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**ASSESSMENT OF CO-OPERATIONAL EFFICIENCY OF SUGAR CO-OPERATIVE DURING COOPERATIVE AND PRIVATE MANAGEMENT****Mrs. Kale Urmila Namdev****M.Com.M.Phil,NET ,Assi.Prof , DSG College Mohol(Solapur)**

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**ABSTRACT**

India is prominently an agrarian economy. Most of its population is dependent on agriculture and agroancillary activities. Agricultural and allied sectors' contribution in India's GDP is 183 US billion dollars which amounts to 17.2% of the total. Sugar industry is second largest agro processing industry in India. Maharashtra state is one of the major contributors of National Sugar Production whose sugar industry is dominated by cooperative sector. Since last decade this industry is paralyzed by various problems like price crash, operating inefficiency, and financial crises. Cooperative Sugar Factories (CSFs) are the only farmer owned enterprise that changed lives of crores of farmers that are now in deep trouble. They are becoming sick and inefficient. In changing economic environment for their survival these sick CSFs are leased out to private management. A pioneer experiment of such leasing out was done in the Maharashtra state in case of Ajara Taluka Shetakari Sahakari Sugar Factory Ltd. Gavase Taluka Ajara in the Kolhapur district. It had been handed over to private management for the five years from. 2004-05 to 2008-09. In current paper researchers tried to assess the operational efficiency of this particular factory during the period of five years before leasing out and five years after leasing out period i.e. 1999 – 2000 to 2003-04 (Cooperative Management period) and 2004-05 to 2008-09 (Private Management period). Assessment of operational efficiency was made by using seven key parameters of the sugar industry. These parameters are: Cane crushing, Sugar production, Gross season taken, Recovery, Capacity utilization, Reduced Mill Extraction (RME) and Cane price paid to the cane growers. To validate the hypothesis set, Students't'test is used. The study reveals the operational efficiency of private management is on the higher side in respect of Sugar Production, Recovery, RME, Capacity Utilization and Cane Price paid. Whereas in respect of cane crushing and gross season taken there is no significant difference during both periods. In a nutshell, operational efficiency of the factory during private management regime is higher than that during cooperative management regime



**KEYWORDS:** Operational Efficiency, Reduced Mill Extraction (RME), Recovery, Capacity Utilisation, Private Management.

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## 1. INTRODUCTION

The Indian sugar industry is the second largest agrobased industry in India after textile. It plays a crucial role in overall rural development of the country. It also has achieved a distinct place in world sugar industry. The total investment in the industry is over and above Rs.5000 billion and annual turnover is over Rs.700 billion. The domestic sugar industry is now influenced by cooperative sector because out of 626 sugar factories in the country 317 factories are in cooperative sector. The industry provides direct and indirect employment of 2 million people and 0.5 billion cane growers.

Out of 18 sugar producing states in India, Maharashtra is the largest. It contributes around 40% of national sugar production. The state industry is highly conquered by cooperative sector. At present out of 198 installed factories in the state, 165 factories are in cooperative sector. The state has installed capacity of 72.69 lakh tons. It crushes over and above 800 lakh M.T. sugar cane and produces 90 lakh M.T. of sugar. It has annual turnover of 1200 billion rupees and contributes 270 billion rupees to state and central exchequer.

## 2. REVIEW OF LITERATURE

**Attwood D.M and Baviskar B.S (June 1987)** in their research paper studied a set of highly successful cooperatives in Maharashtra state. They attempted to explain their success through comparative analysis by comparing these cooperative with private sugar factories and also by comparing them with other kinds of cooperatives. Interpretations presented by them hinge on a comparative analysis of how the informal network of interests and alliances within these organizations affect their formal operation.

**Chapman and Christy (1989)** the both researcher from Louisiana State University Agricultural Centre had completed a research to explore the relationship between the type of firm organization i.e. private versus cooperative and economic performance. They also showed its impact on the Louisiana cane sugar manufacturing industry. The objectives of their analysis were to provide a conceptual argument for evaluating the economic performance of alternative business organization i.e. *private versus cooperative*, to describe the organizational features of the Louisiana Cane Sugar Manufacturing Industry and to evaluate the economic performance of private and cooperatively owned sugar mills in Louisiana.

