trade and commerce etc, is not considered in the study.

Ram Autar (1973) in his study found that there are a lot of problems faced by Indian sugar industry. They are categorized into primary and secondary stage problems. The Primary stage problems are Problem of raw material, location, transport, and labour. Secondary stage problems are problem of modernization, rehabilitation, rationalization, cost structure and price, utilization of by – products, consumption, competition from decentralized sectors.

Kohak M.A. (1982) has studied the effects of sugar factory on agriculture, cultivators and on agriculture labourers. He also studied the impact of sugar factory on the development of infrastructure, social services like education, medical facilities, capital formation and employment generation in the area of operation of sugar factory. The study concluded that because of the establishment of the sugar factory, the tendency of depending solely on the cash crop like sugarcane has been increasing among the farmers, which may ultimately has adverse effect on other
farmers. Secondly, sugarcane requires proportionately more water compared to the other crops.

Krishne Gowda (1984)\textsuperscript{65} has undertaken a study on ‘The geo-economic problems and prospects of sugar industry in Karnataka’ describes the role of sugarcane in Karnataka’s economy and geographical factors influencing the cane cultivation, direct and indirect utilization of sugar by-products like bagasse, molasses, filter mud and sugarcane by-products like cane tops and trash, and problems and remedies related to Karnataka sugar industry.

Hilage V. M. (1989)\textsuperscript{66} revealed in the study that the Cooperative Act 1904 played a significant role till 1947 in sugar sector. But the cooperative sugar sector suffered mostly from financial weaknesses and lack of professionalism. The author is of the view that the performance of sugar factories can be improved by developing sugar cane in scientific manner, providing greater facilities of lift irrigation, paying proper attention to harvesting and transportation schedule of sugar cane and controlling diseases and pests.

Kharche R.M. (1990)\textsuperscript{67} has undertaken study on co-operative sugar factories in Maharashtra in his doctoral work in 1987 and it was published in the year January 1990. It deals with method of licensing, financial structure, the supply of cane, cost of production, development and policy of management.

Nimbagi Waman (1990)\textsuperscript{68} analysed the socio-economic status of seasonal migrants in the co-operative sugar factories during the study period 1983 to 1989. The main objectives of the study were to explain the demographic status of the seasonal migrants to list out problems of seasonal workers and socio economic conditions of the seasonal migrants. Both
primary and secondary data were used to arrive conclusions. The study outcome is that the social and economical conditions of the seasonal migrants were not satisfactory.

Chandrakant Janardhana Joshi (1991) explained the finances of sugar factories (From 1960 to 1987) in Kolhapur District of Maharashtra. The objectives were to measure the liquidity, solvency, efficiency, working capacity, profitability and socio-economic developments. The study revealed that the financial performance depends on internal and external factors. Internal factors are factory maintenance, employee behaviour, liquidity, solvency and profitability. The external factors were social, economic and political. The study concludes that the units should enhance their equity capital; introduce cane development programme, manpower planning and plant modernization.

Mahadik A.S. (1991) analyzed the economics of molasses based by-products of co-operative sugar factories in Kolhapur, Satara, Sangli and Solapur districts of Maharashtra State, during the period from 1975 to 1989. It was a micro level analysis. The main objectives were to analyse the cost, income and utilization of by-product and to examine employment generated by the selected units. The required data were gathered from the records of the factory, Excise Department and Government machinery. The study revealed that the bagasses and molasses constitute the main by-products of sugar industry and the utilization of the by-products affects the processing cost of the sugar. The study concluded with a suggestion that every sugar factory must utilize their by-products effectively to reduce the total cost of the sugar.

to 1989. The objectives of the study were to study the growth of sugar industry in Satara district; to examine the total fund raised as share capital; to estimate the employment generation; to examine the cost of production and price; and to examine the contribution to rural development. The research report revealed that the number of co-operative sugar factories increased in the region: the socio-economic growth has been taking place in Sahyadri; the sugar industry generated employment; and contributed considerably to the rural development.

Shivajirao N. Borhade (1991)\(^72\) analysed the management of productivity in a cooperative sugar factory during the period 1981 to 1989 with the help of published data. The objectives were to measure productivity and to evaluate best approach of productivity. Time lost in percentage; labour lost in terms of revenues; machine efficiency in terms of per hour crushing; and the total productivity value of output, were the productivity parameters used in the study. The conclusion of the study was that performance of the mill was moderate.

