



E-ISSN: 2278-4136  
P-ISSN: 2349-8234  
JPP 2018; 7(5): 2927-2931  
Received: 20-07-2018  
Accepted: 21-08-2018

#### K Shiny Israel

Ph.D Scholar, Agribusiness Management, Department of agribusiness Management, University of Agricultural Sciences, Dharwad, Karnataka, India

#### Y Prabhavathi

Assistant Professor, Department of agribusiness Management, ANGRAU, Andhra Pradesh, India

## Growth and performance of physical indicators: A study of Sri Venkateswara co-operative sugar ltd., Renigunta, Chittoor district

K Shiny Israel and Y Prabhavathi

#### Abstract

Sugarcane is an important commercial crop cultivated in about 120 countries in the world. Sugarcane is cultivated in an area of 42.40 million hectares in the world. Sugar industry is the second largest in India and first being the textile. This study is mainly based on physical indicators. The secondary data was collected from 2009-10 to 2013-14. The performance of sugar industry was examined by the agreement area, agreement quantity, cane crushed, sugar production, sugar recovery and average cane crushed per day of physical indicators through physical analysis from 1977-78 to 2013-14. The results revealed that, the parameters like agreement area, agreement quantity, and average cane crushed, sugar production, sugar recovery and average cane crushed per day were recorded positive growth rate since establishment to till 2013-2014. Despite positive growth rate recorded for the factory since establishment the growth rate is not much impressive.

**Keywords:** Sugar factory, physical indicators, physical analysis.

#### Introduction

Sugarcane is an important commercial crop cultivated in about 120 countries in the world. Sugar industry is the second largest in India and first being the textile. Sugarcane is cultivated in an area of 42.40 million hectares in the world. The total area under sugarcane cultivation is highest in Brazil (6.20 million hectares) followed by India (5.01million hectare). Brazil is the biggest producer of sugar accounting for 41.4 per cent of the world sugarcane production followed by India (17.7 %). Other major producers of sugarcane are China (6.6 %), Thailand (4.5 %) and Mexico (2.9 %). Over 3/4th of the total sugar produced is consumed domestically in which it is produced and the rest is traded around the globe which is often termed as " world sugar". For this purpose agreement area, agreement quantity, cane crushed, sugar production, sugar recovery and average cane crushed per day of the sugar factory were examined.

#### Objective of the study

To evaluate the growth and performance of sugar factory in terms of physical indicators.

#### Methodology

Secondary data was used for analysis in the present study. The data on physical indicators of sugar industry were collected from Sri venkateswara co-operative sugar ltd., Gajulamandyam village, Renigunta town, Chittoor district of Andhra Pradesh for the period from 2009-10 to 2013-14. was employed for analysing the physical indicators viz., agreement area, agreement quantity, cane crushed, sugar production, sugar recovery and average cane crushed per day.

#### Physical indicators of sugar industry

Data pertaining to various physical indicators was collected from physical statements maintained by the factory and analysis of the same was carried out for a period of 37 years from establishment onwards i.e. from 1977-78 to 2013 -14. The growth and performance of the factory was judged by examining the trends of various physical indicators like agreement area, agreement quantity, cane crushed, sugar production, sugar recovery and average cane crushed per day from 1977-78 to 2013-14 and are presented in Table 1. From the Table 1, it is implied that the agreement area under sugarcane increased from 4,744 hectares in 1977-1978 to 6681.75 hectares in 2013-14. Highest agreement area under cane was observed during the year 1994-1995. From the Table 1, it is implied that the agreement quantity of the sugarcane to Be supplied by the sugarcane growers was 93014 in 1977-77 and increased to 1,72,993 metric tons in 2013-2014.

