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GROWTH AND DEVELOPMENT OF SUGAR INDUSTRY IN KARNATAKA: SOME PROBLEMS AND PROSPECTS – AN ANALYSIS

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ABSTRACT

Karnataka is one of the prosperous states in terms of agricultural economy and agro-based industrial activities. Karnataka holds the third rank in sugar industry in India. Its share in total sugar in industry in India is 14.70 percent. At present, there are 57 sugar mills in operation in the state. Nowhere else the integration between the raw material suppliers and the industry is as complete as in sugar production. A large cross-section of rural society is benefited from the development of sugar industry directly or indirectly. In Karnataka the co-operative sugar mills alone had provided direct/ Indirect employment majority of workers. There being no heavy industry in Karnataka, .small scale industries and to some extent, agro-based industries are going to be the mainstay of this state. Unfortunately, in case of several agricultural commodities, processing has not developed to the extent to make full use of surpluses in the state. The data on growth of sugar industries in Karnataka during 2000-01 to 2010-2011. The data clearly reveal that the number of sugar mills were 37 accounting for 7.8% only during the year 2000-01. Their number increased to 55, accounting for 115% of the total in the year 2009-10. In other words the number of sugar mills is 1.49 times higher in the year 2009-10 as compared to the year 2000-2001. Similarly, the production of sugar was 16.20 lakh tones accounting for 9.5% of the total sugar production in 2000-01. It has been increased to 22.52 lakh tones accounting for 13.2% of the total sugar production during the year 2009-10. In other words production of the sugar is 1.39 times higher in the year 2009-10 as compared to the year 2000-01.

KEYWORDS: Sugar, Industries, Agro-based, Growth, Development, Byproduct, Diversification.

INTRODUCTION:

Sugar industry is the second largest agro-based industry in the country. The Indian sugar industry is the key driver of rural development, supporting over 55 million sugar cane farmers. There are around 651 sugar mills in India. As such, the sugar industry has been a focal point for socio-economic development in the rural area by mobilizing rural resources, generating employment & higher income, besides giving a fillip to transport and communication facilities. India is the world's top consumer of sugar and second largest producer of sugar only after Brazil. India has produced 250 lakh tonnes of sugar in 2010-11 and consumed 210 lakh tonnes. The sugar production in the country fluctuates widely based on sugarcane availability in the country.

Karnataka state is a major sugar producing state in the country with 57 sugar mills in operations in the year 2010-11. The total amount of sugar produced in this year is 36.48lakh tonnes and among these mills 11 mills are



managed by cooperative sector. These cooperative mills, though are able to contribute much to the rural economy, are facing many problems and many are at the verge of closure. The present paper throws some light on the problems faced by the sugar and co-operative sugar mills in Karnataka along with mentioning some solutions to overcome these problems.

Karnataka is one of the prosperous states in terms of agricultural economy and agro-based industrial activities. Karnataka holds the third rank in sugar industry in India. Its share in total sugar in industry in India is 14.70 percent. At present, there are 57 sugar mills in operation in the state. Nowhere else the integration between the raw material suppliers and the industry is as complete as in sugar production. A large cross-section of rural society is benefited from the development of sugar industry directly or indirectly. In Karnataka the co-operative sugar mills alone had provided direct/ indirect employment majority of workers. There being no heavy industry in Karnataka, small-scale industries and to some extent, agro-based industries are going to be the mainstay of this state. Unfortunately, in case of several agricultural commodities, processing has not developed to the extent to make full use of surpluses in the state.

