Impact of Capital Structure on Profitability: A Comparative Study of Some Select Public And Private Fertilizer Companies In India.

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Abstract

Fertilizer is required in increasing quantities to enable to feed the teeming millions in our country. Government of India has been planning and approving huge investments in fertilizer sector. A large number of public and private fertilizer companies are operating in India. Capital structure implies the combination of sources which have been used for the creation of the pool of funds. A smart selection of capital structure will maximize the value of the firm and minimize the overall cost of capital of the firm. In the present study an attempt has been made to evaluate the close relationship between capital structure and profitability of the four selected public fertilizer companies in India viz, National Fertilizers Limited (NFL), Rashtriya Chemicals and Fertilisers Ltd. (RCF), The Fertiliser & Chemical Travencore of India Ltd. (FACT) and Southern Petrochemical Industrial Corporation Ltd.(SPIC) and four selected private fertilizer companies in India viz, Chambal Fertilisers and Chemical Ltd.(CHAMBAL), Deepak Fertilisers and Petrochemical Corporation Ltd. (DEEPAK), Gujarat State Fertilizers & Chemicals Limited(GSFC), Coromandel International Limited (COROMANDEL). The data are collected for five years period of time from year 2013 to year 2017.

Keywords: Fertilizer, capital structure, profitability, value of firm, cost of capital.

Introduction

Fertilizer plays an extremely important role in increasing agricultural production. Fertilizer is required in increasing quantities to enable to feed the teeming millions in our country. Government of India has been planning and approving huge investments in fertilizer sector. Fertilizer is defined as any substance which is organic or inorganic, natural or artificial, supplies one or more of the chemical elements required for plant growth. Carbon, oxygen and hydrogen are directly supplied by air and water and therefore no treated as nutrients by the fertilizer industry. One of the vital industries for the Indian economy is the Indian fertilizer industry as it manufactures a very critical raw material for agriculture which is the major occupation of the country. The fertilizers especially like the ammonia urea plants are energy demanding in their operation.

The Indian Fertilizer Industry had a very humble beginning in 1906, when the first manufacturing unit of single super phosphate (SSP) was set up in Ranipet near Chennai with an annual capacity of 6000 MT. The Fertiliser & Chemical Travencore of India Ltd. (FACT) at cochin in Kerala and Fertiliser Corporation Of India (FCI) in Sindri in Bihar were the first large sized fertilizer plants set up in the forties and fifties with a view to establish an industrial base to achieve self sufficiency in food grains. Subsequently, green revolution in the late sixties gave an impetus to the growth of fertilizer industry in India.

Indian fertilizer industry's main objective is to ensure the supply of primary and secondary nutrients in the required quantities. The Indian Fertilizer Industry is the most energy intensive sectors according to the context of environmental discussions. As there is increasing productivity through the implementation of competent and pollution free technologies in the manufacturing sector it would be desirable in combining economic, environmental and social development objectives.

Literature Review

Chiang, Chan, and Hui (2002) collected data related to 18 developers and the other 17 contractors from Hong Kong by using DataStream (an electronic financial database). Their empirical results found through regression analysis indicate that profitability and capital structure are interrelated.

Abor (2005) investigated the relationship between capital structure and profitability of listed firms on the Ghana Stock Exchange (GSE) during a five-year period. Regression analysis is used in the estimation of functions relating the return on equity (ROE) with measures of capital structure. The results reveal a significantly positive relation between the ratio of short-term debt to total assets and ROE. However, a negative relationship between the ratio of long-term debt to total assets and ROE was found. With regard to the relationship between total debt and

return rates, the results show a significantly positive association between the ratio of total debt to total assets and return on equity.

Padachi (2006) analyzed the working capital management practices through a sample of 58 small manufacturing companies in Mauritius. The basic purpose of this study was to examine the trends in working capital management and its impact on firms' performance. The regression results show that high investment in inventories and receivables is associated with lower profitability. This study has also shown that the paper and printing industry has been able to achieve high scores on the various components of working capital and this has had a positive impact on its profitability. The findings also reveal an increasing trend in the short-term component of working capital financing.