#### Correspondence

#### K Shiny Israel

Ph.D Scholar, Agribusiness Management, Department of agribusiness Management, University of Agricultural Sciences, Dharwad, Karnataka, India

Agreement quantity recorded highest and lowest in the year 2006-2007 and 1979-1980 respectively. From the Table 1, it is implied that the total quantity of cane crushed in the factory was increased from 38,283 in 1977-78 to 1,22,862 in 2013-14. From the Table 1, it is implied that the sugarcane in the factory was 20556 quintals in 1977-1978 and increased to 1,11,700 in the year 2013-14. A highly fluctuating trend of sugar production was observed in the factory. From the Table 1, it is implied that the sugar recovery of the factory for the year 1977-78 was 5.37 and increased to 9.16 for the year 2013-2014. All together an increasing trend of sugar recovery was observed in the factory. From the Table 1, it is implied that the average cane crushed per day by the factory was increased from 484 metric tons in the year 1977-1978 to 1293 metric tons in the year 2013-2014. The compound growth rates for different physical indicators like agreement area, agreement quantity, cane crushed, sugar production, sugar recovery and average cane crushed per day were estimated from 1977-78 to 2013-14 and presented in the Table 1.

From the Table 2, it is implied that the compound annual growth rate (CAGR) for agreement area, agreement quantity, average cane crushed, sugar production, sugar recovery and average cane crushed per day was 1.025, 1.027, 1.03, 1.04, 1.005 and 1.02 respectively. The parameters like agreement area, agreement quantity, and average cane crushed, sugar production, sugar recovery and average cane crushed per day were recorded positive growth rate since establishment to till 2013-2014. Despite positive growth rate recorded for the factory since establishment the growth rate is not much impressive. From the Table 1, the index number and percentage change of various physical indicators like agreement area, agreement quantity, and cane crushed sugar production. Sugar recovery and average cane crushed per day was worked out from 1977-78 to 2013-14 and presented in the Table 1 and discussion are drawn accordingly as shown below. The indices for the area under sugarcane for the period 1977-78 to 2013-14 were worked out and are presented in Table 1. From the Table 1, the index number of agreement area which was 125 had fallen to 60 during 1977-1980. But improved for 122 during 1981-1982. The index number have been increasing subsequently barring the years 1983-84 and 1984-85. The highest index number was found in 1990-91. Particularly after 2010-11 onwards the indices have been declining gradually. For the year 2010-11 the agreement area under the factory was doubled which indicates the efforts of the factory to put more agreement area under the factory jurisdiction the fall in the acreage in the past three years might have been due to the farmer's reluctance to grow more area under sugarcane. From the Table 1, the maximum percentage change in the agreement area took place during 1985-86 where it was increased by 150 percent over 1984-85. During the years 1983-84, 1987-88, 1988-89, 1991-92, 1996-97, 2002-03 and 2004-05, 2007-08 and 2009-10, the area under agreement area has decreased over their respective previous

years. From the Table 1, the Index number agreement quantity recorded highest in 2006-07 where in it has increased by nearly five times over the base year. Overall there has been an increase in the agreement area over the years barring sudden fall in 2004-05. But in the last four years of study the indices have been fallen gradually. From the Table 1, the highest percentage change in agreement quantity under agreement quantity was found in 1985-86 (13.4 percent increase). The percentage change in the area under agreement quantity was recorded highest and lowest in the year 1985-86 and 2004-05. From the Table 1, the index number indicates the cane crushed was lowest in 1983-84 followed by 1984-85 and 2004-05 barring random fall the cane crushed has gradually increased over the years. But indices over the past four years reveal that they have been fallen gradually. From the Table 1, once again the highest percentage of cane crushed over the previous year was recorded 1985-86 as it was up by 18.2 percentage. Similarly, maximum fall over the previous year was recorded in 1992-93 where it was down by nearly 50 percentage. From the Table 1, the index number of sugar production which was 79 in 1977-78 gradually rose to 608 by 2000-01 and thereafter there was decline for subsequent four years with a steep production in 2004-05. The momentum picked up in 2006-07 but could not sustain from 2010-11 onwards as there was a gradual fall in the sugar production. From the Table 1, all time high in terms of percentage increase in the cane crushed was found in 1981-82 where it was increased by 352 percent. Similarly highest fall over the previous year was found in 1996-97 where the sugar production was down by 45 percent over its previous year. From the Table 1, the index number of sugar recovery which was 5.37 percent in 1977-78 slowly started increasing and touched 9.6 percent by 2002-03. Barring few years the recovery percent was moving around 9 percent. The index number was found to be 136 by 2013-14. From the Table 1, the highest percentage increase in sugar recovery over the previous year was found in 1980-81 where it increased by 13 percent. But during 1994-95 compared to the previous year the sugar recovery was down by 16 percent.