HISTORY OF CO-OPERATIVE SUGAR MILLS IN KARNATAKA:

The cooperative society's act was enacted in India in 1904, with a limited objective to provide cheap credit to farmers and save them from exploitation of money lenders. It was only in the early 1930's that the cooperative movement penetrated into the sugar sector. The increasingly higher rates of interests charged, by money lenders and violent fluctuation in the Gur, Jaggery and Sugar markets led the farmers to utilize the underlying notion of self help and self-reliance in the cooperative society's act which ultimately led to the setting up of cooperative sugar factories. At present sugar sector occupies an important place next only to cotton textiles. The state of Karnataka is one of the leading states in India in the sugar sector claiming third place in the country in respect of area of sugar cane cultivation, production and yield of sugarcane per hectare during the year 2010-11. Further the state holds the fifth place in respect of total number of cooperative sugar mills and third place in the production of sugar and number of sugar mills. Though these mills are managed by Private, Public and Co-operative sectors, the development of sugar industry in the cooperative sector is commendable. The sugar factories, particularly the cooperative sugar mills act as instrument for rural development by virtue of their location mainly in rural areas. In Karnataka, though the cooperative movement gathered momentum after independence, it is only after 1958 and onwards, the development of sugar industry took birth in the cooperative sector. A sugar cooperative mill was established in 1958 in Kampli near Hospet. Further two more mills were established, one in 1959 at Pandavapura in Mandya District and another in 1960 at Sankeshwar in Belgaum District. The establishment of sugar cooperatives in the state started in the course of second five year plan. In 1961, the State Federation of Cooperative Sugar Factories was established. Sugar cooperatives are being provided financial assistance only from the third five year plan and during this plan a cooperative sugar mill was started at Gouribidanur. During the fourth plan the outlay to sugar cooperatives was raised to 220 Lakhs from 10 Lakhs in the third plan and four more new units were started, one each at Bidar and Chitradurga Districts and two in Belgaum District. The trend continued during the next five year plans and by 2010 eleven cooperative sugar mills were in operation in



Karnataka out of total 57 sugar mills. The cooperative sector constitutes about 19 % of the total number of sugar mills in Karnataka.

ORIGIN OF SUGAR INDUSTRY IN INDIA

In India sugarcane has been known from the earliest times even before the Christian era and the ancient civilization. There are considerable historical, linguistic and botanical evidences to prove that India is the home of the thin glass of cane which was in cultivation in the Indo-Gangetic plains. The plants is mentioned in one of oldest and most sacred book of the Hindus, the 'Atharvaveda'. The institute of Manu and the Medical treatises of Charaka and Sushruta make mention of sugarcane, Sharkara, a Sanskrit word from which names of sugar and sugarcane are-derived, is a linguistic evidence of Indian origin, meaning a new crop from the east". The Sanskrit word for sugarcane used in Atharvaveda is "Ikshu". This word is linked with Ikshvaku, Scn of Manu. The word Ikshu has now become 'Ikh' in Hindu, which is specific for the thir hardy' barberi sugarcane".

There is evidence of white sugar Manu feature in India during the 17th century. Records show that Dutch Merchants used to ship the Bengal. Sugar from Machali Pattnam as early as 1636 and both white sugar candy were being exported from Surat early in the 17th century. India exported 7184 tonned sugar England in 1835-36. It is also record that during the period one-third consumption of sugar in England was met by the India. The first sugar factory in India was, established in the year 1784 at sook sugar in Uttar Pradesh, which was privately owned.

The development of modern sugar industry may be said to have. Started from 1899 when the Government of India imposed duties on boundary-fed sugar. As a result of the changes modern sugar factories were started in North India by about 1903. The industry moved towards any protection, was oriented in 1931. India was importing 5, 19,525 tonnes of sugar, mostly from Java under protection. The industry made tremendous progress during the first 6 years and has made gigantic strides during the last 50 years.