Lazaridis and Tryfonidis (2006) investigated the relationship of corporate profitability and working capital management. We used a sample of 131 companies listed in the Athens Stock Exchange (ASE) for the period of 2001-2004. The purpose of this paper was to establish a relationship that is statistically significant between profitability, the cash conversion cycle and its components for listed firms in the ASE. The results of our research showed that there is statistical significance between profitability, measured through gross operating profit, and the cash conversion cycle. Moreover managers can create profits for their companies by handling correctly the cash conversion cycle and keeping each different component (accounts receivables, accounts payables, inventory) to an optimum level.

Raheman and Nasr (2007) provide further evidence about the relationship of working capital management and profitability. Using variable and methodology as used by Deloof (2003) on a sample of 94 companies listed on the Karachi Stock Exchange (KSE) for the period 1999–2004, the results show that there is strong negative relationship between variables of WCM and profitability of the firms. It means that as the cash conversion cycle increases, it leads to decreasing profitability of the firm. Thus, managers can make the shareholders value positive by reducing CCC to the minimum possible level. The authors also found a positive relationship between the size of the firm and its profitability, and a significant negative relationship between debt and profitability.

Singh and Pandey (2008) studied the working capital components and the impact of working capital management on profitability of Hindalco Industries Limited. The paper also makes an attempt to study the correlation between liquidity, profitability and Profit Before Tax (PBT) of Hindalco. The study is based on secondary data collected from annual reports of Hindalco for the study period 1990 to 2007. The ratio analysis, percentage method and coefficient of correlation have been used to analyze the data. Multiple regressions were used to check the significant impact on the profitability of Hindalco.

Nimalathasan and Brabete (2010) made an attempt to analyze the capital structure and its impact on profit earning capacity during 2003 to 2007 (05 years) financial year of listed manufacturing companies in Sri Lanka. The results showed that debt to equity ratio (D/E) ratio is positively and strongly associated to all profitability ratios [gross profit ratio (GPR); operating profit ratio(OPR); and net profit ratio(NPR)] except return on capital employed (ROCE) and return on investment (ROI). Debt to assets (D/A) ratio is positively and strongly associated to OPR, NPR and ROCE. Similarly capital gearing (CG) ratio is also positively correlated to GPR and NPR. Further, interest coverage (IC) ratio is significantly correlates to ROCE and NPR. Further capital structure has a great impact on all profitability ratios except ROCE and ROI. The outcomes of the study may guide entrepreneurs, loan- creditors and policy planners to formulate better policy decisions in respect of the mix of debt and equity capital and to exercise control over capital structure planning and thereby to control and reduce bankruptcy costs.

Sharma and Kumar (2010) examined the effect of working capital on profitability of Indian firms. We collected data about a sample of 263 non-financial BSE 500 firms listed at the Bombay Stock (BSE) from 2000 to 2008 and evaluated the data using OLS multiple regression. The findings of our study significantly depart from the various international studies conducted in different markets. The results reveal that working capital management and profitability is positively correlated in Indian companies. The study further revealed that inventory of number of days and numbers of day's accounts payable are negatively correlated with a firm's profitability, whereas number of days accounts receivables and cash conversion period exhibit a positive relationship with corporate profitability. The present study contributes to the existing literature by examining the effect of working capital management on profitability in the context of an emerging capital market such as India.

