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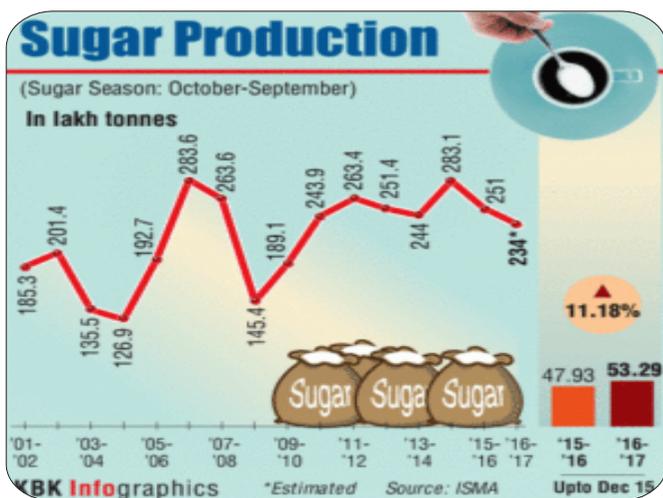


IMPACT OF THE GOVERNMENT POLICY ON THE COST OF SUGAR PRODUCTION



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ABSTRACT

A proper analysis of the costs enables any industrial establishment, to detect all the elements of waste, in different processes of production. It provides information to the management, on the basis of which they can check and control, day to day operations of the organization. Since the adoption of new economic policy, the sugar factories in India have started showing the cost consciousness. They are being helped and guided by the Indian Sugar Mills Association, National Federation of Cooperative Sugar Factories, Industrial Finance Corporation and State Cooperative Banks.

However, none of them have insisted the sugar mills, to employ a qualified cost accountant for the purpose. Some efforts in maintaining proper cost records and cost control are highly necessary. Therefore, in the absence of proper cost accounting system, one has to draw the data from the financial accounting system, to understand the cost structure, as revealed by the financial accounting system, may not reconcile with the cost structure of these sugar mills.

KEYWORDS: Government Policy, Industry and Cooperative Sugar

INTRODUCTION

☒ Sugarcane being a basic raw material in sugar production, constitutes its proportion of 70 per cent and above, in the total cost of sugar production. Hence, the policy of sugarcane price affects more, while ascertaining the total cost of sugar production. Even after the decontrol of sugar, the Government of India announces an increase in the statutory minimum price of sugarcane every year, the State Governments go a step further, in announcing much higher the State Advised Prices, year after year. Even after the lower courts have declared, that the State Advised Prices are irrational and illegal, in actual practice, this system continues due to the pressure exerted by the states. Under these circumstances, the cost of sugar production in India has increased sharply, which made the sugar export non-viable in the international market.

The Indian sugar industry is one of the few industries, which has been tightly controlled by the government. However, this control is now being gradually lifted, and in the light of the recommendations of the high powered committee set up under the chairmanship of Mr.B.B.Mahajan; he says, that the industry is likely to be completely liberalized shortly. In the event of total decontrol, the Mahajan Committee has recommended, that the release mechanism should continue as is in currently. The monthly release mechanism forms an essential part of the post decontrol policy, where a commodity is produced in a period of 5-6 months, but sold over a period of 12-14 months. Out of the major sugar producers and consumers in the world, India enjoys a unique position of closed market, where 95 per cent of its consumption is being met from the internal production. The internal trade of four lakh metric tonnes per month in the eighties has grown up to almost 13 lakh metric tonnes per month, currently. This is likely to increase, nearly 20 lakh metric tonnes per month. When the sugar is completely decontrolled with such a large consumption, it is essential to have stability in price, and this can only be achieved by having an effective control over the cost of sugar production in the country. The main object of studying the cost behaviour, is to obtain an insight into the financial position of sugar factories in the Gulbarga District. These sugar industries are located, in Gulbarga District. In order to judge the financial soundness of the sugar industries, it is necessary to analyze the cost structure and to locate the major cost factors, which are responsible for continuous losses. Therefore, the present study proposes to consider the two important aspects i.e., (i) to find out the cost trends of the sugar industries, which are located in Gulbarga district and (ii) to ascertain the impact of each cost component in the total cost of sugar production. While studying the cost trends of these sugar industries, the net cost of sugar manufacturing is arrived at, on the basis of financial statements. And hence, the different components of costs have been grouped under the following major heads viz.,

- Percentage share of cost of sugarcane in the total cost of sugar production.
- Percentage share of direct wages in the total cost of sugar production.
- Percentage share of manufacturing expenses in the total cost of sugar production and
- Total cost of sugar production.