GROWTH OF SUGAR INDUSTRY IN INDIA:

Table 2 provides data on the cane crushed and sugar produced by sugar mills in India during 1930-31 to 2010-2011. The data clearly indicate that the number of sugar industries increased with diminishing rate during 1930-31 to 1950-51. The total numbers of 29, accounting for only 1.2% of the total and 138, accounting for 5.6% of the total sugar industries were working in 1930-31 and 1950-51 respectively. However, the number of sugar industries rapidly increased with increasing rates during 1960-61 to 2010-2011. The total numbers of 174, accounting for 7.4% of the total and 651, accounting for 26.2% of the total sugar industries were working in 1960-61 and 2010-2011 respectively. In other words numbers of sugar mills are 3.75 times higher in post independence period. This implies that the growth rate of sugar industries was found to be quite significant in post-independence period (after 1950-51) as compared to pre-independence period (before 1950-51). Similar trend, by and large was also observed in respect of daily crushing capacity and cane crushed both in pre and post-independence period. However, in the case of sugar production the proportion of sugar production was



significantly higher in post-independence period as compared to pre-independence period, accounting for 99.1 and 0.9, respectively.

Table -1
Sugar production contribution (%) of Major states in India

Sl.No.	State	
1	Maharashtra -	34.09%
2	Uttar Pradesh	26.47%
3	Karnataka	14.70%
4	Tamil Nadu	9.03%
5	Andhra Pradesh	4.31%
6	Gujarat	3.80%
7	Haryana	1.87%
8	Bihar	1.71%
9	Panjab	1.48%
10	Uttarakhand	1.26%
11	Other States	1.29%

Sources: Sugar statistics India

Sugar Production by Major State
2013-14 to 2014-15

Sl.No.	State	2013-14	2014-15
1	Maharastra -	77.2	104.37
2	Uttar Pradesh	65.08	70.8
3	Karnataka	41.19	48.78
4	Tamil Nadu	11.50	9.8
5	Gujarat	11.75	11.36

Source: ISMA – Indian sugar Mills Association

Table 2
Cane crushed and Sugar Produced by Sugar Mills in India
1930-31 to 2010-2011

Year	No. of Sugar mills	Daily crushing capacity (tonnes)	Cane crushed (000 tonnes)	Sugar production (000 tonnes)
1930-31	29 (1.2)	248(1.9)	1339(0.2)	120(0.1)
1940-41	148 (6.0)	750(5.7)	11492(1.8)	1113(0.4)
1950-51	138(5.6)	873(6.6)	11147(1.7)	1118(0.4)
1960-61	174(7.0)	1172(8.9)	31021(4.8)	3021(1.1)
1970-71	215(8.7)	1394(10.6)	38205(6.0)	3740(1.4)
1980-81	315(12.7)	1718(13.10)	51584(8.1)	5148(1.9)
1990-91	385(15.5)	2088(15.9)	122338(19.1)	12047(4.4)
2000-01	428(17.2)	2223(16.9)	147527 (23.1)	15721(5.8)
2010-11	651(26.2)	2672(20.3)	225000(35.2)	230245(84.6)
Total	2483 (100.00)	13138(100.00)	639653(100.00)	272273(100.00)

Note: Figures in brackets indicate percentage.

Source: Statistical Abstract of India, Various Issues.

During the pre-independence period the growth of sugar industry gradually threw up some problems. These related mainly due-to lack of .planning in the expansion of the sugar industry. Similarly, lack of proper and planned utilization of its by products, especially the production of power alcohol was considered to be a major shortcoming of the sugar industry. While, during the post-independence period, the significant growth was found due to the implementation of Five year plans for .general economic development, the sugar industry too received considerable support. As a part of the programmes sugar industry, which earlier was controlled by State Governments, came under the control of the central Government (1952). As .a first step towards rationalization of the sugar industry, licensing policy was introduced under the provisions of Industries Act (1951).

At present, India has become the fourth major sugar producing country in the world. The first three being the USSR, Brazil and Cuba. Sugar industry in terms of net value added by manufacture. It has total capital investment of over Rs. 2700 crores. It employs nearly 6.25 lakhs of workers directly and creates an indirect employment for 52millions coming from sugarcane cultivators, distributors, channels and subsidiary industries. It is also a major contributor to the central and state excise revenue.

GROWTH OF SUGAR INDUSTRY IN KARNATAKA:

Karnataka is one of the prosperous states in terms of agricultural economy and agro-based industrial activities. Karnataka is the third rank in sugar industry in India. Its share in total sugar industries in India is 14.70 percent.

