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A COMPARATIVE ANALYSIS OF GROWTH OF SUGAR INDUSTRY IN INDIA DURING PRE AND POST GLOBAL RECESSION PERIOD

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ABSTRACT

Agro-based sector, which is one of the major upcoming industrial sectors in India, promotes integrated development of both agriculture and industry. It binds and strengthens industrial and agricultural linkages. Sugar industry is one of the most prominent agro-based manufacturing industries in India. At present, it is the second largest agro based industry of India after textile industry. India is the world's largest consumer of sugar and second largest producer of sugar in the world after Brazil. This was one of the worst hit sectors by Great Recession that world economy suffered during 2007-2009.Looking at the strategic impact of the global crisis on the Indian Sugar Industry, an attempt is made to compare and analyse the growth of Sugar Industry in India during pre and post-recession period. Present study attempts to analyse the growth of Sugar Industry in relation to five growth parameters namely: number of factories, number of employees, productive capital, profits and net-value added for a period of 24 years from 1993-94 to 2016-17; which is bifurcated into two: pre-recession period ranging from 1993-94 to 2007-08 and post-recession period ranging from 2008-09 to 2016-17. Simple growth rates and compound annual growth rates have been calculated for various parameters considered for growth. Using t-test, it wasprimarily concluded that there is significant difference in growth of Sugar Industry in India during the pre-recession and post-recession period.

SECTION-I
INTRODUCTION

Agro-based industries are those industries which depend on agricultural products as primary raw-material. Agro-industries play an important role in strengthening industrial and agricultural linkages which in turn promotes integrated development of both agriculture and industry. The Agro-based manufacturing sector of agro-industry consists of many industries such as textile, paper, sugar, wood and wood products, rubber, etc. Indian Sugar industry which at present is the second largest agro-based industry of India after textile industry has always been a focal point for socio-economic development in the rural areas. It provides livelihood to nearly 50 million sugarcane farmers and a large number of agricultural labourers. India is the largest sugar consumer and second largest producer of sugar in the world. It has a total turnover of Rs. 500 billion per annum. It is also occupies the first place in the production of 'Gur' and 'Khandsari'. There are over 460 sugar mills in different parts of the country. (indiamirror.com/Indian-industries/sugar.html)

Growth of any sector/industry depends on a number of micro and macro political, economic, financial, legal, social and other factors. One important criterion for growth analysis is the phase of business cycle which an economy goes through. 'The Great Recession' from 2007-2009 was one sub-par phase for the world economy. The fall in subprime mortgage market in the United States (U.S.) was the origin of this recession. This situation was attributable to a mix of risks that developed in the financial system, combined with a chain of incidents that started with the flopping of the U.S. housing scene. This recession technically dates from December 2007 to June 2009 owing to a conglomerate of banks not being able to fund businesses and home-loan borrowers repaying debts instead of seeking new loans and spending. This led to a cascading effect for all global economies. China, Japan, Hong Kong, India and other Asian markets were soon affected and vulnerized by this crisis in the U.S. The Indian scenario was still reasonable with GDP growth rate declining from 9% in 2007-08 to 7.8% in the first and second quarter of 2008. However, with the crash of Wall Street in September 2008, India faced a massive downfall in the growth numbers with 5.8%, 5.8% and 6.1% respectively for the next three financial quarters. (economictimes.indiatimes.com, article by Swaminathan SA Aiyar)

In India, one of the worst hit sectors was 'Sugar Industry' which played a key role in the nation's economy in terms of contribution to industrial production, GDP and export earnings. Recession created a situation where our farmers were hard hit by credit crisis, low demand for their produce and also low demand in export markets for Indian products. This reduced demand ultimately affected the profitability of the industry.

Hence, looking at the strategic impact of the global crisis on the Indian sugar industry, an analysis of the growth of Indian Sugar Industry during the great recession that the world economy suffered during 2007-2009 is very important and much needed. Therefore, this study makes an attempt to compare and analyse the growth of Sugar Industry in India during pre and post-recession period..

This research paper includes the following sections presented next. To begin with, literature review of past work done in this field is discussed. It is followed by objectives, proposed hypothesis, research methodology, an analysis of growth of Sugar Industry in India during pre and post-recession period, results from hypothesis testing, and finally the conclusion.

SECTION-II
REVIEW OF LITERATURE

A literature review is an evaluative report of information found in the literature related to selected area of study. Table 1 depicts prior studies in this field.

