

COMPARATIVE STUDY OF THE PERFORMANCE OF CO-OPERATIVE SUGAR FACTORIES IN SOUTH GUJARAT

***PARMAR, V. N.**

NAVSARI AGRICULTURAL UNIVERSITY
NAVSARI-386 450, GUJARAT, INDIA

**EMAIL: viralparmar0@gmail.com*

ABSTRACT

An attempt has been made in this study to analyze the various parameters of growth and performance of the selected co-operative sugar factories of South Gujarat region so as to identify the cause of their success or failure for suggesting appropriate measures of improvement. The five co-operative sugar factories were selected for study. The study was based on secondary data. The secondary data was available from the annual reports and official records of the respective sugar factories and other relevant aspects were obtained from various magazine and publications etc. The performance of the factories were studied for 13 years from 2001-02 to 2012-13 for growth rate, capacity utilization, sugar recovery and cane price paid by co-operative sugar factories. The study suggests that capacity utilization performance, machinery maintenance and financial management need to improve in case of the Maroli co-operative sugar factory. Harvesting and transport operation and sugar recovery percentage need to be enhanced especially in case of the Maroli co-operative sugar factory. All the factories need to take special efforts for increasing hectare yield of cane and production of adequate quantity and to supply good quality sugarcane cultivar in the operational area of the factory.

KEY WORDS: Cooperative factory, performance, sugar

INTRODUCTION

The sugar industry is the second largest agro industry in the country next to textiles. It occupies an important place in the rural economy of the country. This industry plays a dominant role in both agricultural as well as industrial development. They have symbiotic relationship with the rural masses and serve as catalytic agent for rural development. Gujarat produced 127.50 lakh tonnes of sugarcane covering an area of 2.02 lakh hectares and 63.1 t/ha productivity in the year 2012-13

(Anonymous, 2013). Of this, more than 90 per cent area and production of sugarcane was recorded in the South Gujarat region of Gujarat state. Sugarcane is the main cash crop of South Gujarat region. Gujarat state contributes 22 co-operative sugar factories (Anonymous, 2013). Among them, 15 co-operative sugar factories are in south Gujarat region. At present, there are 13 working sugar factories.

METHODOLOGY

Multi stage random sampling technique was followed for selection of sugar factories. For the selection of

sugar factories and other primary information and data were collected from the records of Director of Sugar, Ahmadabad. All the factories in the region were grouped according to the installed crushing capacity.

One sugar factory from each category according to crushing capacity was selected for detail study. There is only one sugar factory having installed crushing capacity of 10,000 tons / day i.e., Bardoli Co-operative Sugar. Only, Madhi Sugar having installed crushing capacity of 7000 tons/day. There are four co-operative sugar factories having crushing capacity of 5000 tones/day, among them, Gandevi co-operative sugar was selected randomly for the study. There is only one sugar factory which is having a crushing capacity of 3500 tones/day, i.e., Mahuva co-operative sugar factory. There are six co-operative sugar factories having crushing capacity of 2500 tones/day, among them, Maroli co-operative sugar factory was selected randomly for study purpose.

Looking to the number of sugar factories, time and resources at the disposal of the investigator, the study was restricted to all the sugar factories of the South Gujarat region only. The data were obtained from the annual reports and office records of the individual co-operative sugar factories. The data on factories which is not in

Percentage capacity utilization

$$\text{Capacity utilization I(\%)} = \frac{\text{Total cane crushed in a season} \times 100}{\text{Installed crushing capacity} \times 160}$$

$$\text{Capacity utilization II(\%)} = \frac{\text{Total cane crushed in a season} \times 100}{\text{Installed crushing capacity} \times \text{Actual days in the season}}$$

RESULTS AND DISCUSSION

Performance

The present section of this chapter is concerned with the study of performance of the selected co-

annual report will also be collected by personal contact with the respective M. D. and officers of the factories. The study covered crushing seasons of sugar factories for the ten years.

