

LIQUIDITY AND PROFITABILITY ANALYSIS OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

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ABSTRACT

The Indian Fertilizer Industry is one of the allied sectors of the agricultural sphere. India has emerged as the third largest producer of nitrogenous fertilizers. Now in the present century, a new technological advancement has hit the Fertilizer companies. The Private Sector Fertilizer Companies are facing day to day competition with the entry of many companies. Finance is one of the important factors for manufacturing and trading of goods and service of any companies. Every investment of finance in the business is to earn optimum return in the form of profit. The business is to earn a profit is one of the important factors for measuring the efficiency of the companies. The Indian Fertilizer industry has helped in the growth of the Indian economy. The private sector has also contributed to the Indian fertilizer industry. The private Sector has played a major role in this mass production of food grains. Fertilizer Industries in India have helped in reducing the fertilizer import rate of the country. India holds a very strong position in the production of nitrogenous fertilizers in the world.

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INTRODUCTION

India is predominantly an agrarian economy. The Indian economy mainly depends upon its agricultural produce. The agricultural output contributes to about 25% of the country's GDP. As a result of the chemical fertilizers being one of the related parts of the agriculture, there is tremendous scope for the growth of the chemical fertilizer industry of India.

The Indian Fertilizer Industry is one of the allied sectors of the agricultural sphere. India has emerged as the third largest producer of nitrogenous fertilizers. The adoption of back to back Five Year plans has paved the way for self sufficiency in the production of food grains.

The large scale use of chemical fertilizers has been instrumental in bringing about the green revolution in India. The fertilizer industry in India began its journey way back in 1906. During this period the first Single Super Phosphate (SSP) factory was established in Ranipet in Chennai. In the pre and post independence era a couple of large scale fertilizer units were established namely the Fertilizer Corporation of India in Sindri, Bihar and the Fertilizer and Chemicals Travancore of India Ltd in Cochin, Kerala. It had a capacity of producing 6000 MT annually.

Fertilizer Industries in India have helped in reducing the fertilizer import rate of the country. India holds a very strong position in the production of nitrogenous fertilizers in the world. The government has been paying huge subsidy to farmers, as it is a critical input in meeting the rising food demands. So far fertilizer plants were inclined to be situated near the stockpiles of raw materials. Now natural gas is being used more and more as worthy raw material.

Fertilizer plants are located in public, private, and co-operative sectors. There are nine public sectors and two co-operative sectors and fifteen private sectors. At present, there are 63 large size fertilizer units in the country, manufacturing a wide range of nitrogenous and Phosphatic/Complex fertilizers. Of these, 38 units produce urea whereas 9 units produce ammonium sulphate as a by-product. Besides, there are about 79 small and medium scale units producing single super-phosphate. Some fertilizer plants have also set up mutually by Indian and local collaborators in some west Asian countries.

The fertilizer industries are slowly and gradually improving the overall agricultural production of the country. Great potential lies ahead for foreign investors looking to invest in the chemicals fertilizers industry in India if they invest in the state of Gujarat as the state is foreseen to be a leading state in the production of fertilizers

Today, the Indian chemical fertilizer industry is developing fast in terms of using the latest

world-class technology. Indian manufacturers of chemical fertilizers are now adopting some of the most advanced manufacturing processes to prepare innovative new products to supplement the Indian agriculture. India is also ranked as the third-largest exporter and producer of nitrogenous fertilizer.

IMPORTANCE OF THE STUDY

The Indian Fertilizer industry has helped in the growth of the Indian economy. The private sector has also contributed to the Indian fertilizer industry. The private Sector has played a major role in this mass production of food grains. The private sector units consists of both major Fertilizer producers on one hand and relatively smaller and medium scale units on the other. They are not only play an important role in production of primary and secondary fertilizer but also contribute substantial value addition in term of quality, Innovation and cost effectiveness of the manufacturing companies in India.