From the Table 1, the index number of the average cane crushed per day was 90 in 1977-78 and started decreasing till 1980-81 barring 1978-79. From 1982-83 a highly fluctuating trend was noticed. The highest and lowest index numbers was observed in 1977-78 and 2001-01 respectively. From the Table 1, indicates the percentage change in average cane crushed per day recorded all-time high in the year 1981-82 where it was increased by 110 percentage. Barring 1981-82 the percentage change in average cane crushed per day in most of the years was ranging between -1 to 3 percentage.

The index number of the average cane crushed per day was 90 in 1977-78 and started decreasing till 1980-81 barring 1978-79. The percentage change in average cane crushed per day recorded all-time high in the year 1981-82 where it was increased by 110 percentage.

**Table 1:** Analysis of physical indicators of S. V. co-operative sugar factory.

Sl. No.	Season	Agreement Area (Acs)	Agreement Quantity (Mts)	Cane Crushed (Mts)	Sugar produced (Qts)	Sugar Recovery	Average Cane Crushed per day
1	1977-1978	4744 (125)	93014 (121)	38283 (103)	20556 (79)	5.37 (79)	484 (90)
2	1978-1979	4365 (115) ((-8))	107330 (140) ((15))	58670 (157) ((53))	45061 (174) ((119))	7.51 (111) ((40))	678 (127) ((4))
3	1979-1980	2300 (60) ((-47))	29590 (39) ((-72))	14977 (40) ((-74))	12150 (47) ((-73))	7.41 (110) ((-1))	444 (83) ((-3))
4	1980-1981	3200 (84) ((39))	67212 (88) ((127))	28957 (78) ((93))	24930 (96) ((105))	8.38 (124) ((13))	417 (78) ((-1))
5	1981-1982	4635 (122) ((45))	168000 (219) ((150))	143406 (384) ((395))	112652 (435) ((352))	7.82 (116) ((-7))	857 (160) ((110))
6	1982-1983	4203 (111) ((-9))	153860 (201) ((-8))	101031 (271) ((-30))	91492 (353) ((-19))	8.71 (129) ((11))	1020 (191) ((2))
7	1983-1984	2505 (66) ((-40))	78679 (103) ((-49))	42081 (113) ((-58))	38940 (150) ((-57))	8.6 (127) ((-1))	716 (134) ((-3))
8	1984-1985	2874 (76) ((15))	83335 (109) ((6))	55334 (148) ((31))	47415 (183) ((22))	8.3 (123) ((-3))	738 (138) ((0))
9	1985-1986	7191 (189) ((150))	195000 (254) ((134))	156039 (418) ((182))	145078 (560) ((206))	9.24 (137) ((11))	1088 (203) ((5))
10	1986-1987	10518 (277) ((46))	229417 (299) ((18))	210620 (565) ((35))	178670 (689) ((23))	8.44 (125) ((-9))	1190 (222) ((1))
11	1987-1988	8548 (225) ((-19))	196420 (256) ((-14))	149811 (402) ((-29))	124800 (481) ((-30))	8.35 (124) ((-1))	1000 (187) ((-2))
12	1988-1989	7367 (194) ((-14))	181703 (237) ((-7))	164605 (441) ((10))	162145 (626) ((30))	9.8 (145) ((17))	1138 (213) ((1))
13	1989-1990	9017 (237) ((22))	214578 (280) ((18))	184403 (494) ((12))	174555 (673) ((8))	9.39 (139) ((-4))	1208 (226) ((1))
14	1990-1991	12938 (340) ((43))	292900 (382) ((37))	303883 (814) ((65))	264480 (1020) ((52))	8.68 (128) ((-8))	1252 (234) ((0))
15	1991-1992	6595 (173) ((-49))	229727 (300) ((-22))	231897 (622) ((-24))	216750 (836) ((-18))	9.33 (138) ((7))	1214 (227) ((0))
16	1992-1993	7215 (190) ((9))	163870 (214) ((-29))	114245 (306) ((-51))	109270 (422) ((-50))	9.51 (141) ((2))	1173 (219) ((-1))
17	1993-1994	9438 (248) ((31))	245770 (321) ((50))	225726 (605) ((98))	216225 (834) ((98))	9.57 (142) ((1))	1314 (246) ((1))
18	1994-1995	13380 (352) ((42))	341000 (445) ((39))	333813 (895) ((48))	267635 (1032) ((24))	8.01 (118) ((-16))	1209 (226) ((-1))
19	1995-1996	11447 (301) ((-14))	283338 (370) ((-17))	294750 (790) ((-12))	250175 (965) ((-7))	8.42 (125) ((5))	1281 (239) ((1))
20	1996-1997	7771 (204) ((-32))	228560 (298) ((-19))	146549 (393) ((-50))	137866 (532) ((-45))	9.36 (138) ((11))	1137 (213) ((-1))
21	1997-1998	8584 (226) ((10))	210000 (274) ((-8))	205812 (552) ((40))	168750 (651) ((22))	8.2 ((-12))	1336 (250) ((2))
22	1998-1999	9619 (253) ((12))	224000 (292) ((7))	251382 (674) ((22))	229165 (884) ((36))	9.1 (135) ((11))	1435 (268) ((1))
23	1999-2000	10553 (277) ((10))	277179 (362) ((24))	218762 (586) ((-13))	197145 (761) ((-14))	9.03 (134) ((-1))	1481 (277) ((0))

