Profitability Analysis of Selected Companies in the Sugar Industry in India Based on their Margin on Sales

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Abstract

Sugar is made from sugarcane, which was arguably discovered thousands of years ago in New Guinea. From there, the route was traced to India and Southeast Asia. It was India which began producing sugar following the process of pressing sugarcane to extract its juice and boil it to get crystals. A business needs profit not only for its existence, but also for expansion and diversification. The investors want an adequate return on their investments, workers want higher wages, creditors want higher security for their interest and loan, and so on. The objective of this study is to analyze whether the overall profitability of the selected companies in the Sugar industry depends on their age, size, and region to which the company belongs based on their margin on sales. From the analysis, it was found that the southern region companies had a higher profitability than the northern region companies, and the companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores had, on an average, the same amount of profitability, and the three groups of companies based on their age - new, moderate, and old - had, on an average, the same level of profitability in terms of margin on sales. It is suggested that to increase their profitability, the companies need to effectively monitor and control their expenses and effectively use their by-products. The companies can also adopt a framework for monitoring the profitability at all levels.

Keywords: profitability, margin on sales, paid-up share capital, sugar industry

The Indian sugar industry, which is the second largest agro-based processing industry after the cotton textiles industry in the country, has a lion's share in accelerating the industrialization process and bringing socioeconomic changes in under developed rural areas. The sugar industry covers around 7.5% of the total rural population, and provides employment to 5 lakh rural people. About 4.5 crore farmers are engaged in sugarcane cultivation in India. Sugar mills (cooperative, private, and public) have been instrumental in initiating a number of entrepreneurial activities in rural India. The increasing demand for sugar depends on the competence of sugar companies in meeting the demand. This necessitated a study with regards to the performance of the Indian sugar companies in perspective of their profitability and growth to cater to the demand.

Statement of the Problem

Profit earning is considered essential for the survival of the business. In the words of Lord Keynes, "Profit is the engine that drives the business enterprise". In the income statement, there are four levels of profit margins. They are gross profit, operating profit, pretax profit, and net profit. The term "margin" may be applied to the absolute number for a given profit level and/or the number as a percentage of net sales/revenues. The objective of margin analysis is to detect consistency or trends in the company's earnings.

Literature Review

Gregor (1977) in his study argued that management of spread, which is a potent tool for improving profit margins, could be achieved by maximizing net interest margins. Nandagopal (1989) in his research for improving the

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profitability found that the mill had gone for more deferred credit facility. While going for such facilities, the mill should take into account the higher cost of finance as compared to that from public financial and lending institutions. Washnik (1995) conducted a study in Maharashtra state on farmers' knowledge regarding sugarcane cultivation practices, and revealed that majority of the farmers knew about the improved cultivation practices in sugarcane, that is, sugarcane varieties, seed rate, and seed treatment. Sona (2004) analyzed that the company was highly indebted towards the creditors for acquisition of sugar and other related products. The income of the company was found to be unsatisfactory, and it incurred an unexpected loss due to drought and insufficient production of sugar. Jayaraj (2004) pointed out in her analysis that the financing charges, depreciation, provisions and other charges decreased slightly over the years, and companies need to see where the charges increase so that there will be a greater demand for the share of the company. Saluja and Kaur (2010) conducted a study on profitability performance of public sector banks in India. The study revealed that banks can reduce their non interest expenditure by adopting effective budgeting techniques.

Objective of the Study

The main objective of this study is to analyze whether overall profitability of the Indian sugar companies depends upon the age, size, and the region to which the company belongs depending on their margin on sales.

Need for the Study

This study is an attempt to review the progress of the sugar industry in India, understand its problems, and challenges in context of the ongoing liberalization process. The Indian sugar industry can be a global leader provided it comes out of the vicious cycle of shortage and surplus of sugarcane, lower sugarcane yield, lower sugar recovery, ever increasing production costs, and mounting losses. It needs quality management at all levels of activity to enhance productivity and production.