STATEMENT OF THE PROBLEM

Agriculture is the backbone of Indian economy still holds its relative importance for more than a billion peoples. Fertilizer in the agricultural process is an important area of concern. Fertilizer Industry in India has succeeded in meeting the demand of all chemical fertilizers in the recent years. Now in the present century, a new technological advancement has hit the Fertilizer companies. The Private Sector Fertilizer Companies are facing day to day competition with the entry of many companies. All the companies are constantly engaged in gaining the attention of the farmers by introducing new offers, new schemes like price offer, etc.

Finance is one of the important factors for manufacturing and trading of goods and service of any companies. Every investment of finance in the business is to earn optimum return in the form of profit. The business is to earn a profit is one of the important factors for measuring the efficiency of the companies. In this paper the researcher analyses the Profitability, Liquidity, Turnover performance of the selected private sector fertilizer companies in India.

OBJECTIVES OF THE STUDY

- The present study has been set out to accomplish the following objectives.
- To study the liquidity, profitability and turnover performance of selected Private Sector Fertilizer Companies in India.
- To study the comparative analysis of selected Private Sector Fertilizer Companies in India.

METHODOLOGY

The study is empirical in nature and executed using the data published by Fertilizer Industry in India. The research study is solely based on secondary data. **PERIOD OF THE STUDY**

The present study covers a period of five years taking from March 2006 to March 2010.

SAMPLING DESIGN

The sample companies are selected on the basis of convenient sampling method and also these seven companies are the main largest producers of Fertilizer in the private sector.

The following companies have been selected for the study

- i. Chambal Fertilizers and Chemicals Limited(CFCL)
- ii. Deepak Fertilizer and Petrochemicals Corporation Limited (DFPCL)
- iii. Gujarat Narmada Valley Fertilizer Co. Limited (GNFCL)
- iv. Mangalore Chemicals and Fertilizer Limited (MCFL)
- v. Nagarjuna Fertilizer and Chemicals Limited (NFCL)
- vi. Gujarat State Fertilizer and Chemicals Limited (GSFCL)
- vii. Zuari Fertilizer Limited (ZFL)

ANALYSIS OF LIQUIDITY, PROFITABILITY AND TURNOVER PERFORMANCE

CURRENT RATIO OF SELECTED FERTILIZER COMPANIES IN INDIA

The current ratio one of the most commonly used financial ratios, measures the firm's ability to meet its short-term obligations. As current liabilities should technically be paid from current assets, this ratio highlights the firm's ability to meet its short-term liabilities from its short-term assets.

The higher the value of current ratio indicate the higher the liquidity of the firm. A lower current ratio means that the company may not be able to pay its bills on time, while a higher ratio means that the company has money in cash or safe investments that could be put to better use in the business.

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Table -1

**Current Ratio of Selected Private Sector Fertilizer Companies for the year
2005-2006 to 2009-2010**

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	0.56	0.67	0.63	0.64	1.95	0.89	0.59
DFPCL	1.11	1.17	1.04	1.59	1.80	1.34	0.33
GNFCL	0.93	0.98	0.91	0.94	1.53	1.06	0.26
MCFL	1.03	0.97	0.77	0.72	0.96	0.89	0.14
NFCL	0.82	0.62	0.67	0.67	0.86	0.73	0.11
GSFCL	0.74	0.84	0.89	0.96	2.19	1.12	0.60
ZFL	1.15	1.55	1.26	0.96	2.36	1.46	0.55

Source: www.moneycontrol.com

The data presented in the table1 reveals that the current ratio of the Chambal Fertilizer and Chemicals Limited (CFCL) was 0.56 in 2005-2006. In the last year current ratio of the CFCL was 1.95. Thus the standard norm of the current ratio is 2:1. Therefore the mean current ratio was decreased.