24	2000-2001	10964 (288) ((4))	291963 (381) ((5))	226806 (608) ((4))	219850 (848) ((12))	9.7 (143) ((7))	1572 (294) ((1))
25	2001-2002	11242 (296) ((3))	210000 (274) ((28))	202694 (543) ((11))	181625 (701) ((17))	8.95 (132) ((8))	1481 (277) ((1))
26	2002-2003	9358 (246) ((17))	217000 (283) ((3))	173693 (466) ((14))	167247 (645) ((8))	9.6 (142) ((7))	1403 (262) ((1))
27.	2003-2004	*	*	*	*	*	*
28.	2004-2005	4181 (110) ((55))	95550 (125) ((56))	62074 (166) ((64))	53940 (208) ((68))	9.01 (133) ((6))	754 (141) ((5))
29.	2005-2006	7392 (194) ((77))	205849 (269) ((115))	153684 (412) ((148))	133420 (515) ((147))	8.7 (129) ((3))	1080 (202) ((4))
30	2006-2007	12449 (327) ((68))	341836 (446) ((66))	275462 (738) ((79))	231080 (891) ((73))	8.35 (124) ((4))	1392 (260) ((3))
30	2007-2008	10005 (263) ((20))	257621 (336) ((25))	209728 (562) ((24))	194290 (750) ((16))	9.23 (137) ((11))	1394 (261) ((0))
32	2008-2009	9576.5 (252) ((4))	245826 (321) ((5))	129501 (347) ((38))	116245 (448) ((40))	9.12 (135) ((1))	1270 (237) ((1))
33	2009-2010	8621.75 (227) ((10))	235922 (308) ((4))	138169 (370) ((7))	111535 (430) ((4))	8.02 (119) ((12))	1247 (233) ((0))
34	2010-2011	9901.75 (260) ((15))	269915 (352) ((14))	198921 (533) ((44))	178545 (689) ((60))	8.93 (132) ((11))	1390 (260) ((1))
35	2011-2012	9419 (248) ((5))	242992 (317) ((10))	176514 (473) ((11))	162431 (627) ((9))	9.16 (136) ((3))	1280 (239) ((1))
36	2012-2013	8290.75 (218) ((12))	214830 (280) ((12))	142162 (381) ((19))	128971 (498) ((21))	9.07 (134) ((1))	1162 (217) ((1))
37	2013-2014	6681.75 (176) ((19))	172993 (226) ((19))	122862 (329) ((14))	111700 (431) ((13))	9.16 (136) ((1))	1293 (242) ((1))
	CAGR	1.025	1.027	1.03	1.04	1.005	1.02