Scope of the Study

Profits are the measures of overall efficiency of a business. It is a financial metric that is used to assess the ability of a business to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. For the profitability ratio, having a higher value relative to a competitor's ratio or the same ratio from a previous period is indicative that the company is doing well. The Table 1 shows the list of companies taken for studying the profitability of the sugar industry.

Research Methodology

✣ **Sources of Data:** Secondary data is used for the study. The required data for the study was collected and compiled from "PROWESS" database of Centre for Monitoring Indian Economy (CMIE) for the period from 2006 to 2010. Prowess is a reliable and empowered corporate database.

Tools of Analysis

(i) Ratio Analysis : The ratio analysis is one of the most powerful tools of financial analysis. A ratio is a simple arithmetical expression of the relationship of one number to another.

(ii) t - test : A t-test is an inferential test that determines if there is a significant difference between the means of two data sets. In other words, a t - test decides if the two data sets come from the same population or from different populations.

(iii) ANOVA: Analysis of variance (ANOVA) is a collection of statistical models, and their associated procedures, in which the observed variance in a particular variable is partitioned into components attributable to different sources of variation. In its simplest form, ANOVA provides a statistical test of whether or not the means of several groups are all equal, and therefore, generalizes t-test to more than two groups.

✣ **Sampling Design :** As the complete source list of all the sugar companies was not available, the data for this study was selected based on convenience sampling method. Among the companies listed on the Bombay Stock Exchange

Table 1. Details of Sugar Companies Considered for the Study

S.No.	Name of the Company	Acronym	Age	Size	Region
1	Bannari Amman Sugars Ltd.	BAS	Moderate	Small	South
2	Dalmia Bharat Sugar & Industries Ltd.	DBS	Old	Small	South
3	Dharani Sugars & Chemicals Ltd.	DSC	New	Small	South
4	E I D-Parry (India) Ltd.	EPL	Moderate	Small	South
5	Empee Sugars & Chemicals Ltd.	ESC	New	Large	South
6	Gayatri Sugars Ltd.	GSL	New	Large	South
7	Indian Sucrose Ltd.	ISL	New	Small	North
8	Jeypore Sugar Co. Ltd.	JSC	New	Small	South
9	JK Sugar Ltd.	JKS	New	Small	North
10	KCP Sugar & Industries Corpn. Ltd.	KCP	New	Small	South
11	Khaitan (India) Ltd.	KIL	Moderate	Small	North
12	Kothari Sugars & Chemicals Ltd.	KSC	Moderate	Large	South
13	Naraingarh Sugar Mills Ltd.	NSM	New	Small	North
14	Oswal Overseas Ltd.	OOL	Moderate	Small	North
15	Oudh Sugar Mills Ltd.	OSM	Old	Small	North
16	Parrys Sugar Industries Ltd.	PSI	New	Small	South
17	Piccadily Agro Industries. Ltd.	PAI	New	Small	North
18	Ponni Sugars (Erode) Ltd.	PAL	New	Small	South
19	Prudential Sugar Corpn. Ltd.	PSC	New	Large	South
20	Rajshree Sugars & Chemicals Ltd.	RSC	New	Small	South
21	Rana Sugars Ltd.	RSL	New	Large	North
22	Ravalgaon Sugar Farm Ltd.	RSF	Old	Small	North
23	Sakthi Sugars Ltd.	SSL	Moderate	Large	South
24	Shree Renuka Sugars Ltd.	SRS	New	Large	South
25	Simbhaoli Sugars Ltd.	SISL	Old	Small	North
26	Sir Shadi Lal Enterprises Ltd.	SSEL	Old	Small	North
27	Sri Chamundeswari Sugars Ltd.	SCS	Moderate	Small	South
28	Thiru Arooran Sugars Ltd.	TAS	Old	Small	South
29	United Provinces Sugar Co. Ltd.	UPS	Old	Small	North
30	Venus Sugar Mills Ltd.	VSM	Old	Large	North

Source: Compiled by the authors from secondary data available in CMIE Prowess database.

and National Stock Exchange of India, 30 companies with consistent financial data were selected. Certain companies were excluded owing to irregular and/or inconsistent financial data support.