Azhagaiah and Gavoury (2011) analysed how far the capital structure (cs) affects the Profitability (p) of corporate firms in India. The study tried to establish the hypothesized relationship as to how far the capital structure affects the business revenue of firms and what the interrelationship is between capital structure and Profitability. This study was carried out after categorizing the

selected firms into three categories based on two attributes, viz. business revenue and asset size. First, firms are grouped into low, medium and high based on business revenue. Second, firms are classified into small, medium and large based on asset size to establish the hypothesized relationship that capital structure has significant impact on Profitability of Information Technology (it) firms in India. For the study, a sample of 102 it firms was chosen by the MultiStage Sampling Technique. The data for a period of 8 years ranging from 1999–2000 to 2006–2007 have been collected and considered for analysis. Regression Analysis (to analyze the unique impact of capital structure on Profitability), in addition to descriptive statistics such as Mean, Standard Deviation, and Ratios has been used. The study proves that there has been a strong one-to-one relationship between capital structure variables and Profitability variables, Return on Assets (ROA) and Return on Capital Employed (ROCE) and the capital structure has significant influence on Profitability, and increase in use of debt fund in capital structure tends to minimize the net profit of the it firms listed in Bombay Stock Exchange in India.

Gill, Biger and Mathur (2011) felt that relationship between capital structure and profitability cannot be ignored because the improvement in the profitability is necessary for the long-term survivability of the firm. This paper seeks to extend Abor's (2005) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the American service and manufacturing firms. A sample of 272 American firms listed on New York Stock Exchange for a period of 3 years from 2005 – 2007 was selected. The correlations and regression analyses were used to estimate the functions relating to profitability (measured by return on equity) with measures of capital structure. Empirical results show a positive relationship between i) short-term debt to total assets and profitability and ii) total debt to total assets and profitability in the service industry. The findings of this paper show a positive relationship between i) short-term debt to total assets and profitability, ii) long-term debt to total assets and profitability, and iii) total debt to total assets and profitability in the manufacturing industry. This paper offers useful insights for the owners/operators, managers, and lending institutions based on empirical evidence.

Objectives of the study:

Capital structure implies the combination of sources which have been used for the creation of the pool of funds. A firm can use different sources of financing whose costs are different. The finance manger strives to obtain the best combination of external and internal equities which will maximize the value of the firm and minimize the overall cost of capital of the firm. So, a smart selection of capital structure will ultimately increase the profitability of the firm if other factors of profitability remain the same. In the present study an attempt has been made to evaluate the close relationship between capital structure and profitability of the four selected public fertilizer companies in India viz, National Fertilizers Limited (NFL), Rashtriya Chemicals and Fertilisers Ltd. (RCF), The Fertiliser & Chemical Travencore of India Ltd. (FACT) and Southern Petrochemical Industrial Corporation Ltd.(SPIC) and four selected private fertilizer companies in India viz, Chambal Fertilisers and Chemical Ltd.(CHAMBAL), Deepak Fertilisers and Petrochemical Corporation Ltd.(DEEPAK), Gujarat State Fertilizers & Chemicals Limited(GSFC), Coromandel International Limited (COROMANDEL). More specifically the following are the objective of the study:-

1. Measurement and presentation of the descriptive statistics of the return on capital employed (ROCE) as a measure of profitability and debt equity ratio, interest coverage ratio, fixed assets turnover ratio as the measures of capital structure.
2. Find out relation between return on capital employed (ROCE) as a measure of profitability and debt equity ratio, interest coverage ratio, fixed assets turnover ratio as the measure of capital structure.

Research methodology:

Selection of Data: Four public fertilizer companies in India viz, National Fertilizers Limited (NFL), Rashtriya Chemicals and Fertilisers Ltd. (RCF), The Fertiliser & Chemical Travencore of India Ltd. (FACT) and Southern Petrochemical Industrial Corporation Ltd.(SPIC) and four private fertilizer companies in India viz, Chambal Fertilisers and Chemical Ltd.(CHAMBAL), Deepak Fertilisers and Petrochemical Corporation Ltd.(DEEPAK), Gujarat State Fertilizers & Chemicals Limited(GSFC), Coromandel International Limited (COROMANDEL) have been selected on the basis of their market capitalization more than Rs.500 crores and total assets amounting more than Rs.500 crores as on 15.12.2017.