( ) : - Indicates Index Numbers

(( )) : - Indicates compound growth rate

\*Indicates: - No crushing operation due to farmers strike

**Table 4.2:** Compound Annual Growth Rates of Physical Indicators of the Sugar Factory

S. No.	Parameter	Compound annual growth rate
1.	Agreement area	1.025
2.	Agreement quantity	1.027
3.	Cane crushed	1.03
4.	Sugar produced	1.04
5.	Sugar recovery	1.005
6.	Average cane crushed per day	1.02

### Summary and conclusion

Reasons for fluctuations in agreement area are due to lack of proper irrigation facilities to cultivate the crop, Farmers are diverting towards other commercial crops, Delay in payments to the farmers by the factory. There are four sugar factories located in surrounding areas, due to which the farmers who are agreed to supply cane to the Sri Venkateswara co-operative sugar factory are diverting their produce to the other industries. Yield of sugarcane is comparatively low due to less water resources. Farmers are not interested to supply cane

to the Sri Venkateswara co-operative sugar factory due to various reasons like delayed payments, etc.

### References

- Bhardwaj R, Sood M, Thakur U. Effect of storage temperature and period on seed germination of Rheum australe D Don: an endangered medicinal herb of high altitude Himalaya. *Int. J. Farm Sci.* 2014; 4(2):139-147.
- Shinde UR, Herekar PM. Assesment of operational efficiency of a leased out sugar co-operative during co-operation and private management regime. *Asian Journal of management research.* 2011; 2 (1):95-106.
- Singh NP, Singh P, Singh RP. Sugar industry in Uttar Pradesh: Efficiency still holds the key. *Agricultural Economics Research Review.* 2007; 20:157-170.
- Suresh P, Joseph SC, Vanniarajan T. Cost of management in sugar industry: *Journal of contempory research in management.* 2007; 1(2):87-98.
- Szumbah M. Assessment of relationship between plant and equipment maintenance strategies and factory performance of the kenya sugar firms: *Asian Journal of Basic and Applied Sciences.* 2014; 1(2):18-28.

6. Taiwo I. Away With SWOT Analysis: Use Defensive/Offensive Evaluation Instead: *The Journal of Applied Business Research*. 2014; 21(2):91-105
7. Abdel R. The Role of Financial Analysis Ratio in Evaluating Performance: *Interdisciplinary journal of contemporary research in business*. 2013; 5(2):13-28.
8. Beck T, Levine R, Loyaza N. Finance and the sources of growth. *Journal of financial economics*. 2000; 58:261-300.
9. Florenz C. A Comparative Analysis of the Financial Ratios of Listed Firms Belonging to the education Subsector in the Philippines: *International Journal of Business and Social Science*. 2012; 3(21):173-190.
10. Gupta NK. Financial wealth health of co-operative sugar mill: a case Study. *International journal of management research and review*. 2012; 2(8):443-448.
11. Herekar PM. Challenges Before Sugar Cooperatives in Maharashtra: *Indian Streams Research Journal*, 2011.
12. Hussain M. Comparative Evaluation of Financial Performance of Pakistan Tobacco Company (PTC) and Philip Morris Pakistan Limited (PMPKL) through Ratio Analysis: *International Journal of Management Sciences and Business Research*. 2013; 3(1):146-156.
13. Javalagi CM, Bhushi UM. Factor analysis approach to investigate productivity in Indian sugar industries. A financial ratios approach. *Journal of business management & social sciences research*. 2014; 3 (3):8-14.
14. Jehad A. Strategic Planning and Organisational Effectiveness in Jordanian Hotels: *International Journal of Business and Management*. 2013; 8(1):97-106.
15. Khatun S, Alam MM, Rahman KMS, Alam MMG. An economic study on sugar cane pricing and its impact on sugar production in Bangladesh. *Pakistan Sugar Journal*. 2011; 26(4):1-31.
16. Nadoni NN. Performance Appraisal of Co-operative and Private Sugar Factory in Belgaum District- An Economic Analysis: *Global Journal of Management and Business Studies*. 2013; 3(10):1197-1204.
17. Pandey PA. Indian sugar industry. A strong industrial base for rural india. *Department of economic, B.H.U. Varanasi*. 2007; 3:1-23.