In order to find out the changes in the above cost components during the period of study, it is necessary to judge the profitability of these sugar industries. It is also essential, to find out the reasons for the profitability or otherwise. The reasons for profit and losses may be grouped under two heads e.g.

INTERNAL FACTORS AND EXTERNAL FACTORS

External factors are beyond the control of the sugar industries. Therefore, it is necessary to concentrate more on the internal factors, which are responsible for the higher manufacturing costs. Therefore, it would be more proper, to ascertain the contribution of each cost component, in the total cost of sugar manufacturing, in terms of the relative weights.

COST OF SUGARCANE

As the cost of sugarcane is a major cost component, which constitutes 70 per cent and above, in the total cost of sugar production. Therefore, the price paid for the sugarcane is treated as the most dominant factor, in the cost of sugar production. The fixation of sugarcane price is affected by a number of reasons e.g.,

- Sugar is a seasonal industry.
- Sugarcane is a perishable commodity.
- Sugar is declared as an essential commodity, and should be offered to common man, at a

reasonable price, throughout the year.

- ☒ Central Government is involved in the fixation of minimum statutory sugarcane price.
- ☒ State advised sugarcane prices are over and above of the statutory minimum prices, decided by the Central Government.

SUGAR POLICY

Since last 50-55 years, the policy of the Government towards the sugar industry has been directed, towards the attainment of following important objectives.

- ☒ Assuming fair price for sugarcane to the cultivators.
- ☒ Regulating the development of sugar industry.
- ☒ Ensuring adequate cane supplies.
- ☒ To protect the interest of consumers and
- ☒ To encourage sugar export for earning foreign exchange

Though the Government of India had adopted a new economic policy since 1991, there was not any drastic change in the sugar policy. The sugar was completely a controlled industry. But since last one year, there was a partial decontrol of the sugar industry. Now, there is no levy quota of sugar, but earlier the mills were required to sell their sugar for levy 20 per cent, below the cost of sugar production. It had affected the economic health of the sugar industry. At present, there is no total decontrol of this industry, because, still the fixation of statutory minimum sugarcane price and regulation of the sale of sugar, are in the hands of the Central Government. Naturally, all these factors have affected the growth, as well as the economy of the sugar industry. Therefore, while studying the cost trends of the sugar industry, it is necessary to keep in mind all these aspects, clearly.

MAJOR COMPONENTS OF THE COST OF SUGAR PRODUCTION

The total cost of sugar production is divided into the following cost components e.g.

- ☒ Per cent share of the cost of sugarcane to the total cost of sugar production.
- ☒ Per cent share of the direct wages to the total cost of sugar production.
- ☒ Per cent share of the manufacturing cost to the total cost of sugar production.

However, this study comprises of each and every individual cost with a detailed analysis, by using appropriate statistical tools.

RAW MATERIAL COST

Production of every product requires some form of basic materials. Materials constitute the substances or the essential parts, of which product is made. Materials form an important part of the cost of product and, therefore, proper control over materials is necessary, from the time, orders are placed with the suppliers, till they are actually consumed in plant and office operation, or have been sold, as merchandise. As efficient system of materials control will lead to a significant reduction in the production cost, control over materials is also necessary, to assure a steady supply of each item of materials. In the absence of quantity-on-hand information regarding each item, there is a constant danger of materials being stored in, too small a quantity, which may result in heavy loss, consequent upon stopping of the whole assembly line or in too large a quantity, resulting in serious obsolescence losses.

