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To study the growth and development of sugar industry in Maharashtra

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Abstract

The present study was undertaken to analyse the trends in growth of sugar factories in Maharashtra. The Compound Annual Growth Rate (CAGR) and coefficient of variance were utilized to estimate growth and variation in various parameters related to sugar industry. The study was mainly focused on growth in the number of sugar factories installed, number of factories in operation in co-operative as well as private sector, sugarcane crushed, sugar production, capacity utilization and recovery percentage of sugar factories in Maharashtra. The present study revealed that, the number of installed sugar factories, number of factories in operation in private sector and capacity utilization by both sectors has increased significantly with 2.16, 11.30 and 0.46 per cent per annum, respectively. The growth in number of co-operative sugar factories in operation was observed to be negatively significant. The compound annual growth rates (CAGR) of sugarcane crushed, sugar produced by both the co-operative and private sugar factories and recovery percentage for co-operative and private sugar factories were insignificant throughout the study period. The cyclical fluctuations were observed in the total number of sugar factories in operation, sugarcane crushed and sugar production by both the co-operative as well as private sugar factories in Maharashtra.

Keywords: Sugar industry, growth, sugar production, sugarcane crushed, recovery, etc.

Introduction

The study area was confined to the state of Maharashtra. Sugar industry is an important organized industry in Maharashtra, dependent in a major way on unorganized sector. Since the industry has been organized on the principles of co-operation, its responsibility is to transform the rural life. The socio-economic life of agriculturists has undergone a complete change since the installation of sugar co-operatives in rural areas. The rural employment has increased dramatically, both in agriculture and in the industrial sector. Keeping above view in mind the present study was undertaken to understand the growth of sugar industry in Maharashtra.

Objectives

To examine the trends in growth of number of sugar factories, sugarcane crushed, sugar production, capacity utilization and recovery of sugar factories in Maharashtra.

Methodology

Maharashtra is the leading state in production of sugar. Therefore, Maharashtra as a whole was taken for study. The present study was based on secondary data. The data related to the number of sugar factories installed, number of factories in operation in co-operative as well as private sector, sugarcane crushed, sugar production, capacity utilization and recovery percentage of sugar factories in Maharashtra was collected from different secondary sources viz., Maharashtra State Co-operative Sugar Factories Federation Limited, Commissionerate of Sugar, Maharashtra, Vasantdada Sugar Institute, Pune, etc.

Period of study

The compound growth rates were computed based on the data collected for Maharashtra as a whole for the period of 14 years i.e. from 2006-07 to 2019-20.

Analytical Tools and Techniques

a) Compound annual growth rate

The compound annual growth rates were estimated to study the percentage changes in various parameters. The following exponential growth function was used.

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$Y = ab^t e$

Where,

Y = Dependent variable for which growth was estimated.

a = Intercept or constant.

b = Regression/trend coefficient.

t = Periods in years (1, 2, 3...n).

e = Error terms.

b) Estimation of variability in sugar industry

Variability was worked out by estimating the value of coefficient of variation (CVs). It was worked out by following

formula,

$$CV(\%) = (\text{Standard Deviation}/\text{Mean}) \times 100$$

Results and Discussion

Percentage change over the base period of Sugar Factories in Maharashtra

The decade wise percentage growth in number of sugar factories, quantity of sugarcane crushed, quantity of sugar production, capacity utilization and recovery percentage was calculated over the base year 1960-61 in Maharashtra as a whole and it is presented in Table 1.

Table 1: Decade wise Growth of Sugar Factories in Maharashtra

Year	Number of Sugar Factories			Sugarcane Crushed (MMT)	Sugar Production (MMT)	Capacity Utilization (%)	Recovery (%)
	Co-operative	Private	Total				
1960-61	20 (100)	12 (100)	32 (100)	4.49 (100)	0.52 (100)	103 (100)	11.64 (100)
1970-71	48 (140)	11 (-8.33)	59 (84.37)	9.35 (108.24)	1.06 (103.85)	98 (-4.85)	11.28 (-3.09)
1980-81	71 (255)	11 (-8.33)	82 (156.25)	18.88 (320.49)	2.09 (301.92)	92 (-10.68)	11.04 (-5.15)
1990-91	93 (365)	8 (-33.33)	101 (215.62)	38.28 (752.56)	4.11 (690.38)	116 (12.62)	10.76 (-7.56)
2000-01	122 (510)	13 (8.33)	135 (321.87)	57.66 (1184.19)	6.71 (1190.38)	88 (-14.56)	11.63 (-0.09)
2010-11	123 (515)	44 (266.66)	176 (450)	80.25 (1687.31)	9.07 (1644.23)	93.23 (-9.49)	11.56 (-0.69)
2019-20	79 (295)	68 (466.67)	147 (359.37)	55.06 (1126.28)	6.31 (1113.46)	98.37 (-5.50)	11.47 (-2.47)

(Source: Sugar Commissionerate, Maharashtra State, Pune)

(Figures in parentheses indicate the changes over the base year)

The numbers of sugar factories were subdivided into two categories i.e. co-operative and private sugar factories. Co-operative sugar factories were increased by 295 per cent in 2019-20 over the base year i.e. 1960-61, whereas the private sugar factories were increased by 466.67 per cent in 2019-20 over the base year.