Collection of Data: This study is based on secondary data only. The secondary data have been collected from www.moneycontrol.com and www.morningstar.in. Editing, classification and tabulation of the data collected from the above mentioned sources have been done as per the requirements of the study. The data are collected for five years period of time from year 2013 to year 2017. This period has

been chosen for easy availability of data.

Analysis of Data: For analyzing the data simple mathematical tool like ratios, percentages etc. and statistical techniques like measures of central tendency, measures of dispersion, skewness, kurtosis, range and multiple correlation and regression analysis have been used.

Analysis and conclusions

Before starting analysis and interpretation a brief discussion on the select parameters will be done in this way:

Return on capital employed: This is a financial ratio that measures company's profitability and the efficiency with which its capital is employed. Return on capital employed = Earnings before interest and taxes / capital employed.

Debt equity ratio: It measures the relation between debt and equity and signals the extent of financial risk involved. DER= Long term debt/ (equity share capital+ reserves and surplus).

Interest coverage ratio: It measures the ability of the firm to meet its interest payment as they become due and is computed as: Net profit before interest and taxes/ Interest.

Fixed assets turnover ratio: It measures the ability of the firm to use its fixed assets and is computed as: cost of goods sold/ total fixed assets.

Table 1: Descriptive statistics of ROCE of some select public fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
NFL	0.87	0.38	2.78	-2.38	0.164	4.14	-2.32	6.46	4.33
RCF	7.34	7.68	2.11	-2.85	-0.22	9.48	4.92	4.56	36.70
SPIC	64.60	9.13	118.10	4.94	2.22	275.53	6.98	268.55	323.01
FACT	27.71	-47.68	211.82	1.55	1.33	369.64	-165.68	535.32	138.55

**Calculated by author*

In Table 1 the mean, median ROCE of SPIC was the highest but standard deviation of the FACT was highest, kurtosis and skewness were highest for SPIC and range was highest for FACT. It is depicted in the above table that the ROCE of FACT and SPIC was moving in high range and too much volatile in nature.

Table2: Descriptive statistics of ROCE of some select private fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
CHAMBAL	10.37	11.11	1.97	-1.90	0.04	12.89	8.36	4.53	51.85
DEEPAK	6.79	6.76	2.63	1.86	1.05	10.96	3.88	7.08	33.93
COROMANDEL	14.58	13.98	1.52	-2.24	0.20	16.35	12.77	3.58	72.88
GSFC	7.81	7.12	2.04	2.94	1.52	11.22	5.82	5.40	39.07

**Calculated by author*

In Table 2, mean, median ROCE of COROMONEL was highest and standard deviation, kurtosis and range of ROCE were highest for DEEPAK. The ROCE of the private fertilizer companies were moving in narrow range and stable in nature.

Comparison: The ROCE of the public fertilizer companies was moving in wide range and too much volatile in nature. The ROCE of the private fertilizer companies was moving in narrow range and stable in nature.

Table: 3 Descriptive statistics of debt equity ratio of some select public fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
NFL	3.44	3.28	1.14	-0.76	-0.48	1.82	4.58	2.76	17.18
RCF	0.72	0.70	0.15	2.92	1.44	0.97	0.57	0.40	3.61
SPIC	1.28	1.23	0.77	-2.48	0.20	2.22	0.51	1.71	6.41
FACT	-2.23	-1.61	1.51	3.50	-1.85	-1.11	-4.83	3.72	-11.16

**Calculated by author*

In Table 3 the mean, median of debt equity ratio of NFL and standard deviation, kurtosis, range of debt equity ratio were highest for FACT. It is depicted in the above table that the debt equity ratio of FACT and NFL was moving in wide range and too much volatile in nature.