For the purpose of this study and analysis, the selected companies were classified into different groups on the basis of age, size, and region in which the companies are located. The study is chronological and covers a period of 5 years - from the financial year 2006-2007 to 2009-2010.

(i) Classification by Age : The sample companies were distributed by their age, which was considered by their year of incorporation as the birth year and March 31, 2011 as the concluding year. The selected companies are classified as new, moderate, and old companies as shown in the Table 2.

(ii) Classification by Size : As the sugar industry is highly capital intensive, the size was determined taking the total paid up equity share capital as base by the companies at the end of the study period. The selected companies were thus divided into two sizes - namely small and large as shown in the Table 3.

Table 2. Classification of Companies Based on their Age

Age Group	Age	Year of Incorporation	No of Companies	% to total
New	< 25 yrs	After 1985	15	50
Moderate	25 to 50 yrs	1960 - 1986	7	23
Old	> 50 yrs	Before 1960	8	27
		Total	**30**	

Source: Secondary data available in CMIE Prowess database.

Table 3. Classification of Companies Based on Paid up Equity Share Capital

Size	Value of Paid up Equity Share capital	No of Companies	% to total
Small	Less than ₹ 26 Crores	22	73
Large	Greater than ₹ 26 Crores	8	27
	Total	**30**	

Source: Secondary data available in CMIE Prowess database.

Table 4. Classification of Companies Based on Region

Size	No of Companies	% to total
Northern Region	13	43
Southern Region	17	57
Total	**30**	

Source: Secondary data available in CMIE Prowess database

(iii) Classification by Region : Based on the region of the States, the companies were classified mainly into two main regions - northern region and southern region (Table 4).

↳ **Significance of the Study :** The study has both academic and practical value. The study focuses on the profitability of the sugar industry, which may be of interest not only to those who are manufacturing sugar or related products, but also for others, who can get to know about the change within the industry. This study will be useful to the managements while making investment decisions and anticipating future conditions. In addition, the present study will be helpful to identify areas of strength and intrinsic value. This study may also be useful to creditors and financial institutions in their effective credit policy formulation.

↳ **Limitations of the Study :** The study is subject to the following limitations :

1) Few of the sample companies were not following a uniform accounting period. In such cases, the financial data was organized in such a way that it related to the twelve months of the relevant accounting year.

2) The financial statements from which the data have been extracted were historical and quantitative in nature. Hence, the study incorporates all the limitations that were inherent in the financial statements.

3) The study considers the financial data from 2006 to 2010 only.

Hypotheses

The following hypotheses were framed to conduct the analysis and evaluate the profitability of the companies in the Sugar industry based upon the margin on sales.

↳ **H01: Northern and Southern region companies, have, on an average, the same amount of profitability in terms of margin on sales.**

↳ **H02: Companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores, have, on an average, the same amount of profitability in terms of margin on sales.**

↳ **H03: The three groups of companies (New, Moderate, and Old) have, on an average, the same level of profitability in terms of margin on sales.**

Results and Analysis
The following Table 5 shows the analysis of profitability of the selected companies based on their margin on sales.