During the year 2005-06 the current ratio of the Deepak Fertilizer and Petrochemicals Corporation Limited (DFPCL) was 1.11. In the next year 2007-2008 the current ratio decreased to 1.04. In the last two years 2008-2009 and 2009-2010 the current ratio increased to 1.80. Thus the standard norm of the current ratio is 2:1. Therefore the mean current ratio was decreased.

In the case of Gujarat Narmada Valley Fertilizer Co. Limited (GNFCL) the current ratio in 2005-2006 was 0.93. In the next year 2006-2007 the current ratio increased to 0.98. In 2007-2008 the current ratio decreased to 0.91. Thus the standard norm of the current ratio is 2:1. Therefore the mean current ratio was decreased.

The current ratio of Mangalore Chemicals and Fertilizer Limited (MCFL) in the year 2005-2006 was 1.03. In the next three years 2006-2007 to 2008-2009 the current ratio decreased to 0.72. In the last year 2009-2010 the current ratio increased to 0.96. Thus the current ratio of the Mangalore Fertilizer and Chemicals Limited is less than the standard norm.

In the initial year 2005-2006, the Nagarjuna Fertilizer and chemicals Limited (NFCL) had the current ratio of 0.82. In the next three years 2006-2007 to 2008-2009 the current ratio decreased to 0.67. In 2009-2010 the current ratio increased to 0.86. Thus the current ratio of the Nagarjuna Fertilizer and chemicals Limited is less than the standard norm.

In the case of Gujarat State Fertilizer and Chemicals Limited (GSFCL) the current ratio in 2005-2006 was 0.74. After that the current ratio figures year after year have increased

continuously till the year 2009-2010. In the last year current ratio of the GSFCL was 2.19. Thus the current ratio of the Gujarat State Fertilizer and Chemicals Limited is more than the standard norm of 2:1.

The current ratio of Zuari Fertilizer Limited (ZFL) in the year 2005-2006 was 1.15. In the next two years 2007-2008 and 2008-2009 the current ratio decreased to 0.96. During 2009-2010 the current ratio of the Zuari Fertilizer Limited is more than the standard norm of 2:1.

TEST OF HYPOTHESIS

Table 2 gives the relevant details whether the current ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of current ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of current ratio during the different years.

Table 2
ANOVA – Current Ratio

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	3.123804	6	0.520634	7.00832
Within Row	2.03898	4	0.509745	6.86174
Residual	1.782916	24	0.074288	
Total	6.9457	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for $V_1=6$, $V_2=24$ is 2.51. Since the Calculated value is more than the table value the null hypothesis is rejected. Hence the value of current ratios of the seven companies differs significantly.

Set-2: Ho: The table value of 'F' at 5% for $V_1=4$, $V_2=24$ is 2.78. Since the calculated value is more than the table value. Hence the Ho is rejected.

QUICK RATIO OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

The Quick (Acid-Test) ratio is similar to the current ratio except that it excludes inventory, which is generally the least liquid current asset. In this, the quick assets or liquid assets i.e. cash, marketable securities and account receivables are expressed as a proportion of current liabilities

$$\text{Quick ratio} = \frac{\text{Current Assets} - \text{Prepaid Expenses} - \text{Inventory}}{\text{Current Liabilities}}$$

Table 3

**Quick Ratio of Selected Private Sector Fertilizer Companies
For the year 2005-2006 to 2009-2010**

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	0.65	1.24	1.13	0.80	1.57	1.078	0.36
DFPCL	1.81	1.01	1.06	1.51	1.70	1.418	0.37
GNFCL	1.05	1.31	1.13	0.89	0.91	1.058	0.17
MCFL	1.42	1.48	1.77	1.81	0.94	1.484	0.35
NFCL	1.35	1.26	1.21	1.14	0.85	1.162	0.19
GSFCL	1.05	1.32	0.85	0.59	1.55	1.072	0.38
ZFL	1.53	1.97	1.92	0.92	1.79	1.626	0.43

Source: www.moneycontrol.com

The data presented in the table 3 reveals that the quick ratio of the Chambal Fertilizer and Chemicals Limited was 0.65 in 2005-2006. After that the quick ratio figures have increased till the year 2007-2008. Next year the ratio decreased and increased to the quick ratio of the Chambal Fertilizer and Chemicals Limited are more than the standard norm 1:1.