It was further noticed that the number of co-operative sugar factories were continuously increased up to 2010-11, but afterwards it showed declined trend in the year 2019-20. In the case of private sugar factories the number of factories was declined continuously up to 1990-91, afterwards due to privatization and liberalization policy of government the number of sugar factories in private sector increased rapidly.

The total sugar factories in Maharashtra were continuously increased by 359.37 per cent in 2019-20 over the base period. The total numbers of sugar factories observed in 2019-20 were 147 which were just 32 at the base year. The quantity of sugarcane crushed and quantity of sugar production were increased by 1126.28 and 1113.46 per cent over the base year, respectively. While, the recovery percentages of sugar was decreased by -2.47 per cent over the base year.

Compound annual growth rates of Sugar Factories in Maharashtra

The growth of sugar factories in Maharashtra as a whole for 14 years i.e. from 2006-07 to 2019-20 is shown in Table 2.

Table 2: Growth of Sugar Factories in Maharashtra (2006-07 to 2019-20)

Year	No. of installed Sugar factories	No. of Factories in operation			Sugarcane Crushed(MMT)	Sugar Production (MMT)	Capacity Utilization (%)	Recovery (%)	
		Co-Operative	Private	Total				Co-Operative	Private
2006-07	190	141	22	163	79.84	9.09	95.57	11.53	10.89
2007-08	193	145	26	171	76.17	9.10	95.27	11.64	10.96
2008-09	195	116	28	144	40.04	4.61	97.67	11.70	11.12
2009-10	199	111	30	141	64.15	7.11	94.91	11.47	10.88
2010-11	209	123	41	164	80.25	9.07	93.23	11.83	11.15
2011-12	211	119	51	170	77.11	9.00	98.56	11.57	10.97
2012-13	212	108	62	170	70.03	7.99	106.74	11.61	10.90
2013-14	216	96	61	157	67.64	7.71	104.78	11.50	10.95
2014-15	230	99	79	178	93.04	10.51	100.58	11.55	10.92
2015-16	236	99	78	177	74.29	8.42	102.26	11.43	10.82
2016-17	238	88	62	150	37.31	4.20	95.84	11.32	11.05
2017-18	240	101	87	188	95.26	10.71	102.64	11.09	10.85
2018-19	243	95	95	190	95.21	10.72	101.49	11.27	10.64
2019-20	243	79	68	147	55.06	6.31	98.37	11.47	10.84
CAGR	2.16 ***	-3.63***	11.30***	0.68	0.39	0.22	0.46*	-0.26***	-0.14*
CV (%)	9.05	17.40	42.56	9.49	25.31	25.13	4.09	1.62	1.18

(Source: Sugar Commissionerate office Report, 2019-20).