Table 5. Consolidated Profitability Ratios Based on Margin on Sales

S.No	Name of the Company	Particulars	2006	2007	2008	2009	2010
1	Bannari Amman Sugars Ltd.	EBDIT / NS	27.44	22.29	15.19	24.22	27.45
		EBIT / NS	19.55	16.86	9.02	19.58	23.2
		Gross profit / NS	41.9	25.79	10.06	34.75	37.81
		PBT / NS	17.54	15.74	7.72	17.97	22.11
		PAT / NS	14.11	13.12	7.5	16.33	15.9
2	Dalmia Bharat Sugar & Inds. Ltd.	EBDIT / NS	25.17	38.83	37.78	25.17	21.32
		EBIT / NS	20.78	33.84	32.62	20.68	15.70
		Gross profit / NS	42.16	47.14	42.14	49.99	36.14
		PBT / NS	17.10	28.95	25.89	13.36	8.61
		PAT / NS	13.32	20.75	20.70	8.15	5.84
3	Dharani Sugars & Chemicals Ltd.	EBDIT / NS	12.37	16.97	2.78	23.83	24.24
		EBIT / NS	10.68	15.00	21.25	20.83	21.90
		Gross profit / NS	34.46	29.16	4.69	2.47	0.88
		PBT / NS	5.70	8.63	-8.12	10.47	13.01
		PAT / NS	2.18	6.05	-3.86	4.32	7.65
4	E I D-Parry (India) Ltd.	EBDIT / NS	12.24	15.65	10.72	18.24	14.56
		EBIT / NS	10.02	12.92	8.51	17.22	12.81
		Gross profit / NS	23.62	19.18	21.74	12.19	21.96
		PBT / NS	8.69	11.22	6.19	16.11	11.14
		PAT / NS	6.26	7.75	3.93	11.20	7.43
5	Empee Sugars & Chemicals Ltd.	EBDIT / NS	14.11	9.18	12.23	15.33	17.87
		EBIT / NS	12.14	5.81	8.07	8.62	10.46
		Gross profit / NS	21.41	10.24	15.28	17.33	49.58
		PBT / NS	7.82	0.27	-0.72	0.61	0.13
		PAT / NS	9.70	0.70	0.54	-1.65	0.84
6	Gayatri Sugars Ltd.	EBDIT / NS	21.95	13.06	10.25	5.51	17.32
		EBIT / NS	17.70	9.25	2.73	-4.44	7.72
		Gross profit / NS	24.80	21.98	-4.19	35.21	34.12
		PBT / NS	10.67	3.02	-12.90	-18.40	-8.44
		PAT / NS	10.02	2.61	-12.96	-18.46	-8.44
7	Indian Sucrose Ltd.	EBDIT / NS	25.03	15.82	9.32	13.48	21.34
		EBIT / NS	21.16	11.77	5.25	8.70	16.48
		Gross profit / NS	30.16	7.24	17.84	20.85	18.20
		PBT / NS	17.60	7.91	0.06	2.88	6.54
		PAT / NS	12.13	3.93	-0.98	3.79	4.38
8	Jeypore Sugar Co. Ltd.	EBDIT / NS	27.89	18.88	15.34	30.19	32.63
		EBIT / NS	24.24	14.74	9.91	23.95	28.10
		Gross profit / NS	38.08	28.28	5.72	25.80	37.99
		PBT / NS	18.52	8.28	-3.12	2.24	11.09
		PAT / NS	12.80	4.39	-2.87	1.60	7.78
9	J K Sugar Ltd.	EBDIT / NS	15.08	2.78	8.63	9.73	7.97