**Das Sanghmitra and Mookherjee Dilip (April 2004)** have submitted discussion paper in Economics entitled as "*Ownership Form and Contractual Inefficiency: Comparing Performance of Cooperative and Private Factories in Indian Sugar Industries*". In this paper the researchers explore the role of differing contractual relationships between sugarcane farmers and sugar factories in India resulting from differing ownership structures. In this paper they have examined the role of varying pattern of organization of processing and marketing arrangements for sugarcane in India, associated with different forms of ownership of sugar factories. In conclusion they stated the role of institutional factors in the growth process is manifested by the contrasting responses of factories and growers to changing pattern of land ownership, technology and price.

**Panda Jadabananda (2007)** in his research paper '*The Privatisation of Nargarh Sugar Milla Right Step Towards The Revival and Rebuilding of The Sick Enterprise*' has made SWOT analysis of Nargarh Sugar mill for two periods – PrePrivatisation and PostPrivatisation. In his paper he has tried to compare preprivatization and postprivatization

Strengths, Weaknesses, Opportunities, and Threats of the said sugar mill. After examining the case, he found that the reasons for making this cooperative unit sick are lack of full utilization of production capacity, lack of encouragement and training to sugarcane cultivators, and occurrence of abnormal reasons like breakdown of machinery during crushing seasons.

**Ghorapade Jai (Mar 1973)** in his study "*Organizational Ownership Patterns and Efficiency: A Case Study of Private and Cooperative Sugar Factories in South India*", took sample of 43 sugar industries in south India which consists 17 from cooperative sector and 26 from private sector. It investigated relative effectiveness of two types of sugar industries working simultaneously in Indian economy. He stated that to what extent the performance of two organizational groups was influenced by "*intervening variables*". Rather than reflecting ownership patterns, it is possible that the performance scores of two organizational groups might be linked with technological variables, workers skills, managerial practices and a host of other intervening variables. In a nutshell the research has shown that the cooperatives were able to hold their own against the private sector in terms of a most critical index organizational efficiency.

### 2.1 Significance of the Study

The cooperative sugar industry which was the champion industry in the Maharashtra state is currently engrossed with the various problems. One of these is operating inefficiency. In the year 2008-09 out of 165 Cooperative Sugar Factories (CSF) in the state merely 110 were in operation. In the winds of globalization especially after delicensing the industry in August, 1998 the number of CSF's are becoming sick. At present in the state 71 CSF's are declared as sick, 13 are already liquidated and 35 are in the process of liquidation. Since last decade operating CSFs have decreased by 33% whereas number of operating private factories has increased by two and half times. To survive this farmer's only enterprise, government took decision to lease out such sick and unviable CSFs to private managements for certain period. Accordingly, the first and pioneer experiment made through Ajara Taluka Shetakari Sahakari Sugar Factory Ltd. Gavase TalAjara in the Kolhapur district. In order to evaluate this experiment, assessment of operational efficiency of both managements i.e. private and cooperative was necessary. This provided a strong rationale for the current research.

### 2.2 Statement of the problem

Leasing out CSF is considered as one of the remedy to revive operative efficiency of a struggling sugar factory. It is assumed that after handing it out to private management, the operational efficiency of the CSF improves substantially. Whether the handing over of Ajara Taluka Shetakari Sahakari Sugar Factory Ltd. Gavase has really improved its operating efficiency?

### 3. OBJECTIVES OF THE STUDY

The present research paper aims to fulfill the following objectives:

1. To evaluate experiment of leasing out CSF.
2. To compare operational efficiency of select CSF during cooperative *visavis* private management period.
3. To identify significant difference in operational efficiency during Cooperative and Private Management.

## 4. METHODOLOGY

The researchers have selected the first leased out CSF in Maharashtra state i.e. Ajara Taluka Shetakari Sahakari Sugar Factory Ltd. Gavase Taluka – Ajara, Distict Kolhapur.