Growth and performance of the selected co-operative sugar factories

Growth of the various parameters of the selected co-operatives sugar factories was measured in respect of the following:

- (i) Total quantity of sugar crushed
- (ii) Total sugar produced
- (iii) Total area under sugarcane available for crushing

Time series data on the above-mentioned aspects were used for the purpose of analysis. Linear and compound growth rates were estimated for the period from 2000-01 to 2011-12.

The factors considered for judging the performance of the selected sugar factories were as under:

- (i) Percentage capacity utilization
- (ii) Percentage sugar recovery
- (iii) Per quintal cost of production of sugar, and
- (iv) Cane price paid to the farmers

The cost of production of sugar and the structure of total cost and returns of the sugar factories studied. This point can be made clear by estimating per quintal cost of production of sugar.

operative sugar factories in respect of the following parameters:

- 1. Percentage capacity utilization
- 2. Percentage sugar recovery
- 3. Cost of production of sugar/quintal

4.Cane price paid to the farmers

A comparison between the average values of performance exhibited by the selected co-operative sugar factories has been made to know whether the differences in their performance are significant or otherwise. The performance of all the sugar factories in the country is found to have high variations due to the incidence of the 'sugar cycle'.

Percentage capacity utilization

The capacity utilization is one of the most important factors determining the overall performance of a sugar factory. The under-utilization of installed capacity results into decline in production and increase in per quintal cost of production of sugar. It also results into wastage of the capital investment and thereby affects the overall good growth of the factory.

The data showed in Table 1 revealed that during 2001-02 to 2012-13, capacity utilization I of the Gandevi co-operative sugar factory was the highest (126.91 %) and the lowest of the Maroli co-operative sugar factory (74.19 %). The capacity utilization I for Bardoli, Madhi, and Mahuva sugar factories was 110.04, 100.02, and 111.60 per cent, respectively. The capacity utilization of 100 per cent is generally considered to be optimum. Therefore, the performance of the all the co-operative sugar factories was above the standard norm except Maroli co-operative sugar factory.

Average capacity utilization II of the Gandevi co-operative sugar factory was also found to be the highest (112.79 %) and the lowest for

Maroli sugar factory (77.88%). The capacity utilization II for Bardoli, Madhi and Mahuva sugar factories was 98.24, 93.82, and 103.52 per cent, respectively. In the case of Maroli co-operative sugar factory, the capacity utilization II was more than capacity utilization I, because the sugar factory's actual running days was less than 160 days.

From the study of average capacity utilization I and II, it is cleared that the better performance of Gandevi co-operative sugar factory in respect of capacity utilization I and II imparts a better position than the other co-operative sugar factories. The performance of the Maroli co-operative sugar factory was much below the standard norm, when measured through both the methods.

Percentage sugar recovery

After capacity utilization, sugar recovery is the next most important factor influencing the economic efficiency of a sugar factory. Both these factors act simultaneously to determine the cost of production of sugar and cane price payable to the cane growers.

Improvement in sugar recovery percentage reduces the per quintal cost of production of sugar. The variable cost is reduced as the same quantity of sugarcane produces more quantity of sugar. There is also less expenditure on chemicals and other inputs used in the production of the sugar. The per unit fixed cost is also reduced as it gets divided over more number of units of production. The percentage sugar recovery is calculated by following formula:

$$\text{Percentage sugar recovery} = \frac{\text{Total sugar produced}}{\text{Total cane crushed}} \times 100$$

The results presented in Table 2 denotes the sugar recovery percentage

observed in the Bardoli, Madhi, Gandevi, Mahuva and Maroli co-

operative sugar factory over the entire study period. It was 10.97, 10.73, 11.50, 10.77 and 10.03 per cent, respectively. To sum up, it was noted that, the position of the Gandevi co-operative sugar factory with respect to other factories was found superior because of the better post harvesting and transportation management of harvested sugarcane. Gandevi and Bardoli sugar factory managed vehicle (truck) at every 11 hours during harvesting so recovery losses was minimized (Nandkumar, 2011). This finding is supported by Hinge *et al.* (1989).

