

DETERMINANTS OF PROFITABILITY OF SELECTED FERTILIZER COMPANIES IN INDIA

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Abstract

The profitability is of greater important to internal and external analysis because of its close relationship with current day-to-day business. Inadequacy of profitability is the leading cause of business failure. Indian fertilizer industry has a tremendous scope in and outside the country as it is one of the allied parts of agriculture. Fertilizer industries also suffering a lot to increase their profitability that may be due to various factors. The present study is focused on Determinants of Profitability of Selected Fertilizer Companies in India.

Key words: Profitability, Fertilizer, Business, Agriculture, Industry.

Introduction

Profitability is the main indicator of the efficiency and effectiveness of a business enterprise in achieving its goal of earning profit. The profitability of selected Indian Fertilizer companies has been analyzed from the point of view of financial management, shareholders and utilization of assets. All companies are keen interested to increase their profitability, practically they are suffering a lot. This is due to failure in the aspects of prediction of determinants of profitability. Because determinants depends upon large number of factors. Determinants of profitability are as essential as the earning of itself for the business concern. Some managerial decision like rising of additional finance, further expansion, problems of bonus and dividend payments rest upon this measurement. It can be measured for a short term and as well as for a long term.

Review of Literature

Vijayakumar (2002) in their research in "Determinants of Profitability-A firm level study of the Sugar Industry of Tamil Nadu", delved into the various determinants of profitability viz., growth rate of sales, vertical integration and leverage. Apart from these three variables, he had selected current ratio, operating expenses to sales ratio and inventory turnover ratio. Econometric models were used to test the various hypotheses relating to profitability with other variables. The researcher noted in his conclusion that efficiency in inventory management and current assets are important to improve the profitability.

Vijayakumar and Kadirvel (2003) in their research studied the determinants of profitability of Indian Public Sector Manufacturing Industries-An Econometric analysis. It is evident from the results that age is the strongest determinant of profitability followed by the variables vertical integration, leverage, size, current ratio, inventory turnover ratio, operating expenses to sales ratio and growth rate. The selected variables have both positive and negative contribution in variation of profit rate. In a nutshell, it can be concluded that firms should consider all these possible determinants while considering its profitability.

Patel (2004) in their research made a study on the profitability of colour-chem. Limited the period of 1981-1999. The multiple correlation technique was used for analysis the impact of net fixed assets, sales and net worth on the profitability. The result of the study showed that sales and net fixed assets net worth had significant effect on net profit of colour-chem. Limited. The analysis of profitability ratios showed that the company was in a sound position.

Chakraborty (2008) evaluated the relationship between working capital and profitability of Indian pharmaceutical companies. He pointed out that there were two distinct schools of thought on this issue. According to one school of thought, investment in working capital plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of working capital, output and sales cannot be maintained- in fact, the inadequacy of working capital would keep fixed asset inoperative.

Ramachandran and Gopinathan (2012) analyzed the relationship between, "Working Capital Management and Profitability of Sugar Industry in India". There was a significant positive co-efficient between current ratio and Return on Investment (5.263), Inventory Turnover Ratio and Return on Investment (1.110) at 5% level. Also there was a significant negative co-efficient between Quick ratio and Return On Investment (-10.582), Working Capital Turnover Ratio and Return On Investment (-0.036) at 5% level. Debtors Turnover Ratio recorded highly significant negative co-efficient (-0.020) at 1% level with Return On Investment. Creditors Turnover Ratio registered insignificant positive co-efficient 0.014 with profitability. The overall regression model fit, which was represented by R² was above 50% (0.51) which indicated that the sugar industry in India was poised to reap a rich harvest in the season beginning Oct 2010. The Sugar Corporate firms were over burdened with surplus inventories that most of them do not have adequate storage facilities, capacities and cash flow which have led them to resort to distress sale of sugar which only brought down the prices.

Objectives of the Study

1. To determine the profitability in respect to financial variables of selected fertilizer companies in India.
2. To assess the relationship of size of the firm and it's influencing the profitability of selected fertilizer companies in India.