Table 1: Review of Literature

Author's & Year of Publication	Period of Study	Scope of Study	Parameters of Study	Major Findings & Recommendations (If Any)
Kaur and Kiran (2008)	Pre-reform period from 1980-81 to 1990-91 and post-reform period from 1991-92 to 2002-03	Growth and productivity of Indian manufacturing sector under new policy regime	Capital productivity, Labour productivity and total factor productivity	In post-reform period, productivity of Indian manufacturing sector has gone down. They suggested efficient use of labour, capital and creating productivity suitable environment for the development of Indian manufacturing Sector.
Das (2010)	Pre and post downturn regime	Examine the correlative-incentive pictures between global recession and Indian textile industry and its impact on HR (Human Resources) practices in India	Textile exports and HR practices explored by Indian textile firms	Global economic slowdown resulted in shrinkage of output, decreasing investments, retrenchments & layoffs and finally adversely affecting the profitability of the Indian textile industry.
Gopalakrishnan, Arumbakwam, Santhoshkumar, and Divya (2010)	Immediate Post-recession period	Impact of global economic challenge on Indian textile industry.	Employment and Indian Textile Exports	Recession of 2008 had slowed down Indian textile sector, resulting in production cuts and shut down of less making units, causing a decline of 9.92 % in overall employment between October-December 2008. They found out that India's textile exports had declined by 5.26 % during April-February 2008-09 compared to the corresponding period of the previous financial year. Indian textile industry can grow provided it introduces innovation and with government's introduction of relief packages in the wake of the global economic slowdown.
Singh, Jain and Yadav (2013)	Period 2001-2011	Study of profitability of the 100 non-financial companies of the Bombay Stock Exchange (BSE) 100 Index	Profitability ratios based on Market Capitalization Data	Though the phase of recession did cause fluctuations in profitability of certain constituent sectors, overall, the sample companies emerged unscathed from the impact of recession, due to their strong financial fundamentals. They were also found to be working towards generating better returns for shareholders.
Reddy and Reddy (2013)	Liquidity ratios, Working Capital Investment Efficiency ratios, Solvency ratios	Financial status of select sugar manufacturing units using the Altman's Z-score model to predict the risk of financial distress.	Working capital turnover efficiency, liquidity position & solvency	Working capital turnover efficiency, liquidity position and solvency situation of the companies is not good. These companies were suffering from financial distress and moving towards bankruptcy. They suggested rigorous efforts from all concerned parties like managers, employees and stakeholders to turnaround their position.
Kumar (2015)	2006-07 to 2010-11	A Study of Financial Performance of Select Sugar Companies in Tamilnadu	Profitability, Liquidity, Long-term Solvency and Asset Utilization Efficiency	It was found that on an average all companies were at average to the industry standards. Further it was concluded that all selected sugar companies showed an average productivity which could be increased provided government and bank agencies came forward to support.
Nair (2015)	2011-12 to 2013-14	A study to Examine the Extent of Financial Distress in Indian Sugar Sector	Profitability, Efficiency in Operations and Long-term Solvency	Study concluded wide-spread financial distress in sugar sector. All parameters showed a decreasing trend. Research recommended immediate steps for survival of the companies such as reducing the pricing policy of sugar and sugarcane. Possibility of export of surplus sugar needed to be explored.

SECTION-III
OBJECTIVES OF THE STUDY

Following are the main objectives of this research.

A. To study the growth of sugar industry in India during pre and post-recessionperiod.

B. To compare the growth of sugar industry in India during pre and post-recession period.

C. To give suggestions for the growth of sugar industry in India.

SECTION-IV
PROPOSED HYPOTHESIS OF THE STUDY

Based on the data of selected growth parameters for Sugar Industry in India during pre and post-recession period, the research proposes following hypothesis.

There is no significant difference in the growth of Sugar Industry in India between the pre-recession and post-recession period.

SECTION-V
RESEARCH METHODOLOGY

For the purpose of this study the parameters used for studying growth, time period and tools used for analysis are discussed as follows.

A. Study Parameters

For the current research, growth of sugar industry is analysed on the basis of five parameters - number of factories, employment, productive capital, profits and net-value added. These five parameters constitute the most significant ones for studying growth trends in any manufacturing sector.

B. Study Period

The period of study is 24 years from 1993-94 to 2016-17; which is bifurcated into two: pre-recession period ranging from 1993-94 to 2007-08 and post-recession period ranging from 2008-09 to 2016-17.