Anikhindi A G (1995)\(^73\) conducted study of computerized cost based information system for decision making in selected organizations from Kolhapur district. Researcher selected four sector viz. private, public, service and cooperative. During his research he concluded private organizations are ahead in using computer based information system and others are lagging behind in this regard. Researcher has suggested model for computer based information system and observed benefits of computer based information system in private organization are i) Reduction in cost and product life cycle ii) Inventory control iii) Optimum utilization of capacity iv) Decision making is more effective.
Biradar Patil (1995) has examined the growth, problems of the co-operative sugar factories in Belgaum district of Karnataka State during 1985-88. The objectives of the study were to study the growth, problems, structure, working and socio-economic impact of co-operative sugar factories; role of sugar co operatives in uplifting of small and marginal sugarcane growers; to compute the cost of sugarcane cultivation and net income of sugarcane growers. Both primary and secondary data were compiled; the primary data was gathered through structured questionnaire. The sugarcane growers were stratified into marginal (up to 5 acres of land), small (5 to 10 acres) and big (above 10 acres) farmers for the study. The study revealed that there was low yield of sugarcane in the region; instability in the sugarcane supply and price; high cost of production; delay in payment of farmers' bills; and observed under utilization of by-products (bagasses, molasses and press mud) within the region.

Ramchari S. Nikam (1995) analyzed the composition of various cost elements and their magnitude in total cost of sugar production, and also cost and productivity trend in co-operative sugar factories in Sholapur district of Maharashtra State for the period of 1987 to 1993. The study revealed that the rapid growth was observed in co-operative sugar industry. Post-independent period was dominated by co-operative sugar sector. The sector's total sugar production and average crushing capacity increased from 800 TCD to 5000 TCD; capacity utilization gone up from 94% to 131%; and average sugar recovery increased from 9% to 12% during the study period. The booms in the said industry fetch an attractive return to the cane growers. A notable suggestion is, over dependence on loan and deposits may hamper the sugar sector in future and cost consciousness is yet to be popularised among these mills. With the help of structured questionnaire primary data was computed. The secondary data was obtained from seven sugar mills in co-operative sector from Solhapur area which comes under
'drought area'. Out of seven, only three expanded their capacity. The duration of crushing ranges from 100 to 128 days and the average recovery rate was 10.68 percent.

Kakade V.B. (1995) studied the capacity utilization of co-operative sugar factories in Maharashtra State. The research was based on published data during the period from 1981 to 1990. The main objectives were to find out the degree of capacity utilization, BEP and the cause for change in capacity utilization. The study revealed that the capacity utilization depends upon the supply of sugarcane.

Hanchinmani S.N. (1996) discussed financial analysis of co-operative sugar factories in Belgaum district of Karnataka with a sample size of one unit. The annual reports and manufacturing reports from 1990 to 1994 were used as secondary data. The main objectives were to assess the financial position of cooperative sugar factory under study and to evaluate the financial operations and performances with the help of financial ratios. The study revealed that there were disproportionate relationship between different financial variables and standards; the co-operative sugar factory had a weak financial base, more dependent on bank loan; and the professional management yet to step in co-operative sugar factory.

Mahadev G. Powar (1997) in his study discussed the raising and utilization of finance by five co-operative sugar factories (From 1961 to 1993) at the micro and the macro level. The objective was to interpret the data with the help of ratios - liquidity, solvency, efficiency and profitability. The findings of the research study were, the use of chemical fertilizer and traditional technology made much harm to the soil.

Maduri L. Bandasoda (1998) analysed the employee services in Rajarampur Patil Sahakari Sakhar Karkhana Ltd. Rajarampur, Sangli
District of Maharashtra for the year 1997. The objectives of the study were to study personnel services, legal aid, vocational guidance, send-off ceremony, employee convenience, canteen and restaurant facilities, existence of co-operative stores, housing facilities, transport, drinking water facility, uniform, etc. The study revealed that less than fifty percent of the employees were observed to have availed basic facilities.

Vandana S. Dandekar (2000) discussed economic analysis to find out rate of return to education due to inception of sugar co-operative factories in Sangli District of Maharashtra State during the period of 1987 to 1997. The required primary data was gathered with the help of structured questionnaire. A random sample survey method was used. The main objectives were to measure the return to educational expenditure for the employees in sugar co-operatives; to measure the social, private and marginal rate of return. The published reports of the sugar co-operatives and published Govt. records were used to collect secondary data.

Patil V.A. (2002) explained the problems of seasonal workers working in selected sugar factories during the period 1997 to 2001. The main objectives of the study were to assess the degree of job satisfaction of the seasonal workers; to analyse the demographical status of the seasonal workers. The study outcome is that the majority (66%) of the seasonal workers were young and were in between 20 to 30 years; 32 per cent were working in manufacturing section; 27 per cent in engineering department; 17 per cent in agriculture; 57 per cent of them had more than 10 years experience.

