

Research Article

Performance analysis of sugar industry – DuPont analysis

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SUMMARY : Financial performance is fundamental to the success and sustainability of any business. Despite several measures of success that business organizations strive for such as status, market share etc., the bottom line for any business is to be financially successful; otherwise the business becomes unsustainable in the long run. The key financial performance measures that are mainly used by most businesses are DuPont analysis. It used to dissect the firm's financial statements and assess its financial condition. The DuPont analysis of financial performance results showed that the level of performance the sugar sector companies was fair and it should be improved by the sample sugar companies by improving the total asset turnover ratio.

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BACKGROUND AND OBJECTIVES

The sugar industry is one of the major agro-based industries in the world. Worldwide, sugar is produced in over 100 countries. India is the second largest producer of sugar after Brazil, with more than 45 millions of sugar cane growers in the country. In an era where there is a need for inclusive growth, the sugar industry is amongst the few industries that have successfully contributed to the rural economy. It has done so by commercially utilizing the rural resources to meet the large domestic demand for sugar and by generating surplus energy to meet the increasing energy needs. In addition to this, the industry has become the mainstay of the alcohol industry. Sugarcane is an important cash crop and the world sugar market continues to experience considerable price volatility. Hence, it is necessary to analyze the financial performance of the sugar sector. The main objective of the research was to analyze the performance of sugar sector companies by using DuPont analysis.

RESOURCES AND METHODS

The sugar companies (forty companies) listed in Bombay stock exchange were selected for performance analysis. Six years periods from 2007 to 2012 is considered for evaluating the performance of sugar companies in India. The secondary data were collected from Centre for monitoring Indian Economy (CMIE), PROWESS database, Mumbai. These data were consolidated for the purpose of analysis.

DuPont analysis:

DuPont analysis is used to dissect the firm's financial statements and assess its financial condition. It is a method of performance measurement that was started by the DuPont Corporation in the 1920s. In this method, assets are measured at their gross book value rather than at net book value in order to produce a higher return on equity (ROE). The DuPont analysis provides information on firm's liquidity, profitability, efficiency and leverage status to see how well a firm is operating as a result of changes

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in one or more of factors. The use of Du Pont Model can assist managers to determine the overall impact of operation decisions with respect to cash flows and asset utilization. DuPont formula:

$$\frac{\text{Net profit/Total asset}}{\text{(ROTA)}} = \frac{\text{Net profit/Net sales}}{\text{(NPM)}} \times \frac{\text{Net sales/Total assets}}{\text{(TATR)}}$$

This analysis helps in understanding how the return on total assets is influenced by the net profit margin and the total assets turnover ratio.

Modified DuPont formula:

It relates to the firm's return on total assets (ROA) to its return on common equity (ROE). The latter is calculated by multiplying the return on total assets (ROA) by the financial leverage multiplier (FLM), which is the ratio of total assets to common stock equity.

$$\text{ROE} = \text{ROA} \times \text{FLM}$$

Use of financial leverage multiplier (FLM) to convert the ROA into the ROE reflects the impact of financial leverage on owners return. The advantage of DuPont system is that it allows the firm to break its returns on equity into a profit-on-sales component (net profit margin) an efficiency of asset use component (total asset turnover) and the use of financial leverage component (FLM).

DuPont control method first brings together the net profit margin, which measures the firms' profitability on sales, with its total asset turnover. The asset turnover indicates how efficiently the firm has used its assets to generate sales. Product of these two ratios results in the return on total assets (ROA). In the second step DuPont system employs the modified DuPont formula. Return on equity (ROE) is calculated by multiplying ROA and Equity multiplier. Equity multiplier is a way of examining how a company uses debt to finance its assets. It is also known as the financial leverage ratio or leverage ratio. Use of equity multiplier to convert the ROA into the ROE reflects the impact of financial leverage on owners return. According to Copeland *et al.* (1996) the ROE is a short term performance measure and that too much focus on it can lead a company to overlook long term growth opportunities that might increase shareholder value.