***, ** and * Significant at 1, 5 and 10 per cent, respectively.

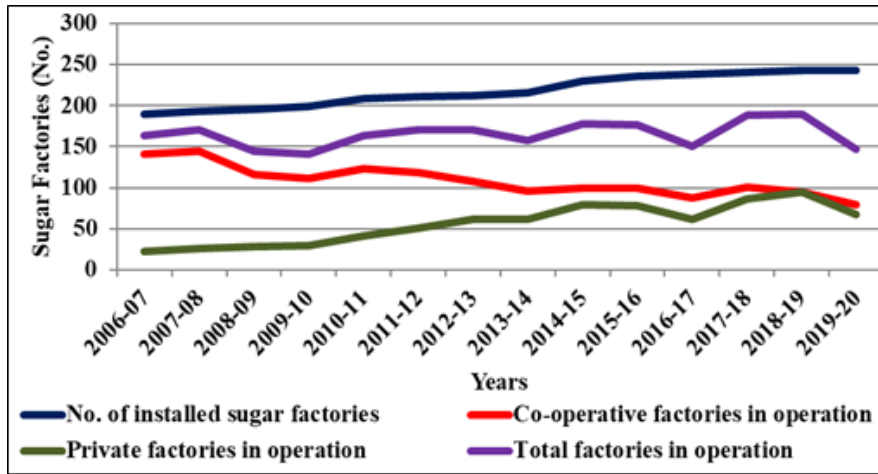


Fig 1: Growth in Number Sugar Factories in Maharashtra

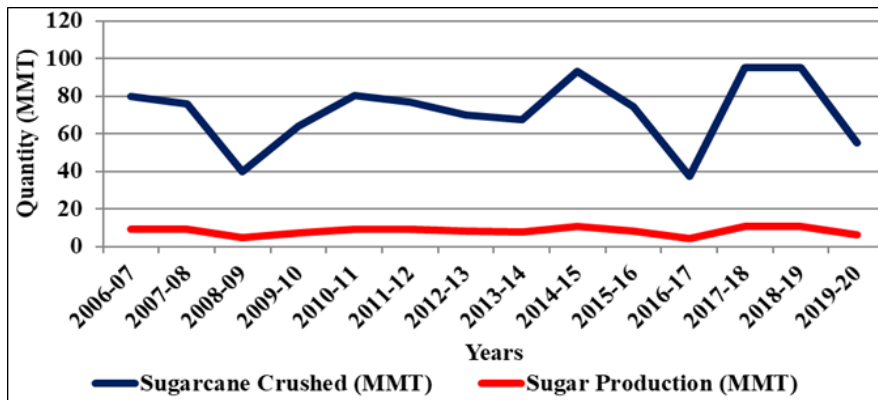


Fig 2: Growth of Sugarcane Crushed and Sugar Production in Maharashtra

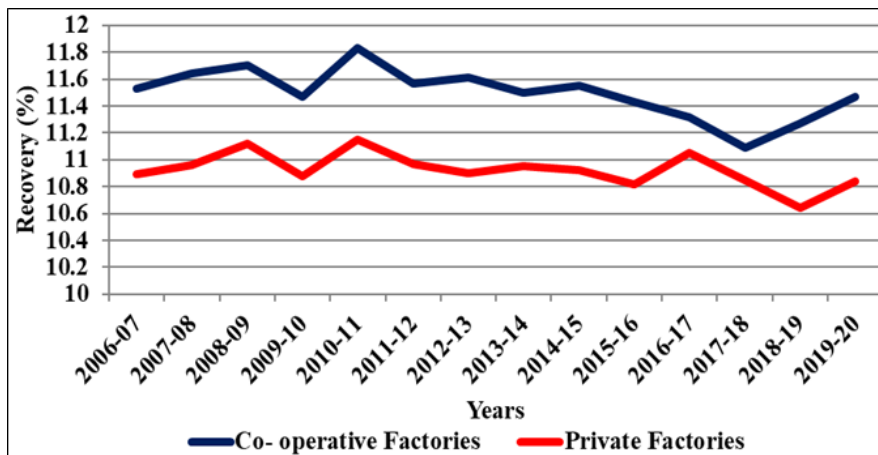


Fig 3: Growth of Recovery percentage in Co-operative and Private Sugar Factories in Maharashtra

The number of installed sugar factories has increased significantly with 2.16 per cent per annum. The growth in number of co-operative factories was observed to be negatively significant with a annual rate of 3.63 per cent, while in case of private sugar factories a significant growth of 11.30 per cent throughout the study period was observed. The compound annual growth rates (CAGR) of sugarcane crushed and sugar produced by both the co-operative and private sugar factories were non-significant during the study period (0.68% and 0.39%, respectively). The CAGR of sugar production was observed to be non-significant (0.22%), capacity utilization was observed to be significant (0.46%) by both the factories collectively. The CAGR of the recovery percentage for co-operative as well as private sugar factories were negatively

significant during the study period. The recovery percentage of co-operative sugar factories was observed to be higher than the private sugar factories, throughout the entire study period. The estimated coefficient of variation for the period of 14 years indicated that, the variation in numbers of co-operative sugar factories were comparatively less than the private sugar factories. The variation in quantity of sugar cane crushed and quantity of sugar production was observed to be 25.31 and 25.13 per cent, respectively. It was mainly due to the cyclical fluctuations in the quantity of sugarcane crushed and sugar produced over the entire study period.

Conclusions

The present study depicted that, the cooperative and private

sugar factories were increased by 295 and 466.67 per cent in 2019-20 to the base year 1960-61. The cooperative sugar factories were continuously increased up to 2010-11, but afterwards declined in the year 2019-20. On the contrary the numbers of private sugar factories were more or less constant up to the year 2000-01 while drastically increased from 2010-11 onwards. It may be due to the privatization and liberalization policy of government the number of private sugar factories increased rapidly. On the contrary, the numbers of co-operative sugar factories were decreased. The number of installed sugar factories, number of factories in operation in private sector and capacity utilization by both sectors has increased significantly with 2.16, 11.30 and 0.46 per cent per annum, respectively. The growth in number of co-operative sugar factories in operation was observed to be negatively significant (-3.63). The compound annual growth rates (CAGR) of sugarcane crushed and sugar produced by both the co-operative and private sugar factories were insignificant throughout the study period. The recovery percentages for co-operative and private sugar factories were negatively significant over the period of time. The quantity of sugarcane crushed and sugar production was observed to be increased while calculating percentage change over a base period for 1960-61 it may be due to the area expansion of sugarcane crop whereas, while studying the growth trends for the last 14 years it was observed that there was cyclical fluctuations in quantity of sugarcane crushed and quantity of sugar produced.

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