Gurav A. M. (2003) has examined financial position of sugar factories under study and evaluated cost of production excluding cane price and including cane price. Researcher analyzed productivity performance
and identified different areas for cost reduction. Author emphasized necessity of atomization and computerization for reduction of manpower and inventory cost.

Jain N.S. (2003) discussed Indian sugar industry development during the plans, the industry’s contribution to national economy and other related aspects of development and research in the area of sugarcane.

Basavraj S. Benni (2005) analysed the physical and financial performance of twelve co-operative sugar factories during 2001-02 with the help of Ratio Analysis and Multivariate Econometric Technique Method. The study revealed that the physical and financial performance indicators influenced the total performance of sugar co-operative factories and concluded with a remark that in the total sugar production cost, cane conversion cost was greater than the cane cost.

Kendre Balaji (2011) investigated the socio-economic background of the migrant sugarcane harvesting workers. At the outset it seems overtly to be a repetitive attempt as the knowledge of the socio-economic composition of any kind of labourers is shown that they are basically property less and belongs to the poverty ridden section of the society. This is an attempt to study socioeconomic background of the migrant sugarcane cutters in Maharashtra in general and Kolhapur district in particular.

2.4 REVIEW OF COMMITTEE REPORTS

V. Bhargava committee (1958) was assigned to appraise the existing price linking formula for sharing the cane prices among growers and millers. Later the Committee was requested to revise the pricing formula in 1960. The determination of fair price payable to the industry based on the new cost of production.
Gundu Rao Committee (1963) was required to examine the problems of the old and uneconomic units in the sugar industry and to make recommendations for their rehabilitation and modernization.

The Sugar Enquiry Commission (1965) appointed by Government of India. It studied the trends in the sugar production, sugar policy, problems of sugarcane development, pricing and distribution policy of sugar and sugarcane and licensing policy. However the report of the sugar enquiry Commission did not touch the cost management factors in sugar industry in general and specifically co-operative sugar factories.

RBI, A Study Group(1980) studied the problems of sickness in sugar industry and erosion of profit of sugar mills is mainly due to mechanical obsolescence Recommendations of the committee for modernization and rehabilitation are considered as the way to reconstruct the sugar industry. All Indian financial institutions announced soft and liberal loan schemes for modernization of sugar industry. Sugar development fund is constituted for modernization of sugar industry and for cane development.

B.B. Mahajan Committee (1998) is related to modification, amendments of any existing law and controls with a view to ensure healthy growth and development of the sugar industry and building healthy relationship between the farmers and the industry. Ways and means to increase production and efficiency through modernization so that sugar is available to the general public at reasonable prices and methods for increasing productivity of sugarcane and ways to ensure fair and remunerative prices to sugarcane growers.

S.K.Tuteja Committee (2004) was focused on the use of alternate feed stocks like sugar beet and sweet sorghum.
Prominent suggestions made by the Committee are presented below

1. State Governments may provide special attention to provide and maintain necessary infrastructure like irrigation, power, roads and drainage, etc., for sugarcane cultivation and transportation.

2. The Central Government may dispense with the release mechanism for free sale sugar with effect from 1st October, 2005.

3. A scheme similar to the one available for integrated textile units should be sanctioned for the sugar sector for reducing their debt service burden.

4. In order to improve profitability of sugar industry through value addition to by products like bagasse and molasses.

5. Co-operative sugar mills having potential for setting up of diversification projects may be encouraged.

Expansion of capacity of sugar mills up to 10000 TCD may be deemed as ‘modernization’ for the purpose of loans from SDF.

Dr.Y.S.P.Thorat Committee (2009)92 recommendations addressed the interests of farmers, consumers and mills. Suggestions were also made regarding the role of the Government in determining policy on Decontrol of Sugar Sector, included the following.

1. Removal of sugar from Essential Commodity Act and a complete deregulation of sugar sector.

2. On the cane pricing issue, to let the buyer and seller determine the same without external intervention as in the case of any other agricultural produce.

3. Decontrol of the mills in the area of merging with existing mills and investment in new mills.

4. Total recall of factory-wise cane area reservation policy.
5. Scraping of levy sugar mechanism and recommended to procure sugar from open market for supply under Public Distribution System (PDS).