In this paper researcher intends to assess the operational efficiency of the select CSF over ten years. i.e. five years before leasing out and five years after leasing out (1998-99 to 2003-04) and (2004-05 to 2008-09) respectively. The management during the pre leasing period is called *cooperative management* and that during the postleasing period is called *private management*. The research paper is purely based on secondary data collected through RT8(C) report and annual reports of concerned sugar factory, State Sugar Factory Federations Report, Books, Journals, and Internet. To assess the operational efficiency, seven key parameters of sugar factory prescribed by Vasantdada Sugar Institute (V.S.I.), Pune are used. ( Vasantdada Sugar Institute is the central autonomous institute in the State of Maharashtra that determines the norms of operation for the sugar cooperatives in the state) .

### 4.1 Hypotheses

The hypotheses of the study are:

H0: There is no significant difference in operational efficiency of Cooperative Management and Private Management of the sugar factory during the period under review. ( $\mu_1 = \mu_2$ )

H1: Operational efficiency of the factory during Private Management was higher than that during Cooperative Management. ( $\mu_1 < \mu_2$ )

### 4.2 Analysis of Operational Efficiency of the factory during Cooperative Management and Private Management regime

Operational efficiency determines profitability. Operational efficiency of selected sugar factory is measured by using various key parameters i.e.

1. Cane crushed by the factory,
2. Production of Sugar,
3. Crushing season,
4. Sugar Recovery obtained,
5. Utilization of capacity,
6. Reduced Mill Extraction (*RMI*) and finally
7. Cane price paid to the cane growers.

#### a. Cane Crushed

Table I shows that the cane crushing during both cooperative and private management period. According the table the mean of cooperative management period is 309613.65 Metric Tons (M.T.) and that during private management period is 391790 M.T. Ajara sugar factory has 2500 Tons Capacity per Day (TCD) hence it requires 4 lakh M.T. of sugarcane for a crushing season. During cooperative management period factory never attained the expected amount of crushing whereas during private management period maximum crushing was 523610 M.T.

**Table 1: Cane Crushed**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	Min. 4 lakh tons	251100.00	362579.84
		521090.00	374755.92
		523610.00	295898.08
		426030.00	320127.08
		237120.00	194707.32
Mean		309613.65	391790.00
Variance		5137761315	19745966250
		Calculated value T =	1.164861023

(Source: Annual reports and RT8(C) form of Sample Unit)

Here  $T < t$  i.e. Accept  $H_0$

Though crushing is quite high in the Private Management period, there is no significant difference in cane crushing during both periods. Operation efficiency in terms of crushing in both periods is similar therefore  $H_0$  is accepted. In case of cane crushing, during the first year of private management period the factory has crushed less amount of sugarcane because there was cooperative management when the cane cultivation had taken place in operating area. Due to delayed payment made by cooperative management during pre leasing period cane cultivation was not adequate. It means during the first year of private management period the influence of cooperative management was there.

### b. Production of Sugar

Sugar produced is final product of the factory. It is the main source of revenue to the factory. Table II shows that mean of sugar production during cooperative management period was 454229 sugar bags and that during private management period it was 793179 bags.

**Table 2: Sugar Produced**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	Maximum	444014	286715
		448936	887012
		366260	1155800
		536575	1088450
		475360	547920
Mean		454229	793179.4
Variance		3774572478	1.3603511
		Calculated value T =	2.026992663

Source: Annual reports and RT8(C) form of Sample Unit)

Here  $T > t$  i.e. Reject  $H_0$

It is observed that 74% more sugar is produced by private management which is quite significant. Here  $H_0$  is rejected it means the operational efficiency in terms of sugar production increased significantly during the period of private management.

### c. Crushing Season

This 2500 TCD factory was expected to run 160 days for a season. Table III shows that neither cooperative nor private management could run this factory as expected. Mean of crushing season during Cooperative and Private Management Period were 127 days and 140 days respectively.

**Table 3: Gross Season**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	Min.160 days or more	159	106
		154	174
		110	180
		129	154
		87	90
Mean			127.8
Variance		910.7	1651.2
		Calculated value T =	0.574311176

(Source: Annual reports and RT8(C) form of Sample Unit)

Here  $T < t$  Therefore, accept  $H_0$

Figures indicate that private management took around 10% more gross season however there is no significant increase in the crushing season during the private management period. Factory runs 13 days more per year on an average during the private management period than during the cooperative management period.