Table 3 provides the data on growth of sugar industries in Karnataka during 2000-01 to 2010-2011. The data clearly reveal that the number of sugar mills were 37 accounting for 7.8% only during the year 2000-01. Their number increased to 55, accounting for 115% of the total in the year 2009-10. In other words the number of sugar mill is 1.49 times higher in the year 2009-10 as compared to the year 2000-2001. Similarly, the production

of sugar was 16.20 lakh tonnes accounting for 9.5% of the total sugar production in 2000-01. It has been increased to 22.52 lakh tones accounting for 13.2% of the total sugar production during the year 2009-10. In other words production of the sugar is 1.39 times higher in the year 2009-10 as compared to the year 2000-01.

Table-3
Growth of Sugar industry in Karnataka- 2000-01 to 2010-11

Year	No. of sugar Mills	Sugar Production (in lakh tonnes)
2000-2001	37	16.20
2001-2002	44	15.19
2002-2003	44	14.64
2003-2004	44	15.32
2004-2005	47	16.09
2005-2006	49	17.08
2006-2007	51	17.03
2007-2008	53	18.05
2008-2009	53	19.00
2009-2010	55	22.52
2010-2011	57	22.62
Total	534	193.77

Source: sugar studies Technological Transition through the Decades, by Mangal Singh, Raj Printers, August 14, 2003, p-146.

Out of 57 sugar factories 11 sugar factories are under co-operative management and 46 sugar factories are under private / public / joint, management. The sugar industry in Karnataka is providing direct employment to about 27520 persons in addition to a very large number of workers engaged in sugarcane growing and other related occupations. It is estimated that the government has been getting direct and indirect revenue to the extent of Rs. 90 crores a year. Today, sugarcane is considered as highly remunerative cash crop as compared to other crops. Hence, large number of farmers are going in favour of sugarcane cultivation in the State. In south this crop is mainly based on canal irrigation, while in the North, it is based on lift and well irrigation. As a result, a good number of sugar factories have been established in Karnataka State.

Table-4
Number of Sugar Mills in Karnataka (2009-10)

Sector	No. of Mills
Public Sector	03
Private Sector	43
Cooperative Sector	11
Total	57

Source: Annual Reports, KSI



Table 5
Number of Cooperative sugar mills in Karnataka during the last ten years.

Year	Co-operative	Total	%
1998-1999	18	33	54.54
1999-2000	18	34	52.94
2000-2001	18	35	51.42
2001-2002	18	36	50.00
2002-2003	19	36	52.77
2003-2004	16	35	45.71
2004-2005	16	37	43.24
2005-2006	16	39	41.02
2006-2007	15	37	31.91
2007-2008	13	51	25.49
2008-2009	12	50	24.00
2009-2010	12	54	22.22
2010-2011	11	57	19.30

Source: Cooperative sugar, March 2010-11.

Table 5 clearly indicates the decreasing trend in establishing the cooperative sugar mills in Karnataka. After 2002-03, many cooperative sugar mills are handed over to private managements as they were under heavy loss.

Table - 6
Production capacity and utilization of capacity during the last six years

Year	Capacity (In Lakh tones)		Utilization (%)	
	Cooperative	Total	Cooperative	Total
2005-06	5.8473	15.4364	101.5	125.9
2006-07	5.8473	16.9840	145.9	156.8
2007-08	5.8473	17.6570	117.6	164.3
2008-09	5.8473	19.4746	59.3	84.8
2009-10	6.1839	20.4844	97.2	124.9
2010-11	6.9832	20.5995	97.5	125.1

Source: Cooperative sugar, June 2011

The above figure shows that during 2006-07 there was a maximum utilization of installed capacity in cooperative sector due to availability of sugarcane. Even then in all these years cooperative sector has fallen behind the private sector.