OBSERVATIONS AND ANALYSIS

Table 1 showed the ratios emerging from DuPont analysis of sugar companies in India. It helps to understand how the return on total assets is influenced by the net profit margin and the total assets turnover ratio. DuPont analysis helps locate the part of the business that is under performing.

Balrampur chini sugars, Triveni sugars, Renuka sugars, Girdharilal sugars, Monnet sugars, Bannari Amman sugars,

EID Parry sugars, KCP sugar sugars, Andhra sugar sugars, Kothari sugars and Dalmia sugars showed positive high return on assets which indicates the strong asset management and operations management of these companies. Shadilal sugars, Upper ganesh sugars, Belapur sugars, India sugars, JK sugars, Oudh sugars, Parry's sugars, KM sugars, Kesar sugars, Venus sugars, Mawana sugars and Uttam sugars showed negative return on asset (ROA) because of negative profit margin which indicates the inefficient management of the company in operation and controlling costs. Hence, these firms have to improve its capital asset turnover through use of idle cash to repay outstanding debts or invest in profit producing activities, operating profit margin through reducing the expenses, use less costly materials and review management development programmes. The return on assets could be improved by matching the net profits after taxes with the assets used to earn such profits.

Balrampur chini sugars, Bajaj Hindusthan sugars, Shadilal sugars, Bannari Amman sugars, EID Parry sugars and Dalmia sugars had higher equity multiplier which indicates the strong capital management in the presence of low and stable cost of debt capital. Ravalgaoon sugars, Belapur sugars, India sugars, Girdharilal sugars, KM sugars, Rana sugars, Venus sugars and Picadilly sugars showed low equity multiplier which indicates the poor capital management of these companies and which means the company is relying less on debt to finance its assets.

Return on equity is an important measure of the profitability of a company. Balrampur chini sugars (4.98), Bajaj hindusthan sugars (7.45), Renuka sugars (3.20), Bannari Amman sugars (8.42), EID parry sugars (13.32), Andhra sugars (2.08) and Dalmia sugars (7.61) had positive high return on equity. Investors should compare the ROE of different companies and also check the trend in ROE over time. However, relying solely on ROE for investment decisions is not safe. It can be artificially influenced by the management, for example, when debt financing is used to reduce share capital there will be an increase in ROE even if income remains constant. Some of the remaining firms got negative ROE which indicates poor performance.

The average return on equity of 27 firms was positive during the study period. The remaining firms had negative return on equity.

Path analysis:

The path analysis is used to analyze the cause and effect relationship between the variables by partitioning the association into direct and indirect effects through other independent variables. It was used for the analysis of sugar companies for the impact on DuPont variables and equity multiplier with the earning per share of the sugar share price. It is essential to identify the factors which are having impact on EPS.

Direct effects of DuPont variables and equity multiplier on EPS:

In the present study, the residual effect of path analysis was found to be 0.9. From this study, it was evident that asset

turnover (0.15) recorded positive direct effect on EPS followed by net profit margin (0.06). The path diagram showed positive relationship among the Du Pont variables and EPS. The co-efficient value indicates the extent of