C. Tools used for analysis

Simple growth rates and compound annual growth rates have been calculated for various parameters considered for growth. These parameters have been selected as they are the key indicators of growth of Sugar Industry in India. For this research study, t test was applied using SPSS (version 24) to test the hypothesis.

Simple growth rates, average annual growth rates and compound annual growth rates at national level have been calculated for various parameters; considered for the growth. They are calculated as follows.

- Simple Growth Rate = Amount of current year-Amount of previous year $\times 100$ / Amount of previous year
- Average Annual Growth Rate(AAGR) = (Growth Rate in Period A + Growth Rate in Period B + Growth Rate in Period C + [Other Periods]) / Number of Periods
- Compound Annual Growth Rate(CAGR) = (End Value/Start Value)^(1/Years)-1

Compound Annual Growth Rates (CAGR) was used to analyse the growth of various selected parameters. This is because CAGR is a better measure given the large Range and high Standard Deviation of the data.

SECTION-VI
GROWTH OF SUGAR INDUSTRY IN INDIA DURING PRE AND POST-RECESSION PERIOD

Growth of sugar industry in India is bifurcated into pre and post-recession period as previously mentioned and studied as follows.

Table 2 depicts the growth in number of factories, employment, productive capital, profits and net value added for the Sugar Industry in India from 1993-94 to 2007-08 and **Table 3** depicts the growth in number of factories, employment, productive capital, profits and net value added for the Sugar Industry in India from 2008-09 to 2016-17.

Table 2: Growth of Sugar Industry in India during Pre-Recession Period: Data from 1993-94 to 2007-08

Year	Number of factories		Total employees		Productive capital		Profits		Net Value Added	
	Numbers	Growth Rate(%)	Numbers	Growth Rate(%)	Rs. million	Growth Rate(%)	Rs. million	Growth Rate(%)	Rs. million	Growth Rate(%)
1993-94	1,283		3,30,158		1,25,090.80		4,937.90		24,779.50	
1994-95	1,261	-1.71	3,27,083	-0.93	65,738.60	-47.45	14,716.40	198.03	36,881.20	48.84
1995-96	1,291	2.38	3,40,919	4.23	68,140.40	3.65	-2,102.70	-114.29	28,123.30	-23.75
1996-97	2,039	57.94	3,54,874	4.09	73,803.90	8.31	-14,683.40	-598.31	21,207.20	-24.59
1997-98	1,220	-40.17	3,16,607	-10.78	95,527.40	29.43	-406.2	97.23	34,336.20	61.91
1998-99	1,198	-1.80	3,07,374	-2.92	1,01,750.30	6.51	228.3	156.20	39,163.60	14.06
1999-00	1,194	-0.33	3,22,099	4.79	1,04,387.50	2.59	-2,829.40	-1,339.33	40,830.90	4.26
2000-01	1,062	-11.06	3,17,421	-1.45	1,34,870.70	29.20	-9,192.20	-224.88	44,790.60	9.70
2001-02	968	-8.85	2,93,996	-7.38	1,29,683.30	-3.85	-8,737.70	4.94	45,120.60	0.74
2002-03	933	-3.62	2,95,760	0.60	1,31,300.60	1.25	-20,298.70	-132.31	36,997.40	-18.00
2003-04	877	-6.00	2,74,465	-7.20	1,39,016.40	5.88	-24,323.30	-19.83	28,802.80	-22.15
2004-05	850	-3.08	2,44,608	-10.88	1,47,272.00	5.94	-9,350.40	61.56	39,568.60	37.38
2005-06	819	-3.65	2,60,546	6.52	1,77,277.90	20.37	9,915.80	206.05	55,414.90	40.05
2006-07	794	-3.05	2,74,079	5.19	2,02,840.80	14.42	28,777.10	190.21	78,211.50	41.14
2007-08	778	-2.02	2,88,841	5.39	2,69,264.90	32.75	-31,361.60	-208.98	29,748.30	-61.96
AAGR(%)	-1.79		-0.77		7.79		-123.12		7.69	
CAGR(%)	-3.51		-0.95		5.63		-14.12		1.31	

Source: Industryoutlook.cmie.com

Table 3: Growth of Sugar Industry in India during Post-Recession Period: Data from 1993-94 to 2007-08