Methodology

The research approach is descriptive and analytical nature. The study is mainly based on secondary data are collected as per requirements of the study. The secondary data is used for evaluation of financial performance appraisal. Secondary data is taken from CMIE, Prowess Database and published annual reports of the Fertilizer companies. In addition to that, financial literature and published articles on the related aspects are also considered. Other information related to the industry are collected from the Economic Times, Financial Express, Business Standard, RBI Bulletin, periodicals, journals and various documents of the companies.

Sampling Design

The study covers two major sectors engaged in manufacturing fertilizers viz. public and private. From the public sector undertakings, there are nine of which six companies viz., Madras Fertilizers Limited, Fertilizers and Chemical Travancore Ltd. Rashtriya Chemicals and Fertilizers Limited, National

Fertilizers Limited, Steel Authority of India, and Neyveli lignite Corporation Limited. were selected and included for the study.

In the private sector, there are 18 fertilizer units, out of which eight undertakings viz., Southern Petrochemical Industries Corporate Limited (SPIC), Tuticorin Alkali Chemicals and Fertilizers Limited (TAC), Basant Agro Tech(India) Limited, Deepak fertilizer and Petrochemicals Corporation Limited, Coromandal Fertilizers Limited, Gujarat state fertilizers & Chemicals Limited , Mangalore chemicals & Fertilizers Limited, and Zuari Fertilizers and Chemicals Limited, are selected for the study based on the availability of financial report and information.

Tools of Analysis

In the course of analysis, correlation, and Linear regression equations have been applied.

Limitations of the Study

This study is based on secondary data taken from CMIE database as well published annual reports of the said companies and as such its finding depends entirely on the accuracy of such data.

The analysis is based on annual reports of the company. So it is subjected to the limitations of secondary data.

The study is largely based on the Ratio analysis, which has its own limitations that also applies to this study.

This study is limited to 12 years from 2001 to 2012 only and related to the Fertilizer Industry in India.

Determinants of Profitability

Useful data about the trend of profitability is available from profitability ratios. The gross profit ratio, net profit ratio and ratio of turn on investment give a good idea of the profitability of business. On the basis of these ratios management gets an idea about the efficiency of managers and bank as well as other creditors to draw useful conclusions about repaying capacity of the borrowers.

A number of factors affect the profitability of an enterprise. Their influence varies in the short term, as well as in the long term. Recognizing these factors will be very helpful in managing a business entity. These determinants can be of a positive or negative nature. In the latter case, an important role falls to the manager of the enterprise, who must make all efforts to improve the financial results of the company.

The profit ratio is measured by sales will give a short-term perspective of profitability because sales are annual flows. On the other hand, the return on assets will give us long-term perspective of profitability. In this study, the Return on Assets is used as Dependent variable in the Specified Model.

ROA = Net Income/total assets

SPECIFICATION OF PROFITABILITY MODEL

The goal of linear regression model is to identify a linear relationship between one dependent variable and one or more independent variables. The dependent variable is therefore a linear function of a series of independent variables. In this study a panel data regression model is applied to determine the profitability of selected companies in India. The study considered the following regression model.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9$$

Where

Y = Dependent variable (RETURN ON ASSETS)

a - constant

b1.....b9 – Regression coefficients

X1 - Fixed Assets Turnover Ratio (FATA)= Fixed assets /Total assets

- X2 - Gearing Ratio Debt Ratio (DTA) = Total Debt / Total Assets
- X3 - Financial Leverage Ratio (DSE) = Total Debt / Total Equity Shareholders equity
- X4 - Current Ratio (CR) = Current Assets / Current Liabilities
- X5 - Working Capital Turnover Ratio (WCTR) = Net Sales / Working Capital
- X6 - Current Assets Turnover Ratio (CAT) = Net Sales / Total Current Assets
- X7 - Sales to Equity Ratio (STE) = Net Sales / Total Shareholders' Equity
- X8 - Gross Margin Return on Inventory (GMI) = Gross Margin / Average Inventory
- X9 - Size = Log (Sales)

To measure the relationship between the profitability of selected financial ratios, ROA is used as measurement of profitability whereas the selected financial ratios for liquidity, working capital and profitability ratios are FATA, DTA, DSE, CR, WCTR, CAT, STE, GMI and LIS, correlation analysis is constructed to determine the profitability of the firms.