Table-1: Comparison of raw material cost in / tonne of sugar industry wise

Sugar industry	YEAR									MEAN	S.D	C.V	AGR %	CAGR %
	2004	2005	2006	2007	2008	2009	2010	2011	2012					
Bhusnoor Sugar Factory	8415.63	10196.84	10088.43	26916.92	26916.46	12627.94	18366.17	24823.41	27492.91	19343.52	9610.33	49.68	28.20	13.46
Renuka Sugar factor	9996.40	12009.79	7242.76	10766.90	27943.77	23189.53	14394.12	14359.70	16360.47	15140.38	6606.17	43.63	15.55	8.05

Source: Annual Report of both mills.

From the table 1, it is seen, that the Bhusnoor sugar industry sugar mills average raw material cost per tonne of sugar is 19343.52 per year, with a C.V. of 49.68 per cent, whereas, in the case of cooperative sugar mills is 15140.38 with a C.V of 43.63 per cent, both of which are lower than the Bhusnoor sugar factory. Also, it is seen, that the AGR, which measures the growth year on year basis, shows, that the growth rate is 28.20 per cent in the case of Bhusnoor sugar factory, which is higher, compared to a 15.55 per cent growth attained in the raw material costs, in the case of Renuka Sugar Industry. However, the CAGR, which measures the overall growth compounded during the study period indicates, that the growth rate of raw material cost in the case of Bhusnoor sugar industry sugar mills is 13.46 per cent, which is more than the Renuka sugar industry, which has a CAGR of 8.05 per cent. The reasons for such differences in the sugar industry as well as among the two industries may be attributed as follows. For the higher cost of raw materials, the reasons may be that the sugarcane would have been taken from long distance, the crushing days may be more, and for want of cane, the industry would have paid an extra amount. For the lower cost of raw materials, the reasons may be, the distance covered would be short distance, the sugarcane crushed would be of very less amount, supply of cane may be more and in time, due to severe drought, the farmers may voluntarily come forward to give cane at reduced price. CAGR is more in bhusnoor sugar factory and hence, we can say, cost maintenance is better in Bhusnoor sugar industry sugar mills.

Table-2: Comparison of raw material cost between Bhusnoor Sugar Industry and Cooperative Sugar Mills during the study period in/ tonne of sugar: year-wise

Years	Sugar Industries				Total	
	Bhusnoor Sugar Industry		Renuka sugar Industry		Mean	S.D.
	Mean	S.D.	Mean	S.D.		
2004	12097.021	7716.489	9934.290	345.709	11015.655	5393.550
2005	12241.586	7168.357	9036.229	1221.228	10638.907	5235.994
2006	12800.580	8043.746	7651.366	673.815	10225.973	6121.812
2007	21237.274	13107.883	9566.298	761.760	15401.786	10806.247
2008	19870.101	9257.851	13443.227	5902.803	16656.664	8201.931
2009	12347.008	4450.726	14087.969	3772.904	13217.489	4085.993
2010	12182.730	3655.918	12760.674	911.442	12471.702	2591.156
2011	19099.190	6584.909	13074.802	737.562	16086.996	5492.468
2012	20756.905	6637.967	13466.746	1252.558	17111.826	5955.424
Total Avg.	15848.044	8401.730	11446.845	3242.184	13647.444	6718.880

Source: Annual Report of both mills.

It is seen from the table 2, that during the study period, the Bhusnoor Sugar Industry have registered an average cost of raw materials of Rs.15848.044 and the Renuka sugar industry have registered an average cost of Rs.11446.845. Also it is seen, that except the year 2009 and 2010 in the remaining years, the cost of raw materials for the Bhusnoor sugar industry sugar mills is much higher than the cooperative sugar mill. In order to see, whether there exist significant differences between the Bhusnoor sugar industry and the Renuka sugar industry, as well as between the years, during the study period, the following hypothesis was framed and tested.

Figure-1: Comparison of raw material cost between Bhusnoor Sugar Industry and Cooperative Sugar Mills during the study period in/ tonne of sugar: year-wise