Year	Number of factories		Total employees		Productive capital		Profits		Net Value Added	
	Numbers	Growth Rate(%)	Numbers	Growth Rate(%)	Rs. million	Growth Rate(%)	Rs. million	Growth Rate(%)	Rs. million	Growth Rate(%)
2008-09	733	-5.78	2,61,692	-9.40	3,25,729.40	20.97	-42,941.70	-36.92	24,826.80	-16.54
2009-10	744	1.50	2,59,757	-0.74	3,90,400.30	19.85	-15,416.90	64.10	53,866.20	116.97
2010-11	895	20.30	2,68,199	3.25	4,51,694.30	15.70	-779.7	94.94	82,667.80	53.47
2011-12	906	1.23	2,61,422	-2.53	4,89,575.40	8.39	-24,031.90	-2,982.20	74,113.50	-10.35
2012-13	859	-5.19	2,59,838	-0.61	4,98,428.40	1.81	-23,560.50	1.96	79,093.10	6.72
2013-14	791	-7.92	2,47,835	-4.62	4,75,391.10	-4.62	-51,330.50	-117.87	57,519.90	-27.28
2014-15	763	-3.54	2,39,817	-3.24	4,61,813.40	-2.86	-34,089.70	33.59	77,040.30	33.94
2015-16	780	2.23	2,32,407	-3.09	5,27,433.60	14.21	-35,212.20	-3.29	84,298.20	9.42
2016-17	741	-5.00	2,27,785	-1.99	5,38,963.80	2.19	13,153.60	137.36	1,40,643.50	66.84
AAGR(%)	-0.24		-2.55		8.40		-312.04		25.91	
CAGR(%)	0.14		-1.72		6.50		-13.75		24.21	

Source: Industryoutlook.cmie.com

A. Number of Factories

Number of factories includes all registered small, medium and large units engaged in manufacture of sugar in India. As per table 2 number of factories has decreased from 1283 units in 1993-94 to 778 units in 2007-08. As per table 3, number of factories has marginally increased from 733 units in 2008-09 to 741 units in 2016-17. This shows decline in number of factories engaged in production of sugar in India during pre-recession period where as only a marginal increase during post-recession period.

As per table 2, it is observed that almost in all years, growth rate in number of factories has reduced. Only in the year 1996-97, it has increased by 57.94%. Table 3 again indicates decline except growth at 20.3% in 2010-11.

CAGR for post-recession period is 0.14%, which is a bit better compared to that of pre-recession period which was at -3.51%. Hence, there is significant difference in growth of number of factories during pre and post-recession period.

B. Employment

Employment represents all workers and employees engaged in sugar producing units in India. As per table 2, people employed were 3, 30,158 in the year 1993-94 decreased to 2, 88,841 in 2007-08. As per table 3, people employed were 2, 61,692 in the year 2008-09 which reduced to 2, 27,785 in 2016-17.

It is also observed from table 2 that employment had highest fall during 1997-98 at -10.78% and 2004-05 at -10.88%. As per table 3 all years except 2010-2011 have a negative growth rates.

It is also observed that there is decline in growth during both pre and post-recession period. CAGR of both pre and post-recession period is negative at -0.95% and -1.72%

respectively.This shows an alarming situation for the sugar industry in terms of employment.

C. Productive Capital

Productive capital is the sum of fixed capital and working capital employed in textile manufacturing sector as on closing day of accounting year. As per table 2, productive capital was ₹1, 25,090.8 million in the year 1993-94 this increased to ₹ 2, 69,264.90 million in 2007-08. As per table 3, productive capital was ₹3, 25,729.4 million in 2008-09 which increased to ₹ 5,38,963.8 million in 2016-17.

From table 2, it is observed that productive capital indicated an increase in growth rate each year and is highest at 32.75% in 2007-08. As per table 3, it is observed that growth rate has come down each year till 2014-15 after which it increased to 14.21% in 2015-16.

CAGR for productive capital for pre-recession period was 5.63% and had come up to 6.5% for the post-recession period. It is concluded that there is significant difference in productive capital during pre and post-recession period.

D. Profits

Profits represent profit after-tax which is the final residual amount of profit generated. It is calculated as: Total Revenue-Total expenses including tax. As per table 2, profits were ₹4937.9 million in the year 1993-94 which decreased to loss of ₹-31,361.6 million in 2007-08. As per table 3, loss were ₹-42,941.7 million in the year 2008-09 which moved towards profit of ₹13,153.6 million in 2016-17. In post –recession period each year shows loss except the year 2016-17 which finally resulted into some profit.