TABLE 1.1 :CORRELATION MATRIX OF SELECTED PUBLIC SECTOR COMPANIES

	FA/TOTAL ASSETS	DEBT/TOTAL ASSETS	DEBT/SHARE HOLDERS EQUITY	CURRENT RATIO	WC TURNOVER RATIO	CURRENT ASSET TURNOVER	SALES TO EQUITY	GROSS MARGIN TO INVENTORY	LOG IN SALES	ROA
FA/TOTAL ASSETS	1.000									
DEBT/TOTAL ASSETS	0.836	1.000								
DEBT/SHAREHOLDERS EQUITY	0.171	0.133	1.000							
CURRENT RATIO	0.112	0.210	-0.180	1.000						
WC TURNOVER RATIO	0.236	0.180	0.912	-0.060	1.000					
CURRENT ASSET TURNOVER	-0.308	-0.691	0.289	-0.378	0.336	1.000				
SALES TO EQUITY	0.174	0.053	0.986	-0.229	0.905	0.421	1.000			
GROSS MARGIN TO INVENTORY	-0.727	-0.411	-0.335	0.172	-0.263	-0.016	-0.383	1.000		
LOG IN SALES	-0.895	-0.652	-0.107	-0.214	-0.117	0.273	-0.127	0.845	1.000	
ROA	0.189	-0.032	0.344	-0.121	0.437	0.437	0.372	-0.146	-0.013	1.000

Source: Computed

Table 1.1 represents that the coefficient of correlation for the variables that are used in the regression model. To represent the bi-variate correlation between dependent and independent variables as constructed correlation matrix. The correlation analysis is used for the data to know the relationship between variables such as FATA, DTA, DSE, CR, WCTR, CATR, STE, GMI, LIS and ROA(Profitability). The table shows that FATA, DSE, WCTR, CAT and STE are in positive relationship between the profitability. The remaining other variables such as DTA,CR,GMI and LIS are negatively related to the profitability.

TABLE 1.1(a)
DETERMINANTS OF PROFITABILITY
REGRESSION ANALYSIS OF PUBLIC SECTOR COMPANIES

Regression Coefficients

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Constant	0.646	0.760	0.850	0.458
Fa/total assets	-0.655	0.257	-2.551	0.084
Debt/total assets	-0.130	0.149	-0.874	0.447
Debt/ shareholders equity	0.052	0.021	2.515	0.087
Current ratio	-0.058	0.056	-1.031	0.378
Wc turnover ratio	0.008	0.003	3.007	0.057
Current asset turnover	-0.061	0.045	-1.348	0.270
Sales to equity	-0.035	0.014	-2.432	0.093
Gross margin to inventory	0.114	0.036	3.123	0.052
Log in sales	-0.038	0.208	-0.183	0.866

Note: P Value <0.05 Significant at 5% Level.

Multiple R	R Square	Adjusted R Square	Standard Error	F Value	P- Value	DW TEST
0.971	0.942	0.769	0.026	5.431	0.045	1.847

The result of regression model are used in this analysis indicates the factor that determine the profitability of public sector companies as represented in Table 1.1(a).The multiple correlation coefficients between the dependent and independent variables are taken into consideration are found to be 0.971 which reveals that the profitability has highly influenced by all the independent variables under the present study.

Adjusted R square is highest in this model for 0.769 which suggests that 76.9 per cent impact on ROA is explained by these independent variables. Specifically the profitability is positively associated with DSE, WCTR, and GMI and the remaining other variables are negatively associated with impact of profitability. Moreover, the F value is significant at 0.045 level (P<0.05) and the Durban-Watson is 1.847 which suggest that there is no auto correlation problem.

Table 1.2 represents that the coefficient of correlation for the variables that are used in the regression model. To represent the bi-variate correlation between dependent and independent variables as constructed correlation matrix. The correlation analysis is used for the data to know the relationship between variables such as FATA, DTA, DSE, CR, WCTR, CATR, STE, GMI, LIS and ROA (Profitability). The table shows that WCTR, CAT, GMI and LIS are in positive relationship between the profitability. The remaining other variables such as FATA, DTA, DSE, CR, and STE are negatively related to the profitability.