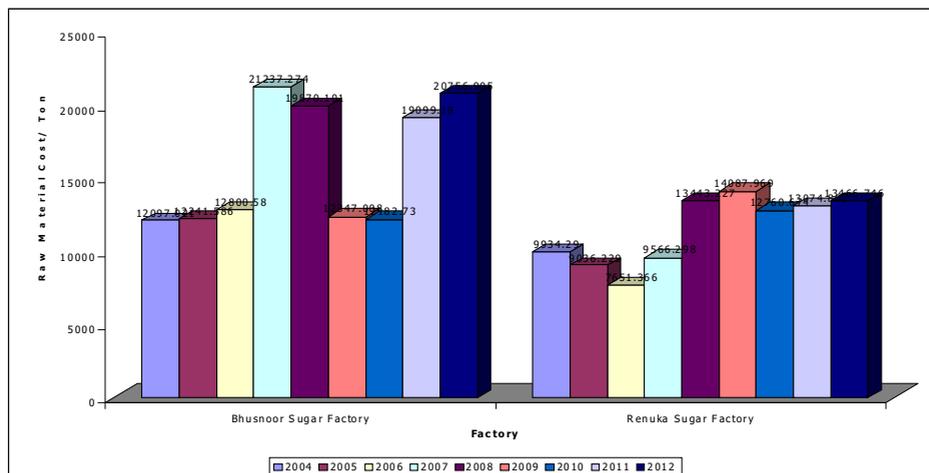


Table 3: Anova for Raw Material Cost (In Rs./Tonne)

Industries	Sum of Squares	df	Mean Square	F	Sig.	Table value
Between Industries	7339965.301	1	7339965.301	19.432	**	6.828
Between Years	9404306.145	8	8675538.268	3.307	**	2.647
Residual	8754529.330	134	35886227.831	-	-	-
Total	6455498800.777	143	45143348.257	-	-	-

Source: Computed

** Significant at one per cent level.

* Significant at five per cent level, NS- Not Significant

It is seen from the above table, that the calculated F-ratio value between the two factories of the Bhusnoor Sugar factory and the Renuka Sugar Factory is 19.432, which is higher than the table value of 6.828, at one per cent level of significance. Also the calculated F-ratio value compared between years is 3.307, which is found to be higher than the table value of 2.647, at one per cent level. Since the calculated values are higher than the table values of both - between both and between years, it can be inferred, that there exist significant differences in the raw materials cost between the Bhusnoor Sugar Factory and the Renuka Sugar Factory, as well as between years. Hence, the hypothesis is rejected.

Table-4: Comparison of Percentage of Share of Raw Materials Cost to the Total Cost: Mill-wise

Sugar industry	YEAR										Mean	S.D	C.V	AGR (%)	CAGR (%)
	2004	2005	2006	2007	2008	2009	2010	2011	2012						
Bhusnoor Sugar Factory	72.75	72.84	72.73	76.44	71.46	71.03	75.32	72.20	69.17	72.66	2.18	3.00	0.08	-0.39	
Renuka Sugar Factory	56.22	71.87	61.30	60.65	50.93	29.07	66.40	65.41	61.77	58.18	12.45	21.40	7.63	-0.80	

It is inferred from the table 4, that in the Bhusnoor factory, an average of 72.66 per cent amount is spent for raw materials and in the Renuka sugar industry an average of 58.18 per cent is incurred out of the total cost. The bhusnoor factory spent more for the raw materials than the Renuka sugar factory. The C.V. of the Bhusnoor Sugar industry is 3.00 per cent and the C.V. of the Renuka sugar industry is 21.40 per cent. The variations in the Bhusnoor Sugar industry are low, and hence the C.V. of it is very low.

Table-5: Comparison of Percentage Share of Raw Materials Cost to the Total Cost: Year-Wise

Year	Sugar industry				Total	
	Bhusnoor sugar factory		Renuka sugar factory		Mean	SD
	Mean	SD	Mean	SD		
2004	69.890	8.909	61.597	5.273	65.744	8.268
2005	70.799	5.874	69.343	4.859	70.071	5.262
2006	72.097	4.185	67.777	7.314	69.937	6.173
2007	69.402	7.040	53.963	9.053	61.682	11.178
2008	71.762	8.111	56.890	11.850	64.326	12.458
2009	73.487	8.437	63.841	15.232	68.664	12.896
2010	73.228	6.782	71.447	5.368	72.338	5.980
2011	71.929	7.417	73.980	5.310	72.955	6.321
2012	70.523	6.430	67.437	6.179	68.980	6.297
Total	71.457	6.869	65.142	10.224	68.300	9.239

Source: Computed

It is observed from the table 5, that the average per cent of share of raw materials cost to the total cost is 71.457 in the Bhusnoor Sugar industry and 65.142 in the Renuka sugar industry. Except for the year 2011, in all the years during the study period, percentage share of raw materials cost to the total cost is higher in the bhusnoor sugar factory when compared to the renuka sugar factory.