Table 4: Descriptive statistics of debt equity ratio of some select private fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
CHAMBAL	1.92	1.93	0.35	0.72	0.94	2.45	1.58	0.87	9.58
DEEPAK	0.82	0.78	0.23	1.69	0.81	1.17	0.55	0.62	4.10
COROMANDEL	0.87	0.93	0.16	-0.07	-0.95	1.03	0.62	0.41	4.34
GSFC	0.22	0.18	0.10	1.02	1.11	0.38	0.11	0.27	1.08

**Calculated by author*

In Table 4, the mean, median, standard deviation, kurtosis and range of debt equity ratio were highest for CHAMBAL. The debt equity ratios of the private fertilizer companies were moving in narrow range and stable in nature.

Comparison : The debt equity ratio of the public fertilizer companies was moving in wide range and too much volatile in nature. The debt equity ratio of the private fertilizer companies was moving in narrow range and stable in nature.

Table: 5 Descriptive statistics of Interest coverage ratio of some select public fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
NFL	1.19	1.15	1.30	-2.26	0.01	2.71	-0.34	3.05	5.97
RCF	4.23	3.80	1.04	-2.66	0.27	5.36	3.05	2.31	21.17
SPIC	1.60	1.62	1.74	-0.48	0.63	4.13	-0.11	4.24	8.03
FACT	-0.75	-0.91	0.57	3.57	1.69	0.22	-1.28	1.50	-3.73

**Calculated by author*

In Table 5, the mean and median of interest coverage ratio were highest for RCF and standard deviation, range was highest for SPIC and kurtosis and skewness of interest coverage ratio of FACT was highest. The interest coverage ratios of public fertilizer companies were moving in narrow range and stable in nature.

Table 6: Descriptive statistics of Interest coverage ratio of some select private fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
CHAMBAL	4.06	4.22	1.00	-0.05	-0.00	5.40	2.74	2.66	20.30
DEEPAK	2.93	2.41	1.00	-0.26	1.02	4.45	1.99	2.46	14.63
COROMANDEL	3.79	3.85	0.42	-2.91	-0.19	4.21	0.89	3.32	18.96
GSFC	18.58	19.11	10.00	-0.12	0.43	32.87	6.77	26.01	92.91

**Calculated by author*

Comparison: The Interest coverage ratio of the private fertilizer companies was moving in wide range and too much volatile in nature. The Interest coverage ratio of the public fertilizer companies was moving in narrow range and stable in nature.

Table:7 Descriptive statistics of fixed asset turnover ratio of some select public fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
NFL	1.25	1.18	0.24	4.28	2.01	1.67	1.07	0.60	6.24
RCF	2.30	1.91	0.95	4.50	2.08	3.97	1.65	2.32	11.49
SPIC	1.92	1.39	1.37	4.77	2.17	4.36	1.08	3.28	9.61
FACT	1.41	1.36	0.20	-1.20	0.56	1.69	1.19	0.50	7.04

**Calculated by author*

In Table 7 mean, meadian and kurtosis of fixed assets turnover ratio was highest for RCF. Standard deviation was highest for SPIC and skewness and range of fixed assets turnover ratio were highest for FACT. The fixed assets turnover ratio of the public fertilizer companies was moving in narrow range and stable in nature

Table: 8 Descriptive statistics of fixed asset turnover ratio of some select private fertilizer companies in India

Name of company	Mean	Median	Standard deviation	Kurtosis	Skewness	Max	Min	Range	Sum
CHAMBAL	2.46	1.62	1.97	4.89	2.21	5.97	1.42	4.55	12.29
DEEPAK	1.43	1.57	0.35	-1.69	-0.68	1.77	0.94	0.83	7.13
COROMANDEL	4.77	4.88	0.31	4.60	-2.11	4.98	4.22	0.76	23.84
GSFC	1.51	1.28	0.52	2.43	1.63	2.39	1.13	1.26	7.56

**Calculated by author*

In Table 8 mean, meadian and kurtosis of fixed assets turnover ratio was highest for COROMONDEL. Standard deviation, skewness and range of fixed assets turnover ratio were highest for CHAMBAL. The fixed assets turnover ratio of the private fertilizer companies was moving in narrow range and stable in nature

Comparison: The fixed assets turnover ratio of the private fertilizer companies was moving in narrow range and stable in nature. Also the fixed assets turnover ratio of the public fertilizer companies was moving in narrow range and stable in nature.