The result of regression model are used in this analysis indicates the factor that determine the profitability of private sector companies as represented in Table 1.2(a).The multiple correlation coefficients between the dependent and independent variables are taken into consideration are found to be 0.935 which reveals that the profitability has highly influenced by all the independent variables under the present study.

TABLE 1.2
CORRELATION MATRIX OF SELECTED PRIVATE SECTOR COMPANIES

	FA/TOTAL ASSETS	DEBT/TOTAL ASSETS	DEBT/ SHAREHOLDERS EQUITY	CURRENT RATIO	WC TURNOVER RATIO	CURRENT ASSET TURNOVER	SALES TO EQUITY	GROSS MARGIN TO INVENTORY	LOG IN SALES	ROA
FA/TOTAL ASSETS	1.000									
DEBT/TOTAL ASSETS	-0.653	1.000								
DEBT/ SHAREHOLDERS EQUITY	0.131	-0.038	1.000							
CURRENT RATIO	-0.071	-0.322	0.558	1.000						
WC TURNOVER RATIO	0.521	-0.274	-0.315	-0.582	1.000					
CURRENT ASSET TURNOVER	-0.237	0.514	-0.667	-0.830	0.415	1.000				
SALES TO EQUITY	0.144	0.036	0.927	0.444	-0.202	-0.607	1.000			
GROSS MARGIN TO INVENTORY	-0.032	0.236	-0.482	-0.577	0.215	0.530	-0.233	1.000		
LOG IN SALES	-0.846	0.717	-0.216	-0.249	-0.258	0.565	-0.200	0.337	1.000	
ROA	-0.361	-0.016	-0.356	-0.337	0.252	0.326	-0.311	0.466	0.474	1.000

Source: Computed

TABLE 1.2(a)
DETERMINANTS OF PROFITABILITY

REGRESSION ANALYSIS OF PRIVATE SECTOR COMPANIES

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Constant	-2.532	1.655	-1.530	0.224
FA/TOTAL ASSETS	0.537	0.278	1.929	0.149
DEBT/TOTAL ASSETS	-0.234	0.304	-0.769	0.498
DEBT/ SHAREHOLDERS EQUITY	0.024	0.009	2.720	0.073
CURRENT RATIO	0.050	0.056	0.894	0.437
WC TURNOVER RATIO	-0.001	0.001	-0.845	0.460
CURRENT ASSET TURNOVER	0.083	0.045	1.849	0.162
SALES TO EQUITY	-0.036	0.013	-2.734	0.072
GROSS MARGIN TO INVENTORY	-0.056	0.063	-0.894	0.437
LOG IN SALES	0.661	0.566	1.168	0.327

Note: P Value <0.05 Significant at 5% Level.

Regression Coefficients

Multiple R	R Square	Adjusted R Square	Standard Error	F Value	P- Value	DW TEST
0.935	0.874	0.498	0.064	2.320	0.264	1.204

Adjusted R square is highest in this model for 0.498 which suggests that 49.8 per cent impact on ROA is explained by these independent variables. Specifically the profitability is positively associated with FATA, DSE, CR, CAT, and LIS and the remaining other variables are negatively associated with impact of profitability. Moreover, the F value is insignificant at 0.264 level ($P < 0.05$) and the Durban-Watson is 1.204 which suggest that there is no auto correlation problem.

TABLE 1.3: CORRELATION MATRIX OF SELECTED OVERALL COMPANIES

	FA/TOTAL ASSETS	DEBT/TOTAL ASSETS	DEBT/SHARE HOLDERS EQUITY	CURRENT RATIO	WC TURN OVER RATIO	CURRENT ASSET TURNOVER	SALES TO EQUITY	GROSS MARGIN TO INVENTORY	LOG IN SALES	ROA
FA/TOTAL ASSETS	1.000									
DEBT/TOTAL ASSETS	0.674	1.000								
DEBT/SHAREHOLDERS EQUITY	0.239	0.102	1.000							
CURRENT RATIO	0.158	0.424	-0.202	1.000						
WC TURNOVER RATIO	0.270	0.131	0.930	-0.123	1.000					
CURRENT ASSET TURNOVER	-0.354	-0.804	0.213	-0.526	0.273	1.000				
SALES TO EQUITY	0.255	0.027	0.989	-0.258	0.930	0.324	1.000			
GROSS MARGIN TO INVENTORY	-0.886	-0.429	-0.146	-0.021	-0.105	0.306	-0.167	1.000		
LOG IN SALES	-0.952	-0.536	-0.293	-0.180	-0.278	0.309	-0.313	0.942	1.000	
ROA	-0.035	-0.326	0.260	-0.054	0.337	0.451	0.285	0.077	0.089	1.000