High Powered Committee on Co-operatives (2009)\textsuperscript{93} constituted under the Chairmanship of Shri. Shivajirao G.Patil, to report on the problems and challenges faced by co-operative agro-based industries. The committee classified co-operative sugar factories in India as the ‘sick and non-viable co-operative organizations’. It must be recognized that most cooperatives function in the agricultural sector where the risk element is relatively high and the returns on investment low. Therefore, startoff with an initial disadvantage.

Department of Food and Public Distribution, Govt. of India (2009)\textsuperscript{94} Indian sugar sector comprises four distinct stakeholders - the cultivators of sugarcane, the consumers of sugar, the manufacturers of sugar and the government. The interests of the first three categories of stakeholders are at variance and often adversarial in nature. While the consumers aspire for affordable prices and adequate availability of sugar, the sugar mills look to better revenues on a large production base supported by comfortable availability of sugarcane at low effective rate. The farmers on their part desire high productivity, low cost of production and high prices for the cane. The government as a significant stakeholder wants to balance the interests of cane farmers (remunerative prices), interest of consumers (affordable price for sugar and adequate availability) while at the same time ensure that sugar mill sector remains strong and efficient. This has led to tight regulation of a number of areas of functioning of the sector from sugarcane production to use of by-products arising from the manufacture of sugar. Some deregulation has taken place, but critical
aspects such as cane price, manufacture, trade and marketing as also use of by-products still continue to be regulated.

T.Nandakumar Committee (2010)\(^95\) had recommended a formula, wherein mills would pay cane growers 70 per cent of their average realisation from sugar multiplied by a specific recovery factor. The recovery factor, in turn, represents the sugar recovery of a particular factory or the average sugar recovery in same industry area thus, if the all-India average sugar recovery is at 10 per cent, a factory in Maharashtra recording a 13 per cent recovery would pay its growers whichever is higher. This formula was accepted among sugar mills but never implemented.

Dr. C.Rangarajan Committee (2012)\(^96\) has suggested removing major Government controls on the sugar sector. It advocated for the removal of levy obligations which calls for a number of sugar mills to supply 10 per cent of sugar cheaper rate to the Government and mills to sell sugar in the open market and introducing a stable export and import policy to take advantage of price differential in the long run.

T.Jacob’s Committee (2013)\(^97\) was mainly formed to assess and report on the sugarcane productivity and sugar recovery front in the year 2013. Sugarcane productivity included credible seed programme, institutionalized extension support, sustainable utilization of water, fertilizers and cultivation practices, mechanization of sugarcane cultivation and framing a special scheme for drainage problems in Bihar. The recommendations of Jacob’s Committee regarding policy support are as follows.
1. To utilize ethanol as a major contributor to the energy security of the country and to promote the development of flexi fuel engines as well as delivery pumps.
2. To take needed effort on the certification, branding or marketing of specialty sugars by the sugar industry’s bodies, especially to promote production and branding of ‘organic sugar’.

3. To make necessary changes in policy to promote sugar beet as a complementary sugar crop.

Chellaswamy. P and Revathi S.V. (2009) This study disclosed that about 45 million sugarcane farmers, their dependents and a large mass of agricultural labours are involved in sugarcane cultivation, harvesting and ancillary activities, and constituting 7.5 per cent of the rural population. Besides these, about 0.5 million skilled and semi-skilled workers, mostly from the rural areas are engaged in the sugar industry.

2.5 CONCLUSION

The review of literature given above serves as a back ground for the present investigation and helps in understanding it in the proper perspective. From the foregoing review it may be noted that sugar industry has an important place in economic activities all over the world. The present study entitled "Cost Management in Sugar Industry: a study with reference to co-operative sugar factories of Bidar district in Karnataka State " was undertaken with a view to fill the existing research gap. It is hoped that such a study would be helpful to the sugarcane cultivators, sugar factories and sugar based units and development agencies.
REFERENCES:


30. D. Subhadra (2005), Sugarcane Technology In The Last Eight Decades In India In Sugarcane Production, Co-operative Sugar, Vol.36, No.9, May 2005.


43. Prof. Gadgil G.R. Sugar co-operative in Maharashtra National Federation of Sugar Factories Ltd. New Delhi.


83. N.S. Jain Regional Economic Planning in Sugar Factory are PhD thesis university of Pune.


87. Government of India for appraising various aspects of sugar industry. The ‘Tariff Commission’ was assigned in 1958.
89. Government of India, New Delhi. High Level Committee on “the Cost Structure of the Sugar Industry” Chairman Sri L. Kumar, 1980.
95. The Committee headed by the former Union Food Secretary, Shri. T. Nandakumar in 2010.