From the following ANOVA table, the calculated F-ratio value is 21.372, is greater than the table value (6.828), at one per cent level of significance between the industries. Also the calculated F-ratio value compared between years is 3.289, which is found to be higher than the table value of 2.647, at one per cent level of significance. Since the calculated values are higher than the table values of both between industry and between years, it can be inferred, that there exists significant difference, in the raw materials cost to the total cost, between the Bhusnoor sugar industry and the Renuka sugar industry, as well as between years. Hence, the hypothesis is rejected.

Table-6: Anova for Percent Share of Raw Materials Cost to the Total Cost

	Sum of Squares	Df	Mean Square	F	Sig.	Table value
Between Sugar Industry	1435.957	1	1435.957	21.372	**	6.828
Between Years	1768.069	8	221.009	3.289	**	2.647
Residual	9003.378	134	67.189	-	-	-
Total	12207.403	143	85.366	-	-	-

EMPLOYEE COST

The second element of cost of manufacturing a product is, labour. The role of labour in the process of production cannot be overlooked, in spite of the fact, that machines are being used on a vast scale, these days. The efficiency of production departments and success of a concern depend upon the utilization of labour force. Skill of labour helps in lowering down the cost of unit produced, besides raising the quantity and quality of the output. For conversion of materials into finished goods, human effort is needed; such human effort is called labour.

Labour can be direct as well as indirect. Employment and efficient utilization of labour are vital factors, which determine the cost and quality of an organization's products. This requires employment of efficient workers, proper recording of time taken by them in production, and accounting for the wages paid to them. Direct labour costs are specifically and conveniently traceable to specific products.

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Indirect labour employed for the purpose of carrying out tasks incidental to goods, or services provided, is indirect labour

From the table 7, it is noticed, that the average employee cost per tonne, in case of the Bhusnoor Sugar Factory is Rs.12.10.26, and in the Renuka sugar factory is Rs.4820.57. The C.V. for Bhusnoor Sugar Factory is 52.53 per cent, whereas for Renuka Sugar factory account for 122.34. The highest employee cost may be due to the following reasons:

- ☒ If the mill is situated in interior place, the labour should be brought.
- ☒ If the workers work on shift basis, the overtime workers will be paid more.
- ☒ The mills may be more labour intensive than capital intensive.
- ☒ The mills would have run for a long period.
- ☒ The employee may be new and may be employed on contract basis and for training those persons; the cost would have incurred high.
- ☒ If a particular employee is of special technical qualifications, he should be paid more.

The low employee cost may be due to the following reasons:

- ☒ The mills may be capital intensive
- ☒ The mills would have run for a short period
- ☒ Better cost management
- ☒ Availability of more labour at cheaper rate.
- ☒ Non-technical labourers may be available at cheaper rate.

The mean C.V. for the Bhusnoor Sugar Factory is 52.53 per cent and for the Renuka Sugar Factory is 11.32 per cent and the above reveals, that the cost variation in the Bhusnoor Sugar Factory is less, compared to the Renuka sugar mills. The C.A.G.R. for the Bhusnoor Sugar Mills is 14.35 per cent, while for the Renuka sugar mills it is 11.32 per cent. This shows that the Bhusnoor Sugar Mills try to bring down the employee cost.

Table-7: Comparison Of Employee Cost In Rs. / Tonne Of Sugar: Mill-Wise

Sugar industry	Year									MEAN	S.D	C.V	AGR %	CAGR %
	2004	2005	2006	2007	2008	2009	2010	2011	2012					
Bhusnoor Industry	536.78	586.73	630.71	1791.53	2081.88	876.82	893.11	1457.13	2037.66	1210.26	635.72	52.53	24.82	14.35
Renuka Sugar industry	2354.51	1491.99	1612.40	2011.51	7562.42	19759.41	2410.48	2624.20	3558.23	4820.57	5897.64	122.34	47.29	11.32

Source: Annual Report of both mills.