Table 2 shows that profits were fluctuating at a very high rate each year. Both negative and positive growth rates are observed year-on-year basis. Highest fall was in 1999-2000 at -1339.33%. As per table 3, highest fall in profit was in 2011-12 at -2982.2%. Both periods show average negative growth rate at -123.12% and -312.1% respectively.

CAGR for profits during post-recession period was -13.75% which is slightly better compared to that of pre-recession period which was at -14.12%; indicating revival trend during post-recession period.

E. Net Value Added

Net value added is arrived at by deducting total input and depreciation from total output. As per table 2, net value added was ₹ 24,779.5 million which has increased to ₹29,748.3 million in 2007-08. As per table 3, net value added was ₹ 24,826.8 million in 2008-09 which has increased to 1,40,643.5 million in 2016-17.

In pre-recession period growth rate is very nominal. In the year 2007-08 net value added showed a negative growth at -61.96% which suggests on set of recession. During the post-recession period, there is remarkable growth in net value added. In 2009-10, the growth rate was 116.97% which suggests improvement in the sugar industry and decreasing effect of recession.

CAGR for net value added during post-recession period was 24.21% which was higher than pre-recession CAGR of 1.31%. Net value added also shows a significant difference in growth during pre and post-recession period.

It is concluded that Sugar Industry in India has achieved a growth in number of factories, productive capital, profits and net value added. Productive capita and net value added show impressive and noteworthy growth during both pre and post-recession period. Number of factories growth rate is better in post-recession period but overall number of units has reduced in 24 years. Profits have reduced during pre-recession period but by the end of post-recession period they have marginally improved. Employment is a matter of concern during both pre and post-recession period. It is also observed thatfrom the year 2007-08 all parameters except employment and productive capital show a negative growth rate in the year 2007-08 which suggests onset of effects of recession on Sugar Industry in India.

F. Results from Hypothesis Testing

For the measure of significant difference in growth of Sugar Industry in India during pre and post-recession period, the study has applied t-test. Independent Samples t-test was conducted on the data to check the validity of the hypothesis.

Table 4 describes the mean, standard deviation and standard error mean for the two groups called pre-recession and post-recession for analysis of five selected growth parameters for sugar industry in India. The results of t-test are shown in Table 5. As it can be clearly depicted from Table 5, p-value for all the five parameters is less than 0.05 which suggests that hypothesis of the study is rejected. **Therefore, we can primarily conclude that there is significant difference in growth of Sugar Industry in India during the pre-recession and post-recession period.** There can be several reasons attributable to this phenomenon.

Table 4: Group Statistics for Select Parameters for Indian Sugar Industry during Pre- Recession and Post-Recession Period

Parameter	Identity	N	Mean	Standard Deviation	Standard Error Mean
Number of Factories	Pre-Recession	15	1104.4667	321.31646'	82.96355
	Post-Recession	9	801.3333	67.71447	22.57149
Total Employees	Pre-Recession	15	303255.3333	30959.60141	7993.73471
	Post-Recession	9	250972.4444	14548.38306	4849.46102
Productive Capital	Pre-Recession	15	131064.3667	54185.18487	13990.55457
	Post-Recession	9	462158.8556	67336.7876	22445.59587
Profits	Pre-Recession	15	-4314.0067	15473.41103	3995.2175
	Post-Recession	9	-23801.0556	20390.98944	6796.99648
Net Value Added	Pre-Recession	15	38931.7733	13986.09630	3611.19454
	Post-Recession	9	74896.5889	31115.64739	10371.88246

Table 5: Results of t-test for Significant Difference of Growth of Sugar Industry in India during Pre-Recession and Post Recession Period

Parameter		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Number of Factories	Equal Variances Assumed	6.141	0.021	2.770	22	0.011
	Equal Variances Not Assumed			3.526	15.996	0.003
Total Employees	Equal Variances Assumed	5.133	0.034	4.731	22	0.000
	Equal Variances Not Assumed			5.592	21.181	0.000
Productive Capital	Equal Variances Assumed	0.414	0.526	-13.241	22	0.000
	Equal Variances Not Assumed			-12.518	14.199	0.000
Profits	Equal Variances Assumed	0.614	0.442	2.653	22	0.015
	Equal Variances Not Assumed			2.472	13.558	0.027
Net Value Added	Equal Variances Assumed	2.395	0.136	-3.907	22	0.001
	Equal Variances Not Assumed			-3.275	9.973	0.008