		EBIT / NS	11.81	-1.13	4.28	5.87	3.09
		Gross profit / NS	36.37	10.43	-8.47	47.09	-41.22
		PBT / NS	6.32	-6.54	-1.85	-1.07	-2.64
		PAT / NS	3.57	-4.75	-1.75	-1.07	-2.64
10	K C P Sugar & Industries. Corpn. Ltd.	EBDIT / NS	29.38	15.12	10.18	16.81	18.56
		EBIT / NS	27.31	12.09	5.96	11.23	14.46
		Gross profit / NS	40.19	26.92	23.42	27.29	33.38
		PBT / NS	26.14	11.03	4.13	9.38	13.23
		PAT / NS	15.89	7.12	2.83	5.82	9.15
11	Khaitan (India) Ltd.	EBDIT / NS	4.21	5.65	5.49	15.55	11.30
		EBIT / NS	2.97	3.91	3.52	7.37	2.62
		Gross profit / NS	17.18	2.48	15.36	42.75	34.50
		PBT / NS	1.50	2.46	-1.42	-11.21	-19.10
		PAT / NS	1.86	2.66	-0.59	-1.10	-19.10
12	Kothari Sugars & Chemicals Ltd.	EBDIT / NS	13.29	12.27	10.27	7.09	10.89
		EBIT / NS	10.54	10.41	6.80	2.39	7.02
		Gross profit / NS	25.58	15.24	12.74	8.55	20.13
		PBT / NS	10.53	8.33	4.18	0.41	5.51
		PAT / NS	10.46	7.33	3.64	0.30	3.25
13	Naraingarh Sugar Mills Ltd.	EBDIT / NS	37.73	16.24	11.69	18.25	12.97
		EBIT / NS	31.18	13.71	9.40	16.86	12.12
		Gross profit / NS	17.88	3.24	8.91	30.34	16.39
		PBT / NS	17.86	5.40	1.27	5.45	5.32
		PAT / NS	16.43	5.40	2.83	6.40	5.99
14	Oswal Overseas Ltd.	EBDIT / NS	14.09	6.27	5.28	8.16	9.53
		EBIT / NS	10.04	0.92	1.39	3.23	5.61
		Gross profit / NS	24.92	-5.82	23.79	20.64	-13.22
		PBT / NS	9.49	0.17	0.21	1.05	3.37
		PAT / NS	8.81	0.02	0.15	0.61	2.56
15	Oudh Sugar Mills Ltd.	EBDIT / NS	21.14	1.99	23.41	24.64	4.23
		EBIT / NS	18.20	-2.31	17.23	20.18	-3.00
		Gross profit / NS	31.44	1.08	-1.18	45.32	-14.93
		PBT / NS	14.60	-8.29	-1.71	5.09	-19.58
		PAT / NS	8.56	-5.69	-1.23	3.25	-14.55
16	Parrys Sugar Industries Ltd	EBDIT / NS	25.52	29.35	23.37	36.6	6.38
		EBIT / NS	21.9	23.05	14.7	23.06	-6.35
		Gross profit / NS	26.59	42.31	23.67	14.87	-12.17
		PBT / NS	16.77	16.75	6.94	-5.87	-28.61
		PAT / NS	12.88	9.8	3.94	0.46	-27.68
17	Piccadily Agro Industries. Ltd.	EBDIT / NS	17.98	8.72	6.74	12.98	15.57
		EBIT / NS	10.59	4.19	3.80	10.26	12.53
		Gross profit / NS	-17.52	8.07	10.71	34.12	24.41
		PBT / NS	3.66	0.70	1.25	8.18	10.60
		PAT / NS	3.92	0.40	0.98	6.20	5.24
18	Ponni Sugars (Erode) Ltd.	EBDIT / NS	15.02	7.60	0.34	15.93	23.41
		EBIT / NS	13.34	5.97	-1.51	13.91	22.21