Cost of production of sugar

Per quintal cost of production of sugar bears an inverse relationship with the health and well-being of a sugar factory. It reflects collective results of performance of various departments of a factory. Income and profitability of a factory is severely hampered if the per quintal cost of production of sugar is excessively high. The Table 3 represents the performance of the selected sugar factories in respect of per quintal cost of production of sugar during the period from 2001-02 to 2012-13. The performance of the Gandevi co-operative sugar factory was found to be the best. The average per quintal cost of production of sugar, including the cost of cane, was 2133.10, 2134.18, 2135.52, 2111.44 and 2366.86 Rs./tone in case of the Bardoli, Madhi, Gandevi, Mahuva and the Maroli co-operative sugar factories, respectively. This indicates poor performance of the Maroli co-operative sugar factory in comparison to the other co-operative sugar factory. The Maroli sugar factory paid less cane price as compared with other factories yet the cost of sugar production was high during the study period. There was no much difference between the averages per quintal cost

of production of sugar, including the cost of cane. Average per quintal cost of production of sugar, excluding the cost of cane was 334.05, 423.83, 333.47, 443.40 and 683.19 Rs./tone in case of the Bardoli, Madhi, Gandevi, Mahuva and the Maroli co-operative sugar factories, respectively. In case of the Maroli co-operative sugar factory, the cost was higher than the other co-operative sugar factories. Similar result was found by Lakshmikantham (1979) for the state of Andhra Pradesh.

Cane price paid to the farmers

The cane price paid by a co-operative sugar factory is the ultimate indicator of its performance from the farmer view point. It is net result of the working results, management and ultimately financial position of a co-operative sugar factory. The co-operative sugar factories declare to pay a 'final cane price' to the growers, after taking into all production cost and income received from the sale of sugar. There is a practice of making certain deductions from final cane price declared by the factory for various reasons. Thus, the cane price paid to the cane growers equals 'final cane price' minus deductions. Higher deduction results in less cane price actually received by the cane growers. The data presented in Table 4 reveals that cane price paid by the selected co-operative sugar factories during the whole study period (2001-02 to 2012-13). The average cane price paid by the Gandevi co-operative sugar factory was the highest than other co-operative sugar factories. The cane price paid to farmers by Bardoli, Madhi, Gandevi, Mahuva and Maroli were 1941.33, 1806.33, 2008.50, 1842.33 and 1650.63 Rs./tone, respectively. Here also average differences of about 67 Rs. per tonne than next best price paid by Bardoli sugar prove the superior position of the

Gandevi co-operative sugar factory over other co-operative sugar factories. The Maroli sugar factory paid the lowest price as compared to other co-operative sugar factories indicates the poor performance of the Maroli sugar factory. Thus, the performance of the Gandevi co-operative sugar factory was superior to other selected co-operative sugar factories in respect of capacity utilization, sugar recovery, cost of production of sugar and cane price paid to the farmers. A study of average performance indicated that Gandevi sugar factory was in better position.

CONCLUSION

Average capacity utilization I during the period of 2001-02 to 2012-13, was also found to be the highest in case of Gandevi sugar factory (126.91 %) and the lowest in Maroli sugar factory (74.19 %). The average capacity utilization I of all other selected sugar factories was more than 100 per cent. In case of average capacity utilization II also found the highest in Gandevi sugar factory (112.79 %). It was the lowest of the Maroli sugar factory (77.88 %). The average capacity utilization II of Bardoli, Madhi and Mahuva sugar factories was almost around 100. The capacity utilization of 100 per cent is generally considered to be optimum. So the performance of Maroli sugar factory was much below than the standard norms and as compared to other sugar factories. The better performance of Gandevi sugar factory in respect of capacity utilization imparts a better position than the other co-operative sugar factories. Average sugar recovery percentage during the period of 2001-02 to 2012-13 of the Gandevi, Bardoli, Mahuva, Madhi and Maroli co-operative sugar factories were 11.50, 10.97, 10.77, 10.73 and 10.03 per cent, respectively. The