Table - 7
Sugar production during the year 2008-09, 2009-10 & 2010-11

Sector	Sugar Produced (in MT)		
	2008-09	2009-10	2010-11
Public Sector	15,120 (0.94%)	10,140 (0.44%)	82,541 (2.26%)
Cooperative Sector	3, 75,802 (23.46%)	6, 57,906 (28.79%)	7, 24,261 (19.85%)
Private Sector	12, 11,100 (75.6%)	16, 17,291 (70.77%)	28, 41,252 (77.88%)
Total	16,02,022	22,85,337	36,48,054

The sugar produced by the cooperative mills in 2010-11 is approximately 20% of the total production. During this year the average % recovery in case of cooperative sugar mills is approximately same as that of private mills.

RESULTS AND DISCUSSION

Sugar industry contains three important factors viz., cane cultivators, sugar manufactures and consumers. The cane cultivators form an important pressure group and also the sugar manufactures. The interests of the consumers are taken care of by the Government through various regulations and controls. It is generally witnessed that sugar industry is often affected by either over production or under production almost regularly. The sugar industry in the Karnataka state have been faring certain problems which require a re-thinking from various points of view.

a) Low yield of sugar Cane:

The production of sugar depends upon the quantity and quality of cane available to sugar factories. Hence supply of adequate quantity of high quality sugar cane at an economic price is much importance. The problem of low yield of sugar cane is the result of out dated methods of cultivation, non-availability of suitable varieties, inadequate application of chemical fertilizers, manures, pesticides, lack of sufficient irrigation facilities and non-availability disease free cane seed.

b) Chronic instability:

It is one of the serious problems faced by sugar industry. There has been an expansion and contraction in the production of sugarcane over short periods, resulting in wide spread fluctuations in prices of sugar cane leading to difficulties on the part of producers. Both natural and manmade causes are held responsible for this chronic instability

c) Low Price of Sugar cane:

A sugar factory in Karnataka were paying cane prices on the basis of their technical and financial performance or on the basis of weight, does not give any encouragement to the cultivators to grow better variety

of cane with higher recovery. This system of payment of cane price is discouraging to cultivators who grow inferior quality of sugarcane.

d) Problem of Harvesting and Transportation:

Some sugar factories are experiencing, harvesting problem due to non-availability of labor during the season, while transportation of cane from the farms to the factory gates the sugar industries has to face certain problems. There is shortage of labour force specialty during harvesting season. Many labor contractors happen to earn more money by supplying required labour force for harvesting and transportation of cane. Several times the agreements made between the factories and labour contractors have been breached merely for the sake of obtaining higher commissions on the part of contractors. During such situations, the smooth working of sugar factories had been adversely affected date of distorted harvesting and transportation of cane.

e) Higher Cost of Production:

One more basic factor affecting the sugar industry is the higher cost of inputs it has been estimated that prices of sugar cane accounted for nearly 70 per cent of the cost of sugar followed by Government taxes, sales tax, income tax, excise duties which constituted about 20 per cent of sugar. Other manufacturing costs are cost of storage, parking, fuel and labour which account for nearly 10 percent of the total cost of Production of sugar.

f) Delay in Payment of Cane Price:

Since 1981-82 seasons, the sugar industry has come up with the problem of liquidity arising from the huge existing Sugar stock. Since the commercial banks only partly met the requirement of funds of industry for supporting such huge stocks, the liquidity position of the industry was considerably strained. This has resulted in a steep rise in the volume of arrears to be paid to the cultivators.

g) Small and Uneconomic Size of Sugar Plants:

The uneconomic size of plant and obsolescence of plant and machinery are some of the problems of sugar industry. The technologies adopted in many of the sugar factories at present fall / roughly. Ruse these plants were set up long back' The sugar in the following age groups: Upto years 3 factories; Between 6 to 15 years 12 factories; Between 16 to 25 years 11 factories; Between 26 to 35 years 7 factories and more than 35 years 22 factories. It can be observed from the above that practically half. Of the sugar factories are more than 25 years old. The physical condition of the refectories is very poor. Resulting in high time and loss of capacity.