		Gross profit / NS	20.71	15.33	9.46	18.63	21.44
		PBT / NS	12.03	5.20	-2.03	12.79	21.69
		PAT / NS	7.88	3.28	-1.23	8.37	14.42
19	Prudential Sugar Corpn. Ltd.	EBDIT / NS	18.70	8.78	-13.54	11.44	7.00
		EBIT / NS	15.09	5.83	-9.87	6.26	3.31
		Gross profit / NS	16.31	15.09	7.78	-3.33	9.73
		PBT / NS	11.83	2.77	-21.92	0.60	0.16
		PAT / NS	9.29	1.68	-14.56	0.19	-1.23
20	Rajshree Sugars & Chemicals Ltd.	EBDIT / NS	24.06	13.33	5.43	24.23	24.61
		EBIT / NS	20.63	10.79	2.38	20.55	20.43
		Gross profit / NS	22.29	23.00	15.11	27.06	21.54
		PBT / NS	16.58	6.64	-1.72	9.25	12.08
		PAT / NS	11.23	5.58	-1.38	6.03	7.96
21	Rana Sugars Ltd.	EBDIT / NS	26.59	29.33	11.75	12.95	21.62
		EBIT / NS	22.16	23.66	5.27	2.07	15.40
		Gross profit / NS	49.53	36.21	19.46	-6.03	4.31
		PBT / NS	17.32	18.54	-3.87	-24.54	3.94
		PAT / NS	12.64	15.72	-3.53	-20.03	3.57
22	Ravalgaon Sugar Farm Ltd.	EBDIT / NS	14.94	-1.50	11.00	12.80	18.92
		EBIT / NS	10.58	2.49	8.13	10.64	15.42
		Gross profit / NS	14.10	-25.89	14.43	53.90	54.28
		PBT / NS	8.05	-8.40	4.40	9.45	14.34
		PAT / NS	4.94	-5.86	2.27	7.01	9.58
23	Sakthi Sugars Ltd.	EBDIT / NS	15.07	24.00	22.75	10.34	14.69
		EBIT / NS	13.14	21.66	19.70	5.14	10.88
		Gross profit / NS	20.26	33.13	27.28	28.89	12.84
		PBT / NS	4.59	11.43	4.47	-8.50	8.83
		PAT / NS	4.52	11.43	4.47	-7.78	7.37
24	Shree Renuka Sugars Ltd.	EBDIT / NS	11.61	15.73	12.92	15.67	12.76
		EBIT / NS	10.56	12.37	10.89	12.97	11.31
		Gross profit / NS	16.05	29.98	16.75	-3.24	11.38
		PBT / NS	8.85	10.24	7.34	9.38	9.95
		PAT / NS	6.66	7.14	5.17	6.18	7.28
25	Simbhaoli Sugars Ltd.	EBDIT / NS	14.10	-0.41	4.20	16.83	-0.08
		EBIT / NS	11.97	2.11	-0.67	13.18	-2.60
		Gross profit / NS	36.74	39.98	44.17	37.33	8.91
		PBT / NS	8.33	-6.52	-6.66	6.87	-8.43
		PAT / NS	5.00	-6.58	-4.40	7.17	-5.00
26	Sir Shadi Lal Enterprises Ltd.	EBDIT / NS	11.54	3.65	-9.11	9.59	9.53
		EBIT / NS	10.39	2.16	-4.61	5.66	6.39
		Gross profit / NS	47.09	47.23	-8.52	42.54	28.97
		PBT / NS	9.52	1.04	-20.07	-0.22	3.06
		PAT / NS	6.40	0.56	-14.19	-1.36	2.66
27	Sri Chamundeswari Sugars Ltd.	EBDIT / NS	2.32	20.22	21.44	13.81	20.34
		EBIT / NS	-2.00	17.63	18.47	10.81	13.00
		Gross profit / NS	29.38	30.32	25.51	19.59	35.81

		PBT / NS	-7.60	14.76	12.17	3.56	0.36
		PAT / NS	-1.28	13.85	9.36	1.81	0.20
28	Thiru Arooran Sugars Ltd.	EBDIT / NS	16.69	2.99	10.34	21.35	9.55
		EBIT / NS	13.15	-0.36	6.96	18.60	6.67
		Gross profit / NS	40.35	37.94	42.20	24.67	21.32
		PBT / NS	7.84	-5.57	0.87	12.59	0.38
		PAT / NS	4.77	-3.86	0.41	6.73	0.63
29	United Provinces Sugar Co. Ltd.	EBDIT / NS	17.68	4.79	11.04	13.12	8.45
		EBIT / NS	12.85	0.95	5.25	7.61	4.36
		Gross profit / NS	21.44	29.47	-3.40	23.45	-2.30
		PBT / NS	5.26	-3.93	-0.28	-0.64	0.44
		PAT / NS	2.49	-2.65	0.13	-0.10	0.34
30	Venus Sugar Mills Ltd	EBDIT / NS	11.05	-6.94	8.77	-1.39	-8.11
		EBIT / NS	6.63	-1.92	0.67	2.60	2.39
		Gross profit / NS	36.08	-15.48	11.51	58.75	-42.36
		PBT / NS	1.02	-18.02	-14.55	-12.44	-29.86
		PAT / NS	1.02	-18.02	-14.55	-12.44	-29.86

Source: Compiled from Secondary data available in CMIE Prowess database.