average sugar recovery percentage of the Gandevi co-operative sugar factory was found to be higher than the other co-operative sugar factories during. Noticed that, the average sugar recovery percentage of all the selected co-operative sugar factory has declined during the recent years. During the period from 2001-02 to 2012-13, the average per quintal cost of the production of sugar including cane cost was high in case of the Maroli co-operative sugar factory, indicated poor performance of the factory in comparison to the other co-operative sugar factories. Same trend was observed for average per quintal cost of production of sugar, excluding the cost of cane. The average cane price paid by the Bardoli, Madhi, Gandevi, Mahuva and the Maroli co-operative sugar factory were 1941.33, 1806.33, 2008.50, 1842.33 and 1650.33 Rs./tone, respectively, during the period from 2001-02 to 2012-13, it was highest in case of Gandevi sugar factory followed by Bardoli sugar factory.

REFERENCES

- Anonymous. (2013). Sugar India, Year Book, 2013. pp-81-92.
- Hinge, V. N.; Pawar, J. R.; Nawadkar, D. S. and Sale, D. L. (1989). Production performance of co-operative sugar units in Maharashtra. *Bharatiya Sugar*, **14** (12): 19-24.
- Lakshmikantham, M. (1979). On utilization of installed cane crushing capacity of some sugar factories in Andhra Pradesh. *Co-operative Sugar*, **11**(3): 135-139.
- Nandkumar, R. (2011). Recovery percentage of cane. A paper presented in Proc. of 10th Joint Conv. of STAI and DSTA, pp: 138-144.

Table 1: Average capacity utilization percentage during study period (2001-02 to 2012-13)

Sr. No.	Name of Factory	Capacity Utilization I	Capacity Utilization-II
1	Bardoli co-operative sugar factory	110.04	98.24
2	Madhi co-operative sugar factory	100.02	93.82
3	Gandevi co-operative sugar factory	126.91	112.79
4	Mahuva co-operative sugar factory	111.60	103.52
5	Maroli co-operative sugar factory	74.19	77.88

Table 2: Average sugar recovery percentage during study period (2001-02 to 2012-13)

Sr. No.	Name of Co-operative Sugar Factory	Average Sugar Recovery(%)
1	Bardoli co-operative sugar factory	10.97
2	Madhi co-operative sugar factory	10.73
3	Gandevi co-operative sugar factory	11.50
4	Mahuva co-operative sugar factory	10.77
5	Maroli co-operative sugar factory	10.03

Table 3: Average cost per quintal of production of sugar during study period (2001-02 to 2012-13)

Sr. No.	Name of Factory	Per Quintal Cost of Production (Rs/tonne)	
		Including Cost of Cane	Excluding Cost of Cane
1.	Bardoli co-operative sugar factory	2133.10	334.05
2.	Madhi co-operative sugar factory	2134.18	423.83
3.	Gandevi co-operative sugar factory	2135.52	333.47
4.	Mahuva co-operative sugar factory	2111.44	443.40
5.	Maroli co-operative sugar factory	2366.86	683.19

Table 4: Average cane price paid to farmers per tonne of sugarcane during study period (2001-02 to 2012-13)

Sr. No.	Name of Factory	Average Cane Price Paid (Rs. /tonne)
1.	Bardoli co-operative sugar factory	1941.33
2.	Madhi co-operative sugar factory	1806.33
3.	Gandevi co-operative sugar factory	2008.50
4.	Mahuva co-operative sugar factory	1842.33
5.	Maroli co-operative sugar factory	1650.63

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