### d. Sugar Recovery

Sugar Recovery means percentage of sugar recovered by crushing 100 kgs. of sugarcane. It depends upon quality of cane, harvesting mechanism and process technology. More recovery indicates more profitability. Table IV shows that the mean of sugar recovery of Cooperative Management. Period is 11.38% and that of Private Management Period is 12.00%.

**Table 4: Sugar Recovery**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	Min.160 days or more	11.62	11.41
		11.66	11.72
		11.36	12.01
		11.98	12.77

		10.32	12.11
Mean		11.38	12.04
Variance		0.40492	0.25788
		Calculated value T =	1.69189912

(Source: Annual reports and RT8(C) form of Sample Unit)

Here  $T > t$  Therefore, Reject  $H_0$

Operational efficiency in terms of recovering sugar from cane has increased significantly during Private Management Period. It means there is significant improvement in sugar recovery during the private management period.

#### e. Capacity Utilization

The factory should fully utilize its crushing capacity. Underutilization of capacity leads to increase in cost of production. Table V shows that private management utilized the crushing capacity properly as the capacity utilization is over and above 100%.

**Table 5: Capacity Utilization**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	More than 100%	91.21	86.86
		97.34	110.31
		99.46	106.91
		91.73	102.42
		83.05	96.61
Mean		92.55	100.62
Variance		40.85247	85.52947
		Calculated value T =	1.603958076

(Source: Annual reports and RT8(C) form of Sample Unit)

Here  $T > t$  i.e. Reject  $H_0$

The operational efficiency in terms of capacity utilization is differs significantly therefore  $H_0$  is rejected. Thus it is inferred that the private management has improved the capacity utilization during the period of lease.

#### f. Reduced Mill Extraction (Mittal) RME

Reduced Mill Extraction (Mittal) indicates the operating efficiency of the milling section. It depends upon fiber content in cane. It is useful in comparing performance of milling tandem of two and more sugar factories or of same sugar factory at different intervals of time period. Table VI shows that the RME during Private Management is more.

**Table 6: Reduced Mill Extraction –RME (Mittal)**

	Standard	Cane Crushed(M.T)	
		Co.op. Mgt. Period	Pvt. Mgt. Period
	Min.95%	94.68	95.54
		94.98	95.47
		95.26	95.68
		95.32	95.91
		94.75	95.66
Mean		94.99	95.65
Variance	95.652	0.02827	
		Calculated value T =	4.36797

(Source of Figure Annual reports and RT8(C) form of Sample Unit)  
Here  $T > t$  Therefore, Reject  $H_0$

Operating efficiency in terms of Reduced Mill Extraction during the Private Management period is significantly higher than that during the Cooperative Management period as the  $H_0$  is rejected.

#### g. Cane Price Paid

Payment of cane price to the cane growers is the most important parameter of overall organizational efficiency. Factory should pay cane price over and above Statutory Minimum Price fixed by the Government.

**Table 7: Cane Price Paid**

	Standard	Cane Crushed(M.T)			
		Co.op. Mgt. Period		Pvt. Mgt. Period	
		SMP	Price Paid	SMP	Price Paid
	Maximum and Over and above Statutory Minimum Price fixed by the Govt.	798.60	824.00	903.40	1200.00
		840.00	767.62	1006.20	1300.00
		897.90	742.99	1045.50	900.00
		1006.60	765.00	1081.80	1300.00
		1087.00	823.00	1153.80	1700.00
Mean		926.02	784.52	1038.14	1280.00
Variance		1357.69052		82000	
		Calculated value T =			3.837395317

(Source: Annual reports and RT8(C) form of Sample Unit)  
Here  $T > t$  i.e. Reject  $H_0$

The mean of SMP of Cooperative Management is Rs.926.02 as against the mean of actual price paid is Rs. 784.52 whereas the mean of SMP of Private Management. Rs.1038.14 as against the mean of actual price paid of Rs.1280. The cane price given to cane growers by the private management is apparently high. The t test endorses the finding that the operating efficiency of



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private management on the basis of cane price paid to the cane growers is higher than that of the cooperative management.