Note:

EBDIT - Earnings Before Depreciation, Interest and Tax, EBIT - Earnings Before Interest and Tax, PBT - Profit Before Tax, PAT - Profit After Tax and NS - Net Sales.

Testing of Hypotheses

✥ **Hypotheses 1**

t – Test for Margin on Sales Based on the Region

✥ **Aim:** The present study aimed to compare the profitability of selected companies in the sugar industry in terms of margin on sales in sugar companies located in the northern region and southern region of India.

✥ **Null Hypothesis:** Northern and southern region companies have, on an average, the same amount of profitability in terms of margin on sales.

✥ **Alternative Hypothesis:** Northern and southern region companies do not have, on an average, the same amount of profitability in terms of margin on sales.

Table 6. *t* -Test for Margin on Sales Based on the Region

S.No	Region	N	Mean	to	Significance	Remarks
1	Northern region	13	7.397384615	-2.29067	0.02971794	< 0.05 the level of significance. So reject Null Hypothesis
2	Southern region	17	15.68147059			

Level of Significance = 5%   Degree of Freedom = 28

Source: Secondary - Computed

Since the significant value shown in Table 6 is less than 0.05, the null hypothesis is rejected. Hence, it can be said that the sugar companies located in the northern and southern region of India did not have, on an average, the same amount of profitability in terms of margin on sales. Comparing the means, it is concluded that southern region companies had higher profitability in terms of margin on sales.

↳ **Hypotheses 2**

***t*– test for Margin on Sales Based on the Size of the Company**

↳ **Aim:** To compare the mean values of the profitability of selected companies in the sugar industry in terms of margin on sales in companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores.

↳ **Null Hypothesis:** Companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores have, on an average, the same amount of profitability in terms of margin on sales.

↳ **Alternative Hypothesis:** Companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores do not have, on an average, the same amount of profitability in terms of margin on sales.

Table 7. *t* -test for Margin on Sales Based on the Paid-up Share Capital

S.No	Paid-up Share Capital	N	Mean	to	Significance	Remarks
1	Less than ₹ 26 crores	22	13.7154	1.428	0.164	the level of significance > 0.05 So, accept Null Hypothesis
2	Greater than ₹ 26 crores	8	7.6265			

Level of Significance = 5%   Degree of Freedom = 28

Source: Secondary - Computed

Since the significant value shown in the Table 7 is greater than 0.05, the null hypothesis is accepted. Comparing the means, it is concluded that the companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores have, on an average, the same amount of profitability in terms of margin on sales.

↳ **Hypotheses 3**

Anova for Margin on Sales Based on their (the companies') Age

↳ **Aim:** In this study also, the companies are classified into three groups New, Moderate , Old, and their profitability in terms of margin on sales is to be compared on the basis their mean values.

↳ **Null Hypothesis:** The three groups of companies have, on an average, the same level of profitability in terms of margin on sales.

↳ **Alternative Hypothesis:** The three groups of companies do not have, on an average, the same level of profitability in terms of margin on sales.

