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A STUDY ON THE IMPACT OF CRUSHING CAPACITY ON FINANCIAL HEALTH OF SELECT COOPERATIVE SUGAR MILLS

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Abstract
As a business enterprise, the Cooperative Sugar Mills need to attain itsobjectives with sound financial health. In India, the financial health of SugarIndustry is severely affected by a number of reasons and they are interlinked.The financial performance of business enterprises is evaluated with the help of ratio analysis. This Research Paper analyses the degree of financial health of the selected Cooperative Sugar Mills with the help of Edward Altman's Z-score model and the compere the financial health of the selected Cooperative Sugar Mills.
Keywords: *Sugar Industry, Financial Health, Z Score, Ratio Analysis*

Introduction

Effectiveness of financial performance has got direct bearing on shareholders, investors and investment analysis to identify the determinants of corporate performance. Analysis of financial performance is a process of identifying the financial strengths and weaknesses by establishing proper relationship between various financial facts and figures as given in the set of financial information of an enterprise. Analysis of financial performance is effectively used to predict, compare and evaluate the firm's earning ability.

In the present scenario, the sugar industry is suffering from various problems. Of them, problem relating to financial aspects like inadequate working capital, inappropriate capital structure, excess or low liquidity, low profit margins, low return on equity and financial health affect the overall performance of sugarindustry. It is hope that the present study would be useful to government andmanagement of the sugar mills for taking various decisions relating to finance and investments. It is felt that these problems could be solved efficiently by making a detailed financial analysis.

As every business enterprise, the Cooperative Sugar Mills also aim to attain its objectives with sound financial health. In India, the financial health of Sugar Industry is

severely affected by a number of reasons and they are interlinked. The low per centage of sugar in sugarcane leads to low sugar recovery rate; the obsolete technology leads to high production cost; the accumulation of sugar stock leads to high interest burden; the state advised price leads to the additional burden on temporary loanare some of the reasons affecting the performance of Cooperative Sugar Mills. All these reasons ultimately lower the profit line on performance graph of the Cooperative Sugar Mills.

Rationale of the Study

Traditionally, the financial performance of business enterprises is evaluated with the help of a universally accepted accounting tool that is ratio analysis. However, the major drawback of the traditional financial ratio is that each ratio deals with one particular aspect of finance like working capital and its turnover with respect to current assets, fixed assets, and sales and so on. It cannot be consolidated and a holistic view cannot be taken. The consolidated effect of various ratios with the help of the traditional financial ratios cannot be computed.

This Research Paper analyses the degree of financial health of the selected Cooperative Sugar Mills with the help of Edward Altman's Z-score model and the comparison of wealth health among the selected units with the help of statistical tools. The indepth analysis of Annual Reports and financial statements of the selected Cooperative Sugar Mills is carried out to ascertain the financial health of the selected Cooperative Sugar Mills by both the Models.

Methodology

Objectives of the Study

In order to ascertain the financial health of the selected Cooperative Sugar Mills following objectives are set.

1. To compute the Financial Ratios of the selected Cooperative Sugar Mills.
2. To identify the financial health of the selected Cooperative Sugar Mills using Z Scorevalues.
3. To compare the financial health of selected Cooperative Sugar Mills vis-a vis crushing capacity

Sample Selection

The State of Maharashtra is one of the leading state in sugarcane cultivation and sugar productionin India. The area under sugarcane cultivation in Maharashtrais one million Hectares which is20 percent in total of India. The sugar produced is 7.2MMT, which is 34 percent of sugarproduced in India.There are 102 Cooperative Sugar Mills in Maharashtra as against 206 Cooperative Sugar Mills in India during 2015. Hence,the research is focussed on the Cooperative Sugar Mills in the state of Maharashtra.

For the analysis purpose eight Cooperative Sugar Mills are selected with purposive sampling method from all over the state having average sugarcane crushing capacity of 2500TPD, 3500TPD and 5000TPD respectively.Two Cooperative Sugar Mills are selected for each of the crushing capacity.The brief over view of the selected Cooperative Sugar Mills is described in Table No.1.

Table 1 Overview of the selected Cooperative Sugar Mills

Sugar Mills	Year of Registration	31st March 2015			Average Sugar Recovery Percent
		Crushing Capacity *MTCD*	No. of Members	Share Capital *Rs.*	
SSK1: Rena SSK	27-09-2001	2500	6,877	12.77	11.68
SSK2:TukaramSSK	22-05-1990	2500	18,521	24.12	11.45
SSK3:HutamaKisanAhirSSK	29-06-1981	3500	8,613	10.46	13.26
SSK4: SM B.ThoratSSK	06-09-1966	3500	22,314	14.7	11.87
SSK5:KumbhikasariSSK	20-06-1960	5000	23,744	28.55	13.33
SSK6:VikhePatilSSK	1949	5000	12,869	21.7	12.15
SSK7:SahyadriSSK	26-08-1969	7200	37,387	59.48	11.98
SSK9:SMSMohiteSSK	20-06-1960	7500	23,026	62.08	11.51

Table 1 gives the over view of the selected Cooperative Sugar Mills. These Mills are coded as SSK1 to SSK8.The sugarcane crushing capacity of the selected mills increase from 2500MTCD toapproximately 7000MTCD. All the Sugar Mills have percentage of sugar recovery above 11 per cent and two of them, SSK3 and SSK5 have high sugar recovery, above 13 per cent. The ages of the selected sugar mills vary between 14 years to 65 years.