It is seen from the table 8, that during the study period, the Bhusnoor sugar mills have incurred an average cost of Rs.1213.092 for employee, and the Renuka sugar Industry have incurred an average cost of Rs.2038.885. The average employee cost is more in the Renuka Sugar Industry compared to the Bhusnoor sugar industry. Throughout the study period, the employee cost is more in the Renuka sugar Industry.

Table-8: Comparison of Employee Cost in Rs. / Tonne of Sugar: Year-Wise

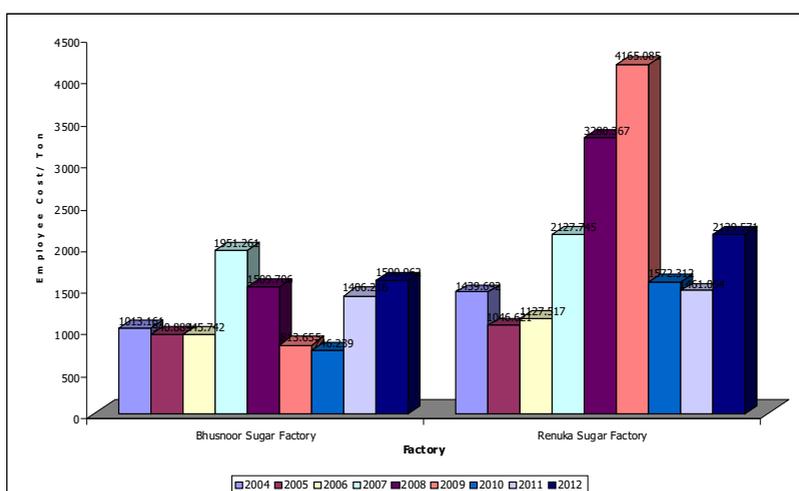
Year	Industry				Total	
	Bhusnoor sugar industry		Renuka sugar industry		Mean	S.D
	Mean	S.D	Mean	S.D		
2004	1013.161	500.197	1439.692	507.328	1226.427	534.214
2005	940.884	495.622	1046.621	351.514	993.753	418.660
2006	945.742	595.112	1127.517	333.964	1036.629	475.535
2007	1951.261	1376.925	2127.745	1169.708	2039.503	1237.566
2008	1509.706	644.009	3280.367	2321.659	2395.036	1882.815
2009	813.655	443.056	4165.085	6327.106	2489.370	4665.679
2010	746.239	258.889	1572.312	526.469	1159.275	585.317
2011	1406.216	595.007	1461.054	582.069	1433.635	569.321
2012	1590.962	565.429	2129.571	946.567	1860.267	802.924
TOTAL	1213.092	747.693	2038.885	2408.894	1625.988	1824.921

Table-9: Anova for Employee Cost (In Rs.)/Tonne

	Sum of squares	Df	Mean squares	F	Sig	Table value
Between Industry	49624.159	1	49624.159	6.061	**	5.828
Between Years	88471.961	8	48558.995	1.789	Ns	2.008
Residual	100214.960	134	45523.992	-	-	-

It is seen from the ANOVA table, that the calculated F-ratio value between the both of the Bhusnoor Sugar industry and the Renuka Sugar industry is 8.061, which is higher than the table value of 5.828, at one per cent level of significance. But, the calculated F-ratio value comparing between years is 1.789, which is found to be lower than the table value of 2.008, at five per cent level. Since the calculated F-ratio value is higher than the table value of between both only, it can be inferred, that there exist significant differences in the employee cost of the Bhusnoor sugar industry and the Renuka sugar industry only. Hence, the hypothesis is rejected with respect to differences between the Bhusnoor sugar industry and the cooperative sugar mills only. Since the calculated F-ratio value is less in comparing between years, we can infer, that there exists significant difference between years. Ho: There is no significant difference in the average of employee cost between the Bhusnoor sugar industry and the Renuka sugar industry, and between years.