h) Slow Technological Transfer:

Modern Cultivation practices, better cane Varieties and protection measures developed by constant effort of research and experimental .stations for particular regions and conditions for take much time to reach the cane



cultivators. The extension services for transmitting the latest developments from laboratories to land were considerably poor and insufficient. The slow transfer of technology prevents the cultivators from obtaining maximum advantage from the research and experiments carried out. Lack of district contact between sugar factories and the cane cultivators has been another vital factor which is adversely affecting the development activities.

i) Under Utilization of Bye-Products:

The optimum development of any industry is generally judged by the efficiency of civilization of its by-products (Biogases, Molasses and Press-Mud). It is quite distressing to note that attention has not been given to the utilization of by-products in the best possible manner by the sugar industry in the state.

DIVERSIFICATION OF SUGAR INDUSTRY:

Diversification of sugar industry has substantial scope in 1) The production of raw sugar, white sugar, plantation of white sugar, amorphous sugar, liquid sugar, glucose and fructose syrup. 2) Alcohol Production 3) Production of animal fodder 4) Production of Pulp and Paper 5) Production of agglomerated products 6) Production of fuels 7) The generation of electric power and steam for raw sugar production. Sugar cane processing produces cane sugar from sugar cane (sucrose) other products of the processing include biogases, molasses and filter cake. Bagasse, the residual dry fiber of the cane after the cane juice has been extracted, is used for several purposes.

- a) Fuel for the boiler
- b) Production of paper, paperboard products and reconstituted panel board
- c) Agricultural mulch
- d) As raw material for production of chemicals

Molasses is produced in two forms; black syrup that is not edible and syrup that is edible. Black syrup molasses is used primarily as an animal feed additive but also is used to produce ethanol, compressed yeasts, citric acid and rum.

CHEMICAL AND BIOCHEMICAL DEVELOPMENT OF CANE SUGAR BYPRODUCTS:

Most of the chemical firms have based their production mainly on petro chemistry while other alternatives like those offered by sugarcane have received much less attention. The economical causes for this situation are expected to change in the future. Considering all these sources of different possible alternatives for the production of organic and especially chemicals and related products could be mentioned. Biotechnologies of second and third generation have made available conventional and new technologies for the production of amino acids, vitamins, organic acids, solvents, microbial polymers, proteins for human and animal consumption, enzymes for industrial and such microbiological processes as silage, biologic treatments of lignocellulose residues, bio pulping and bio bleaching processes, anaerobic digestion of waste streams and other alternatives. In addition more sophisticated technologies are available for their application in the pharmaceutical industry. It may be considered that all



sugarcane by products could be used as substrates for liquid or solid states fermentation opening a wide range of possibilities for production based on biochemical process. (O Almazan, L.Gonzalez and L.Gulvez ; 1998).

ALTERNATIVES FOR BYPRODUCT DIVERSIFICATION:

A proper diversification approach could lead to widen broadly the horizon for sugarcane exploitation. The alternatives are to be selected with the following suggestions

- A. Diversification alternatives must be selected with high ratios of selling price to cost of intermediates or byproducts used as raw materials
- B. For development of byproducts cane varieties should have high fiber content and short development time up to maximum sugar content for fermentation technologies.
- C. Whenever conditions allows, manufacturer of byproducts should derive from integral processes of energy balance and technology
- D. Closed processing cycles should be adopted in order to make use of most wastes, changing them in to useful products while recovering for recycling most of the water and hence decreasing the quantity of fresh water used and avoiding pollution
- E. Cogeneration and efficient use of steam are the two approaches in the efficient use of energy in sugar processing. The latter is more significant when surplus bagasse is required
- F. Byproducts manufacture generates wastes which may increase pollution levels. This can be controlled by adequate use and reuse of process water in addition to the application of the necessary treatments

It can be concluded that the selection of alternatives should consider, 1) Selection of those showing attractive economical results 2) Integral layouts of involved technologies 3) Efficient use of energy 4) Flexible economy of scale 5) Priority to animal feeding 6) Non pollution of the environment.