Table 8. Descriptive Statistics for Margin on Sales Based on Age of the Companies

S.No	Age	N	Mean
1	Moderate	7	11.24771429
2	New	16	12.90475
3	Old	7	11.07728571
	Total	30	12.0917

Source: Secondary - Computed

Table 9. ANOVA for Margin on Sales Based on Age of the Companies

S.No	Particulars	Sum of Squares	df	Mean Square	F	Sig.	Remarks
1	Between Groups	22.76624244	2	11.38312122	0.097	0.9082	the level of significance > 0.05 So, accept Null Hypothesis
2	Within Groups	3180.48496	27	117.7957393			
	Total	3203.251202	29				

Level of Significance = 5%   Degree of Freedom = 28

Source: Secondary - Computed

The Table 8 shows the mean value of profitability of the three companies based on their margin on sales. Since the significant value as shown in the Table 9 is greater than 0.05, the null hypothesis is accepted. The three groups of companies based on their age have, on an average, the same level of profitability in terms of margin on sales.

Findings

Findings from *t* - test

⮵ **Based on Region:** Northern and southern region companies did not have, on an average, the same amount of profitability in terms of margin on sales. Comparing the means, it is concluded that the southern region companies had higher profitability in terms of margin on sales.

⮵ **Based on Size:** Comparing means, it is concluded that companies having paid-up share capital less than ₹ 26 crores and greater than ₹ 26 crores had, on an average, the same amount of profitability in terms of margin on sales.

Findings from ANOVA:

⮵ **Based on Age:** The three groups of companies, based on their age, had, on an average, the same level of profitability in terms of margin on sales.

Suggestions

Keeping in mind the variables that influence the profitability, the following suggestions have been made :

⮵ **Monitoring and Controlling:** The companies can adopt a framework for monitoring the profitability at all levels. The companies can take steps regularly in comparing the monthly targets with their achievements at each and every level and can take immediate actions if there are any deviations. Continuous monitoring and controlling will lead to increase in the profitability of the companies.

⮵ **Effective Control Over Expenses:** The administration and other expenses eat away a major share of the income earned by the companies. Therefore, they can take adequate measures to reduce their expenditure by reducing the staff cost and operating cost. The companies should try to have an efficient control over the interest payments. Since the profitability of the companies are affected by the expenses, it is necessary to have an effective control over all expenses.

⮵ **Proper Usage of By-products:** The companies should make use of the by-products of sugar production - bagasse, molasses, and ethanol, which are used in fuels, foundries, paint industries, distilleries for power alcohol, acetone, potable alcoholic drinks, newsprint paper, and cattle field without wasting it. Disposing of these by-products is a huge problem in many companies. So the companies should be aware of selling these by-products and thereby make profits, which will increase their profitability.

⮵ **Government Role:** The Government should take necessary steps to revise the sugar prices, that is, the statutory minimum price (SMP) fixed by it. The Government should relax the regulations for sugar exports. The Government has to widen its research and development initiatives in the sugar industry in view of increasing the productivity, thereby increasing the profitability by introducing new methods and technologies. It has to be done in such a manner that the farmers won't switch over to other crop cultivation. It should spread awareness among the farmers of different regions about the new techniques for increasing productivity.

Conclusion

The Indian sugar industry uses sugarcane in the production of sugar and hence, the maximum number of companies are likely to be found in the sugarcane growing states of India, including Uttar Pradesh, Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Andhra Pradesh. Profits are the measure of overall efficiency of a business. It is a financial metric that is used to assess the ability of a business to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. The study suggests that the selected companies in the sugar industry should have an efficient control over their indirect expenses, and to have an effective monitoring and control system. It is also suggested that the Government of India needs to take some measures to revise the sugar prices, needs to initiate

research and development programmes, and needs to create awareness among farmers about new technologies. There is scope for further research in extension of the present research as an exclusive study in the field of profitability in various industries.

Research Implications

We suggest that the companies can adopt a framework for monitoring the profitability at all levels by regularly comparing the monthly targets with their   achievements to enhance their profitability. The profitability of the companies are affected by the expenses, so it is necessary to have an effective control over all expenses. The companies should be aware of selling these by-products and thereby make profits, which increases their profitability and reduces the risk of disposing these by-products. Moreover, the Government should take the necessary steps to revise the sugar prices, that is, the statutory minimum price (SMP) fixed by it and should also relax the regulations for exporting sugar from India.

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