The Table 9 and Table 10 showed that multiple correlation and multiple regression of return on capital employed (ROCE) on Debt equity ratio(DER), Interest coverage ratio(ICR), Fixed assets turnover ratio(FATR).The computed multiple correlation co-efficient is tested with

the help of 'F' test and computed multiple regression coefficient is tested with the help of 'T' test. In this analysis, debt equity ratio(DER), Interest coverage ratio(ICR), Fixed assets turnover ratio(FATR) are selected as independent variables and the return on capital employed (ROCE) has been selected as dependent variable. The regression equation in this study is Regression equation $ROCE=\beta_0+\beta_1.DER+\beta_2.ICR+\beta_3.FATR$.

In Table 9, the regression coefficient between ROCE and Interest coverage ratio (ICR) of NFL is statistically significant at 5% level of confidence. And coefficient of regression of ROCE and FATR of RCF is statistically significant at 1% level of confidence. Coefficient of regression of ROCE and ICR of SPIC is statistically significant at 1% level of confidence.

In Table 10, the correlation coefficient of ROCE and factors of the capital structure i.e. DER, ICR and FATR is statistically significant at 5% level of confidence. Also, the coefficient of regression of ROCE and DER, ICR and FATR of CHAMBAL is statistically significant at 10% level of confidence.

Table 9: Multiple correlation and multiple regression

Multiple correlation and multiple regression of Return on Capital Employed(ROCE) on Debt equity ratio(DER), Interest coverage ratio(ICR), Fixed assets turnover ratio(FATR) some select public fertilizer companies in India [Regression equation $ROCE=\beta_0+\beta_1.DER+\beta_2.ICR+\beta_3.FATR$]

company	R	R^2	F	β_0		β_1		β_2		β_3	
				value	t	value	t	value	t	value	t
NFL	1.00	1.00	111.41	0.99	0.01	0.48	-1.08	0.04	14.82**	0.59	-0.75
RCF	1.00	1.00	118.88	0.15	4.07	0.26	-2.27	0.07	9.62	0.09	-7.32***
SPIC	0.99	0.98	16.05	0.01	6.28	0.17	3.75	0.09	-6.78***	0.11	-5.58
FACT	0.89	0.79	1.23	0.35	-1.61	0.31	1.90	0.89	0.17	0.34	1.71
# Significant at 5% level of table value (n-k-1), k i.e (1,3) degree of freedom at 5% is 215.7				*Significant at 10% level ** Significant at 5% level *** Significant at 1% level Table values of t with (n-k-1) or 1 degree of freedom at 10%, 5% and 1% levels are 6.31, 12.71,63.66 respectively.							

*(*Source: Calculated by author)*

Table 10: Multiple Correlation and Multiple Regression

Multiple correlation and multiple regression of Return on Capital Employed(ROCE) on Debt equity ratio(DER), Interest coverage ratio(ICR), Fixed assets turnover ratio(FATR) some select private fertilizer companies

in India [Regression equation $ROCE=\beta_0+\beta_1.DER+\beta_2.ICR+\beta_3.FATR$]

company	R	R^2	F	β_0		β_1		β_2		β_3	
				value	t	value	t	value	t	value	t
CHAMBAL	1.00	1.00	3525.31#	0.00	71.91*	0.01	-51.31*	0.01	45.32*	0.01	53.14*
DEEPAK	0.93	0.86	2.05	0.98	-0.02	0.93	0.11	0.30	1.94	0.85	-0.23
COROMANDEL	0.66	0.43	0.25	0.69	0.54	0.76	0.40	0.91	0.15	0.77	-0.38
GSFC	0.94	0.89	2.77	0.72	0.47	0.25	2.43	0.56	0.82	0.74	0.43
# Significant at 5% level of table value (n-k-1), k i.e (1,3) degree of freedom at 5% is 215.7				*Significant at 10% level ** Significant at 5% level *** Significant at 1% level Table values of t with (n-k-1) or 1 degree of freedom at 10%, 5% and 1% levels are 6.31, 12.71,63.66 respectively.							