SUGGESTIONS:

The Suggestions offered her easement for putting the sugar industry on a stable footing so that the sugar industry may grow at a faster rate than at present and able to face the challenges of the future with confidence.

1. The area under Sugarcane cultivation should be regulated to meet the needs of the sugar co-operatives. The cane cultivators should be educated to enrich their knowledge of cultivation of sugar cane on modern lines.
2. The best policy must be formulated in such a way that it should protect the overall efficiency in cane cultivation and stability in sugar industry.
3. Sugarcane prices should be fixed taking into account cost of production of Sugarcane, return to the growers from alternate crops and general trend of prices of agricultural commodities.
4. In order to overcome harvesting and transportation problem, proper varietal mix of early, mid and late maturing varieties should be adopted by the factories. It will enable them to some extent, to harvest cane during the months of October / November when the labour is relatively free. There should be direct



relationship between the farmers and factories for ensuring maturity wise harvesting and transportation of cane from the fields to the factories on an efficient manner for attaining higher recoveries.

5. The efforts should be made to minimize cost of maintenance of the plant and machinery during the crushing season and over-hauling the same during the off Season by planning and scheduling the jobs, fixing norms for each cost center.
6. Efforts have to be made for increasing the capacity of the secular factories either by expansion or by merging smaller units so as to make them economically viable.
7. There is an urgent need to - encourage investment in expansion and modernization of existing sugar factories rather than making fresh investment on the new sugar factories. So the licensing policy about the sugar industry should be suitably modified.

Sugar industry is not only the second largest traditional industry but also the largest agro-based organized industry in India. India is the biggest sugar producer in the world. Nowhere else i[-re interaction between the raw material suppliers and the industry is so complete as in sugar production (Gehlawal, 1990)sugar industry in India occupies as distinctive position in the economic and social fabric of the economy. It is playing a pivotal role especially in the upliftment of the rural economy. Nearly.64% of the country's working population is dependent on agriculture and very significant portion of its national income comes from agriculture. (Biradar, Patil, 1990).In addition, the earnings of an important section of the agricultural population depend o1 the growth and prosperity of sugar industry, Agriculture development followed by rural development is therefore, need of-the hour io boost the national economy. Sugar industry is such an industry located in rural area and has a positive healthy relationship with the rural masses.

CONCLUSIONS:

In the light of the findings of the present study some conclusions can be drawn and important ones are mentioned below.

1. Sugar and Co-operative sugar industries are not evenly distributed among all the sugarcane growing district of Karnataka State. Hence, there is a need to establish sugar cooperatives in these areas so that the farmers and the community can harvest the benefits to the greater extent.
2. In most of the Sugar and Co-operative sugar sugar mills, there is under utilization of capacity observed and this has led to the heavy debt which has adversely affected the performance of these mills. Hence adequate measures are necessary to utilize the capacity to the full extent.
3. Modern technology has to be adopted for-the manufacture of sugar so that the efficiency of Sugar and Co-operative sugar mills can be increased which will ultimately lead to reduction in cost of production of sugar.
4. Provisions are to be made for proper utilization of valuable by products. A power generation plant and a distillery along with compost yard will be an ideal sugar complex with zero waste generation.
5. There should be proper checks and strict measures to be implemented to check misappropriation of funds, which is a measure cause for the poor performance of many Sugar and Co-operative sugar mills.



6. Government policy towards sugar cane and sugar pricing should be liberalized and should be more consistent.
7. Modern Human resource development techniques are to be inculcated by the managements of Sugar and Co-operative sugar mills, so that proper trained man power is made available to run these industries.
8. The measure cause for the poor performance of most of the sugar and co-operative sugar mills is the lack of sense of belonging among the managing committee members. It is the attitude and morality of the people involved the management which can only make these sugar cooperatives to perform better and flourish. The members of the sugar cooperatives should ensure that people with good knowledge and high moral character should be made chairman, directors and top office bearers.

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