SECTION-VII
CONCLUSION

We can primarily conclude that there is significant difference in growth of Sugar Industry in India during the pre-recession and post-recession period.. In terms of productive capital, profits and net value added, post-recession period shows improvement compared to pre-recession period. This suggests long term growth in Sugar Industry but at a very low rate. Rate of growth rate in post-recession period in number of factories is better than pre-recession period but overall number of units in Sugar Industry has come down in 24 years. The major parameter of concern is the employment. CAGR for number of employees is negative in both pre and post-recession period. Employment should be a major focus for Sugar Industry, given the pressure on government for creation of employment opportunities. The slump in employment in the sugar sector can be attributed to challenges such as higher cost of raw-materials, higher taxes, strong global competition, fragmented and inefficient structure of sugar sector, etc. The employment condition is further aggravated

due to loss of jobs resulting from technology up gradations and automation in the Sugar Industry.

Apart from this, Sugar Industry is running into losses. In fact during post-recession period all years are showing loses except the last year 2016-17. This poses an alarming situation for the Sugar Industry. High cost of production, obsolete machinery, large number of small-sized units etc. continue to be challenges for Sugar Industry in India.Probably because of all these factors, Sugar Industry is going through the liquidity crunch in recent times.

Hence, Sugar Industry requires corrective actions on the part of the management of sugar companies as well as necessary intervention and welfare steps by government for revival of Sugar Industry in India. For boosting the growth of Sugar Industry in India, it is recommended that Government should introduce special package for this sector, frame export promotion policies, boost domestic manufacturing sector, revise rates for incentives under export schemes, promote Foreign Direct Investment (FDI) in sugar sector, revision in labour laws for employment generation, technology up-gradation, etc. With the government's thrust on 'Make in India' initiative and revival measures by government for this industry, the future of Sugar Industry looks bright. Such boost by government will help in integrated and sustainable growth of Sugar Industry in India and at global level.

This comparison of growth of Sugar Industry during pre and post-recession period points to numerous implications for further research, policy decisions by the Government of India and industry associations and manufacturers to remain sustainable and grow in the long term.

Future research can also analyse if this difference exists only for Sugar Industry or for other agro-based manufacturing industries such as textile, paper, etc. Also, factors that led to differences in growth of Sugar Industry in India during pre-recession and post-recession period can be potential arena for research.

However, conclusion of the study is confined to 15 years pre-recession and 9 years post-recession data, five select parameters and applicability of only t-test to the hypothesis. If these premises change, the results of this study can undergo changes.

The world faced an unprecedented situation with a global pandemic in 2020, which sends economic repercussions across the globe. This study will be a torch-bearer to explain, analyse and conclude the growth parameters of Sugar Industry in India in the volatile and complex times that follow in the post Covid-19 business arena.

REFERENCES

1) Das, S. (2010). Global Recession and Indian Textile Industry: An Impact Study on HR Practices. *Kegees Journal of Social Science*, 2(2), 231-241.
2) Gopalakrishnan, D.; Anandhakumar, S.; Santhoshkumar, K. and Divya, U. (2010). Global economic challenge and its impact on Indian textiles. *Indiantextilejournal.com/articles/FAdetails.asp?id=2680.*
3) Kumar, M. (2015). Financial performance of Select Sugar Companies in Tamil Nadu. *International Journal of Advance Research in Computer Science and Management* Studies, 3(2), 360-368.
4) Kaur, M. and Kiran, R. (2008). Indian Manufacturing Sector: Growth and Productivity under the New Policy Regime. *International Review of Business Papers*, 4(2), 136-150.
5) Nair, J. (2015). Examination of Financial Distress in Indian Sugar Sector-Application of Ohlson's 'O' Score Model. *International Journal of Management and SocialScience Research Review*, 1(14), 221-226.
6) Reddy, R. and Reddy, H. (2013). Financial Status of Select Sugar Manufacturing Units-Z Score Model. *International Journal of Education and Research*, 1(1), 1-9.
7) Singh, S.; Jain, P.K .and Yadav, S. (2013). Financial Management Analysis of Profitability of selected Industries in India: Empirical Research Findings. *Journal of Financial Management and Analysis,* 26(1), 75-95.

WEBSITES

1) www.business-standard.com
2) www.ibef.org
3) www.india.crafts.com
4) www.indiamirror.com/indian-industries/sugar.html
5) www.indiatoday.in
6) www.industryoutlook.cmie.com
7) www.economictimes.indiatimes.com (article by Swaminathan SA Aiyar)