*(*Source: Calculated by author)*

Conclusion

It may be concluded from the above analysis that ROCE, DER of public fertilizer companies are moving in a wide range than their counterpart and ICR of private fertilizer companies are moving in wide range and volatile in nature than public fertilizer companies during the period of observation. But the FATR of both public and private fertilizer companies are stable in nature and moving in a narrow range. In public fertilizer companies the correlation between ROCE and factors of capital structure are not statistically significant. In private fertilizer companies the correlation between ROCE and factors of capital structure is statistically significant only in case of CHAMBAL. Also, there is coefficient of regression between ROCE and the factors of capital structure of both public and private fertilizer companies during the period of observation.

Limitations of the study

- The study is limited for a period 5 years from year 2013 to year 2017.
- Four public fertilizer companies in India viz, National Fertilizers Limited (NFL), Rashtriya Chemicals and Fertilisers Ltd. (RCF), The Fertiliser & Chemical Travencore of India Ltd. (FACT) and Southern Petrochemical Industrial Corporation Ltd.(SPIC) and four private fertilizer companies in India viz, Chambal Fertilisers and Chemical Ltd.(CHAMBAL), Deepak Fertilisers and Petrochemical Corporation Ltd.(DEEPAK), Gujarat State Fertilizers & Chemicals Limited(GSFC), Coromandel International Limited(COROMANDEL) have been selected on the basis of their market capitalization more than Rs.500 crores and total assets amounting more than Rs.500 crores as on 15.12.2017.
- The study has used limited numbers of statistical parameters.

References

1. Abor, Joshua. (2005).The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana, The Journal of Risk Finance, Vol. 6 Issue: 5, pp.438-445.
2. Chiang, Y.H., Chan, P.C.A., & Hui, C.M.E., (2002). Capital structure and profitability of the property and construction sectors in Hong Kong. Journal of Property Investment and Finance, 20(6), pp. 434-454.
3. Gill, Amarjit; Biger, Nahum; Mathur, Neil.(2011). The effect of capital structure on profitability: Evidence from United States. International Journal of Management, Poole, vol 28, issue 4. pp 3-15,194.
4. Lazaridis, Ioannis; Tryfonidis, Dimitrios.(2006).Relationship between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange. Journal of Financial Management and Analysis, Vol. 19, No. 1, pp. 1-12. January-June.
5. Nimalathasan, Balasundaram; Brabete, Valeriu(2010).Capital structure and its impact on profitability: a study of listed manufacturing companies in Sri Lanka. Young Economists Journal / Revista Tinerilor Economisti. Vol. 8 Issue 15, pp7-16.
6. Padachi, K. (2006). Trends in working capital management and its impact on firms' performance: An analysis of Mauritian small manufacturing firms. International Review of Business Research Papers, 2(2),45–58.
7. Raheman, A., & Nasr, M. (2007). Working capital management and profitability-case of Pakistani firms. International Review of Business Research Papers, 3(1), pp. 279–300.
8. Ramachandran, Azhagaiah; Candasamy, Gavoury.(2011). The Impact of Capital Structure on Profitability with Special Reference to IT Industry in India vs. Domestic Products. Managing Global Transitions.Koper. vol 9, issue 4, pp. 371-392.
9. Sharma,A.K; Kumar, Satish.(2010). Effect of Working Capital Management on Firm Profitability : Empirical Evidence from India. Global Business Review . 12,1, pp. 159-173.
10. Singh, J. P.; Pandey, Shishir.(2008). Impact of Working capital management in the profitability of Hindalco Industries Limited. ICFAI Journal of Financial Economics . Vol. 6 Issue 4, pp 62-72.