Table 1: DuPont analysis of sugar companies

Sr. No.	Name of the company	Net profit margin	Asset turnover	ROA*	EM*	ROE*
1.	Dhampur sugars	0.02	0.74	0.01	31.49	0.31
2.	Dwarikesh sugars	0.01	0.59	0.01	44.28	0.44
3.	KM sugars	-0.06	1.59	-0.1	8.73	-0.87
4.	Kesar sugars	-0.01	1.05	-0.01	53.89	-0.54
5.	Mawana sugars	0.02	1.03	0.02	23.55	0.47
6.	Monnet sugars	0.26	0.41	0.11	12.88	1.42
7.	Piccadilly sugars	0.05	0.29	0.01	6.8	0.07
8.	Rana sugars	0.01	0.5	0.01	6.28	0.06
9.	Uttam sugars	-0.05	0.52	-0.03	34.19	-1.03
10.	SEBC sugars	0.01	1.38	0.01	4.68	0.05
11.	Bajaj Hindusthan sugars	0.04	0.35	0.02	372.26	7.45
12.	Balrampur chini sugars	0.06	0.68	0.04	124.54	4.98
13.	Jeypore sugars	0.03	0.48	0.02	11.78	0.24
14.	Riga sugars	0.01	0.6	0.01	31.58	0.32
15.	Simbhaoli sugars	0.01	0.86	0.01	52.87	0.53
16.	Shadilal sugars	-0.04	1.06	-0.04	468.96	-18.76
17.	Triveni sugars	0.04	0.8	0.03	95.47	2.86
18.	Upper ganesh sugars	-0.04	0.67	-0.03	64.13	-1.92
19.	Venus sugars	-0.11	0.68	-0.07	1.92	-0.13
20.	Vishnu sugars	0.02	0.72	0.01	48.35	0.48
21.	Belapur sugars	-1.95	0.1	-0.2	4.92	-0.98
22.	Girdharilal sugars	0.15	0.81	0.12	2.3	0.28
23.	India sugars	-0.12	0.8	-0.1	3.72	-0.37
24.	JK Sugars	-0.03	0.75	-0.02	17.5	-0.35
25.	Oudh sugars	-0.04	0.61	-0.02	47.52	-0.95
26.	Parry's sugars	-0.06	0.41	-0.02	33.08	-0.66
27.	Ravalgaon sugars	0.01	1.05	0.01	2.29	0.02
28.	Renuka sugars	0.06	0.87	0.05	64	3.2
29.	Sri Chamundeswari sugars	0.04	0.73	0.03	26.05	0.78
30.	Ugar sugars	0.01	0.92	0.01	56.43	0.56
31.	Andhra sugars	0.09	0.66	0.06	34.66	2.08
32.	Bannari amman sugars	0.11	0.69	0.08	105.29	8.42
33.	Dharani sugars	0.03	0.89	0.03	19.89	0.6
34.	Dalmia sugars	0.09	0.47	0.04	190.3	7.61
35.	EID parry sugars	0.23	0.48	0.11	121.08	13.32
36.	Empee sugars	0.01	0.59	0.01	7.47	0.07
37.	KCP sugars	0.07	0.75	0.05	31.38	1.57
38.	Kothari sugars	0.03	0.78	0.03	4.52	0.14
39.	Sakthi sugars	0.02	0.54	0.01	64.95	0.65
40.	Thiru Arooran sugars	0.02	0.95	0.02	42.54	0.85

*ROA – Return on Assets, EM – Equity Multiplier, ROE - Return on equity

influence of DuPont variables on EPS. The results showed that equity multiplier got negative effect with the EPS.

Indirect effects of DuPont variables and equity multiplier on EPS:

Equity multiplier:

Equity multiplier showed low positive indirect effect with the DuPont variables which indicates negligible.

Asset turnover:

Asset turnover showed low positive indirect effect on equity multiplier and optimum positive indirect effect on net profit margin.

Net profit margin:

Net profit margin showed low positive indirect effect with the equity multiplier which shows negligible

The direct and indirect effect of the path analysis revealed that the DuPont variables like asset turnover and net profit margin was considered as important variables for the earning per share of the sugar firms. Similar results were obtained by Kasilingam and Jayabal (2012). They found that there is a positive relationship among the DuPont variables and EPS.

Conclusion:

The present study was an attempt to analyze the performance of sugar mills in India by using DuPont analysis for the period of 2007-2012. The results showed that sugar sector companies net profit margin was negative which indicates the inefficient management of the companies in operations and in controlling of costs. It can be improved by the companies by improving their asset turnover.

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