Data Analysis

The data is analysed using financial ratio analysis followed by Z score Model for determining the financial health of the selected Sugar Cooperatives. Then simple statistical tools like mean, standard deviation and coefficient of variation also have been used.

Z - Score Model of Financial Health

Z score model is attributed to Professor Edward Altman. He was Professor of Finance in School of Business in New York University developed a new model of consolidated ratios to predict business failures. Professor Altman observed that a large number of business houses have failed especially in large and medium scale organizations in America. Professor Edward Altman came up with the Z score model as a financial linear analysis. In order to arrive at a final profile of variables, in the formula, the list of 22 potentially helpful variables of traditional ratios have been condensed in to five standard ratios viz., Liquidity, Profitability, Leverage, Solvency and Activity. This Variable have been further modified and tested with 66 Businesses corporate. On the basis of

the empirical study, Professor Altman established the Z score formula with Standard Variables. The academicians, the capital analysts and financial experts all over the world have accepted the Z score model as a credible model, as the Z score model consolidates all factors of financial health and gives the final judgment on sickness of a enterprise as against ratio analysis.

In order to ascertain the degree of financial health of the selected units, Edward Altman's Z score model,

Z score= 1.2 X1+1.4X2+3.3X3+0.6X4+0.999X5 is applied.

Parameters Used in Z- Score Model:

The following parameters are used for computing the Z Scores and in DuPont Analysis.

- Working Capital- The difference between Current assets and Current liabilities
- Total Assets- as given in Balance sheet
- Net Profit- as given in P & L a/c
- Net Sales – as given in P&L a/c
- Equity Capital – as given in schedule 1 or 'A' in balance sheet
- Total Debts- as given in schedules of secured loans and unsecured loans
- EBDIT- Earning before depreciation, interest & tax computed from account statements.

Ratios Computed in Z- Score Model:

The following ratios are computed from the financial statements of the selected Cooperative Sugar Mills for the years 2004-05 to 2014-15 and used as variables x_1 to x_5 in the Z Score Model Analysis.

1. X_1 = Working Capital to Total Assets,
2. X_2= Net Profit to Net Sale,
3. X_3= EBDIT to Total Assets,
4. X_4= Equity capital to total Debt,
5. X_5= Net sale to Total Assets.

Statistical Analysis

The financial consistency of the selected units has been evaluated with the help ofstatistical tools like mean, standard deviation and coefficient of variation. The standard specified under Z Score Model are;

Sr. No.	Financial Health	Z Score
1	Sound	Above 2.66
2	Sick	1.86 to 2.66
3	Continued Sick	less than 1.86

Variables of the ratios of Cooperative Sugar Mills have been tabulated. Further, the arrived ratios (X_1, X_2, X_3, X_4 and X_5) have been multiplied with the standard values given in Z score Model. All the results of multiplication of standard values and ratios have been added to arrive at Z score for each year.

Data Analysis and Interpretation

The Table 4.1 below describes the year wise Z Scorevalues for the selected Cooperative Sugar Mills in Maharashtra.

Table 4.1 Z Score Values for Cooperative Sugar Mills

Years	SSK1	SSK2	SSK3	SSK4	SSK5	SSK6	SSK7	SSK8
2005	4.05	2.39	5.86	6.15	1.67	-0.37	1.76	2.27
2006	2.50	3.21	5.91	8.51	1.29	0.29	1.42	1.60
2007	2.60	2.73	5.34	8.86	1.28	-0.02	1.13	2.30
2008	2.62	3.41	6.92	10.94	1.68	0.88	1.61	1.71
2009	2.89	3.72	4.93	9.66	1.52	0.72	1.53	1.37
2010	3.89	4.88	7.52	10.98	1.58	1.24	1.73	1.39
2011	2.01	4.42	5.46	13.70	1.75	0.36	1.71	1.12
2012	2.04	4.33	4.87	13.78	1.64	0.93	5.54	1.05
2013	2.41	3.81	3.73	13.78	1.27	1.27	1.56	1.46
2014	1.63	3.62	4.84	9.59	2.65	0.77	1.41	1.16
2015	1.42	2.66	3.83	9.38	1.37	0.16	1.07	0.94
Average	**2.55**	**3.56**	**5.38**	**10.49**	**1.61**	**0.57**	**1.86**	**1.49**
S.D.	0.83	0.79	1.16	2.46	0.39	0.53	1.24	0.46
CoV	32.55	22.19	21.56	23.45	24.22	92.98	66.67	30.87
Financial Health	Sick	Sound	Sound	Sound	Continued Sick	Continued Sick	Sick	**Continued Sick**
Crushing Capacity MTCD	2500	2500	3500	3500	5000	5000	**7200**	**7600**
Sugar Recovery	11.68	11.45	13.26	11.87	13.33	12.15	**11.98**	**11.51**

Table 4.1 describe Z Score values for the selected Cooperative Sugar Mills. The analysis shows that the Z score values of SSK4are the highest amongst the selected Cooperative Sugar Mills. According to the above Table, it's very clear that the financial health of the Cooperative sugar MillsSSK2, SSK3 and SSK4 found to be sound than other Sugar Mills.