Figure-2: Comparison of Employee Cost In Rs. / Tonne of Sugar: Year-Wise



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From the table 10, it is seen that the average mean of employees cost in the Bhusnoor Sugar industry is Rs.4.43 and in the cooperative mill is Rs.13.43 to the total cost. The amount spent for employees cost is more in the Renuka sugar industry, when compared with the Bhusnoor Sugar industry. The C.V. of the Bhusnoor Sugar industry and the Renuka sugar industry is 11.56 per cent and 33.02. The A.G.R. and C.A.G.R. of the Bhusnoor sugar industry and the Renuka sugar industry are 1.67;7.84 and 0.40;0.2.20 respectively. From A.G.R. and C.A.G.R. results, it is inferred, that out of the total cost, the amount spent for the employee is less in the Bhusnoor Sugar industry compared to the Renuka sugar industry. It may be due to the fact, that the Bhusnoor Sugar industry may be more capital intensive and the Renuka sugar industry may be labour intensive. The Bhusnoor Sugar industry may be equipped with the updated machines.

Table-10: Comparison of Percentage Share Of Employees Cost To The Total Cost: Industry Wise-Wise

Industry	Year									Mean	S.D	C.V	AGR (%)	CAGR (%)
	2004	2005	2006	2007	2008	2009	2010	2011	2012					
Bannari Amman	4.64	4.19	4.55	3.89	5.53	4.93	3.66	4.24	5.13	4.53	0.60	13.29	1.67	0.40
Renuka sugar industry	13.24	8.93	13.65	11.33	13.78	24.77	11.12	11.95	13.43	13.58	4.48	33.02	7.84	2.20

Table-11: Comparison of Percentage Share of Employees Cost to the Total Cost: Year-Wise

Year	Industry				Total	
	Bhusnoor sugar industry		Renuka sugar industry		Mean	S.D
	Mean	S.D	Mean	S.D		
2004	6.173	1.958	8.793	2.741	7.483	2.669
2005	5.578	1.573	7.931	2.278	6.755	2.248
2006	5.328	.791	9.931	2.787	7.630	3.093
2007	6.424	1.994	11.159	4.136	8.792	3.977
2008	6.015	2.308	12.274	4.485	9.144	4.724
2009	4.775	1.589	12.071	5.794	8.423	5.572
2010	4.498	1.069	8.630	2.270	6.564	2.737
2011	5.170	1.014	8.066	2.384	6.619	2.316
2012	5.520	1.403	10.266	3.252	7.897	3.445
Total	5.496	1.621	9.900	3.686	7.702	3.596

From the table 11, it is known, that the average per cent share of employees cost to the total cost is 5.496 in the Bhusnoor Sugar industry and in the Renuka sugar industry is 9.900. The percentage of employees cost to the total cost is higher in the Renuka sugar industry in all the years taken up for this study.

Table-12: Anova for Per Cent Share of Employees Cost to the Total Cost

	Sum of Squares	Df	Mean Square	F	Sig	Table Value
Between Industry	698.460	1	698.460	85.301	**	6.828
Between Years	115.910	8	14.489	1.873	Ns	2.008
Residual	1036.466	134	7.735	-	-	-
Total	1850.837	143	12.943	-	-	-

From the ANOVA table 12, the calculated F-ratio value between the industry of Bhusnoor sugar industry and cooperative sugar mills is 85.301, which is higher than the table value of 6.828, at one per cent level of significance. And between years, the calculated F-ratio value is 1.873, which is less than the table value of 2.008, at five per cent level of significance. Since the calculated value is higher between industry, it can be inferred, that there exist significant differences. And between years, the calculated value is less than the table value, and therefore, it can be inferred, that there exists no significant difference between years. Hence, the hypothesis is rejected between industry, and the hypothesis is accepted between years.

CONCLUSION:

Sugarcane being a basic raw material in sugar production, constitutes its proportion of 70 per cent and above, in the total cost of sugar production. Hence, the policy of sugarcane price affects more, while ascertaining the total cost of sugar production. Even after the decontrol of sugar, the Government of India announces an increase in the statutory minimum price of sugarcane every year, the State Governments go a step further, in announcing much higher the State Advised Prices, year after year. Even after the lower courts have declared, that the State Advised Prices are irrational and illegal, in actual practice, this system continues due to the pressure exerted by the states. Under these circumstances, the cost of sugar production in India has increased sharply, which made the sugar export non-viable in the international market.

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