## 5. FINDINGS

1. There is no significant difference in cane crushing, though the private management has made available and crushed more sugarcane.
2. The sugar production has increased substantially during the private management regime *vis a vis* cooperative management regime.
3. Though the private management took around 10% more gross season and factory runs 13 days more per year on an average during the private management period. However there is no significant increase in the crushing season during the private management period.
4. During the period of private management the factory obtained higher recovery. More crushing and more recovery results in higher production of sugar which is main source of revenue for the enterprise.
5. Capacity utilization above 100% was achieved by the private management, which proved profitable.
6. During the private management regime crushing capacity utilization was optimum. With 10% increase in gross season factory has crushed 30% more sugarcane.
7. Reduced mill extraction of the factory during private management was above the standard level whereas during cooperative management it was below standard. Private management showed higher milling efficiency.
8. Cane price paid by the private management was always over and above Statutory Minimum Price (SMP). Cooperative Management never paid cane price above SMP fixed by the government except in the year 1999-2000. As a result of higher cane price paid, it was possible for private management to obtain more cane for crushing. Payment of higher cane price to cane growers is the ultimate objective of a sugar cooperative movement. Success of this farmer's organization is measured through it. But the prime objective of cooperation was defeated due to the inefficiency of cooperative management. The private management could achieve it better on account of its higher operational efficiency.

### 5.1 Limitations of the study

Single case study may provide very interesting results, but they provide no appraisal of their generalisability. Moreover singularity is compounded by the observer's prospective interruption of the situation under examination. This case study is essentially particular until its results are tested in sample of cases carefully selected from large population. The level of analysis and participants observation in this research is confined to the short term and to limited operational space i.e. working of selected CSF. The mode of generalization under this study is reconstructing existing theory and explanation is also genetic. It compares similar phenomena with a view to explaining differences. This research tried to extract the general from the unique rather more from the micro to macro and to connect the present to the past in anticipation of the future, all by building on pre-existing theory.

## 5.2 Future work

In the present research article, the researcher has taken one sample cooperative sugar factory i.e. Ajara Cooperative Sugar Factory Ltd., .Gavase DistKolhapur which was leased out for five years. It was pioneer experiment done in cooperative sector of the Maharashtra state during 2004-05. At present 43 private sugar factories are working in the state. 31 CSF's in the state are in the process of leasing out. Private sugar industry occupied around 25% state sugar industries. Therefore, there is a large scope for undertaking the future research regarding overall performance of cooperative sugar industry vis a vis private sugar industry in the state.

## 5.3 Conclusion

Leasing out cooperative sugar factory is one of the remedy to make survival of sick CSF. In this regard a pioneer experiment done in the state of Maharashtra in case of Ajara Cooperative Sugar Factory. The factory which was sick and could not operate properly since its inception was successfully run by the private management with the same paraphernalia (i.e. same plant, same employees, and the same cane growers etc.) Out of seven efficiency parameters checked by the researcher, it is found that in case of only two parameters i.e. *sugar cane crushing* and *Gross Season* the organizational efficiency of Cooperative management period and Private management period was similar whereas according to the rest five organizational efficiency parameters i.e. *Sugar Production, Recovery, Capacity Utilization, Reduced Mill Extraction and Cane price paid*, the performance of private management is far better. In case of *sugar cane crushing*, during the first year of private management period the factory has crushed less amount of sugarcane because there was cooperative management when the cane cultivation had taken place in the operating area of the factory. Due to delayed payment made by cooperative management during pre leasing period cane cultivation was not adequate. It means that during the first year of private management period the influence of cooperative management was there. And in case of gross season, though the difference is not significant the private management has crushed more sugarcane in lesser number of days. At the end we should remember that the motives of private and cooperative management are contradictory i.e. one is solely profit oriented and another is service oriented. Though the organizational efficiency of private management is better, leasing out of CSF should be used as temporary remedy to revive and retain cooperative movement. The cooperative management should adopt professional management techniques to enhance their organizational efficiency or else their survival would be difficult in the modern world where winds of liberalization, privatization and globalization are blowing fast.

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