Sugar Mills SSK1 and SSK7 found to be sick during the Study period. Sugar MillsSSK5, SSK6 and SSK8 found to be continuously sick. The financial consistency of the Cooperative Sugar Mills has been evaluated with the help of average, standard deviation and coefficient of variation.

Critical analysis on the Financial Health of selected Cooperative Sugar Mills

The Researcher categorised the selected Cooperative Sugar Mills on their financial soundness into three categories like Financially Sound, Financially Sick and financially continued sick. Further, the financial health is compared with crushing capacity utilization as well with the percentage of sugar recovery. The significance of critical analysis is to make the comparison and suggest the strategy to improve their financial soundness of Cooperative Sugar Mills. As per the above Z score values the researcher

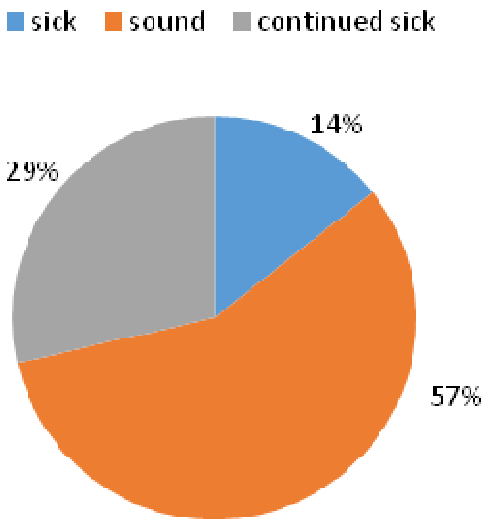
classified financial soundnessvis a vis crushing capacity and percentage sugar recovery. The comparison is described in Table No.4.2 below,

Table 4.2 Critical Analysis of Financial Health of selecctedCooperative Sugar Mills

Years	SSK1	SSK2	SSK3	SSK4	SSK5	SSK6	SSK7	SSK8
Av. ZScore Values	**2.55**	**3.56**	**5.38**	**10.49**	**10.49**	**0.57**	**1.86**	**1.49**
Financial Health	Sick	Sound	Sound	Sound	Sound	Continued Sick	Sick	**Continued Sick**
Crushing Capacity MTCD	2500	2500	3500	3500	5000	5000	**7200**	**7600**
Sugar Recovery	11.68	11.45	13.26	11.87	13.33	12.15	**11.98**	**11.51**

It is observed from Table 4.2 that financial health is sound with smaller crushing capacity, up to 3500 MTCD. The sugar mills with crushing capacity of 2500 MTCD are also financially sound. Though SSK1 with crushing capacity of 2500 MTCD is sick but the average Z Score value is marginally less, 2.55 instead of 2.66, forsound financial health. Moreover, it has crossed the Z Score value of 2.66 many times in the study period.

Graph 4.1 Categorisation of Financial Soundness of Cooperative Sugar Mills



From the Graph 4.1 it is observed that the 57per cent of Sugar Mills are in the financially sound category, 29per cent Cooperative Sugar Mills are in the category of continues sickness and 14 per cent are financially sick. These 29per cent Sugar Mill require turn around strategies and very strong measures like reduction in employees, lowering of overheads and gearing up of capacity utilization. These Sugar Mills require soft loans at very low interest rates to revive themselves and involvement of all stake holders into revival.

Conclusions

The analysis of the secondary data of the selected sugar mills and the Z score values leads to following conclusions, It is concluded that the increased crushing capacity is not benefitting the financial health of sugar mills. Similarly higher percentage of sugar recovery is also not assisting to improvise or establish sound financial health. The large crushing capacity needs to be executed properly so as to avoid financial sickness.

The crushing capacity or sugar recovery may not be helping factors to financial soundness. The sugar mills of less crushing capacity like 2500MTCD are also financial sound which is against the general perception of the sugar sector.

Lastly, it may be concluded that it is not the crushing capacity or sugar recovery but financial management in the factor for the financial health of a sugar Mill.

Suggestions

On the basis of the analysis and the conclusions drawn the following suggestions or the action plan emerge.

The Sugar Mills needin depth financial planning, to place these Cooperative Sugar Mills in financially sound category. Otherwise, these Sugar Mills will become fall into financially sick health category.

The Researcher observed that the cost of different Stores have to bring under control by adopting different Management Tools.

The policy makers and bankers need to take urgent steps to salvage the Cooperative Sugar sector by providing soft loans, rescheduling the existing loans and hand holding for financial discipline.

The Cooperative Sugar sector needs to inculcate financial discipline and pro activeness with professionalization.

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