Source: Computed

Table 1.3 represents that the coefficient of correlation for the variables that are used in the regression model. To represent the bi-variate correlation between dependent and independent variables as constructed correlation matrix.

The correlation analysis is used for the data to know the relationship between variables such as FATA, DTA, DSE, CR, WCTR, CATR, STE, GMI, LIS and ROA (Profitability). The table shows that DSE, WCTR, CAT, STE, GMI and LIS are in positive relationship between the profitability. The remaining other variables such as FATA, DTA, and CR, are negatively related to the profitability.

TABLE 1.3(a)
DETERMINANTS OF PROFITABILITY
REGRESSION ANALYSIS OF OVERALL COMPANIES

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Constant	-6.595	1.877	-3.513	0.039
FA/TOTAL ASSETS	1.011	0.246	4.102	0.026
DEBT/TOTAL ASSETS	-0.642	0.228	-2.822	0.067
DEBT/ SHAREHOLDERS EQUITY	0.004	0.009	0.466	0.673
CURRENT RATIO	0.148	0.050	2.931	0.061
WC TURNOVER RATIO	0.000	0.001	0.083	0.939
CURRENT ASSET TURNOVER	-0.024	0.041	-0.572	0.607
SALES TO EQUITY	-0.004	0.014	-0.253	0.817
GROSS MARGIN TO INVENTORY	-0.100	0.082	-1.209	0.313
LOG IN SALES	1.993	0.610	3.268	0.047

Note: P Value <0.05 Significant at 5% Level.

Regression Coefficients

Multiple R	R Square	Adjusted R Square	Standard Error	F Value	P- Value	DW TEST
0.963	0.928	0.710	0.031	4.267	0.129	1.612

The result of regression model are used in this analysis indicates the factor that determine the profitability of overall companies as represented in Table 1.3(a).The multiple correlation coefficients between the dependent and independent variables are taken into consideration are found to be 0.963 which reveals that the profitability has highly influenced by all the independent variables under the present study.

Adjusted R square is highest in this model for 0.710 which suggests that 71 per cent impact on ROA is explained by these independent variables. Specifically the profitability is positively associated with FATA, DSE, CR, WCTR, and LIS, and the remaining other variables are negatively associated with impact of

profitability. Moreover, the F value is insignificant at 4.267 level ($P < 0.05$) and the Durban-Watson is 1.612 which suggest that there is no auto correlation problem.

Conclusion

The analysis carried out with the key objective of analyzing the financial variables for enhancing the development of the growing fertilizer industry in India. Results of this study found that correlation and regression results are significantly positive associated to the firm profitability. The Indian fertilizer industry with the support from the Government has, therefore, a good future ahead and efforts are required by the industry to improve their competitive strengths with the support of government.

References

1. Vijayakumar, A. (2002) "Determinants of Profitability-A Firm Level study of the Sugar Industry of Tamil Nadu", The Management Accountant, pp.458-465.
2. Vijayakumar, A. and Kadirve, S. (2003)"Determinants of profitability in Indian Public Sector Manufacturing Industries-An Econometric Analysis", The Journal of Institute of Public Enterprises, Vol.26, pp.1-2.
3. Patel. D.M (2004) "Profit and the profitability", ACCST Research journal, Vol;2, No2, pp. 89-95.
4. Chakraborty, K. (2008), "Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry," The ICFAI Journal of Management Research, Vol.34, pp.36-45.
5. Ramachandran Azhagaiah and Gopinathan Radhika, (2012), "Working Capital Management and Profitability of Sugar Industry in India", Smart Journal of Business Management, Vol.8, No.2, pp.54-55.