As on 31st March 2006 quick ratio of Deepak Fertilizer and Petrochemicals Corporation Limited was 1.81. In the next year quick ratio decreased to 1.01. Next three years ratio increased to the quick ratio of the Deepak Fertilizer and Petrochemicals Corporation Limited is more than the standard norm 1:1.

For the Gujarat Narmada Valley Fertilizer Co. Limited quick ratio in the year 2005-2006 was 1.05. In the next year 2006-2007 the quick ratio increased to 1.31. After that the quick ratio

figures decreased continuously till the year 2009-2010. The quick ratio of the Gujarat Narmada Valley Fertilizer Co. Limited is less than the standard norm 1:1.

In the case of Mangalore Chemicals and Fertilizer Limited quick ratio in the year 2005-2006 was 1.42. After that the quick ratio figures increased continuously till the year 2008-2009. In the last year quick ratio decreased to 0.94. The quick ratio of the Mangalore Chemicals and Fertilizer Limited is less than the standard norm 1:1.

The quick ratio of the Nagarjuna Fertilizer and Chemicals Limited is less than the standard norm 1:1 with the average quick ratio of Nagarjuna Fertilizer and Chemicals Limited at just 1.162.

In the initial year 2005-2006, the Gujarat State Fertilizer and Chemicals Limited (GSFCL) had the quick ratio of 1.05. In the next years the quick ratio increased to 1.32. After that the next two years the quick ratio decreased to 0.59. In the last year Gujarat State Fertilizer and Chemicals Limited (GSFCL) the quick ratio increased to 1.55. For the Gujarat State Fertilizer and Chemicals Limited the quick ratio is more than the standard norm of 1:1.

For the Zuari Fertilizer Limited the quick ratio is more than the standard norm of 1:1. The Company's average mean was 1.626 for the five year period.

TEST OF HYPOTHESIS

Table 4 gives the relevant details whether the quick ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of quick ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of quick ratio during the different years.

Table 4 ANOVA – Quick Ratio

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	0.31604	6	0.052673	0.44904
Within Row	1.63552	4	0.40888	3.48576
Residual	2.8152	24	0.1173	
Total	4.76676	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=6, V2=24 is 2.51. Since the Calculated value is less than the table value. So the null hypothesis is accepted. There is no difference among the companies.

Set-2: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the calculated value is more than the table value. Hence the Ho is rejected.

GROSS PROFIT MARGIN OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

Gross Profit is the result of the relationship between prices, sales volume and cost. The gross margin represents the limit beyond which fall in sales prices are outside the tolerance limit. The gross profit margin is a very important profitability measure for any business. It essentially measures the trading effectiveness and basic profit earning potential of a firm

The Gross Margin Ratio is calculated as follows:

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$\text{Gross Profit} = \text{Net Sales} - \text{Cost of Goods Sold}$$

Table 5**Gross Profit Margin Ratio of Selected Private Sector Fertilizer Companies****For the year 2005-2006 to 2009-2010**

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	15.19	14.98	10.78	10.33	11.93	12.642	2.31
DFPCL	20.94	19.02	12.87	17.92	16.86	17.522	3.01
GNFCL	21.92	21.26	15.82	11.86	6.00	15.372	6.67
MCFL	4.77	4.01	4.75	7.03	3.72	4.856	1.30
NFCL	11.53	8.26	8.36	8.76	12.00	9.782	1.83
GSFCL	18.26	14.46	9.63	14.28	7.68	12.862	4.21
ZFL	2.45	3.27	5.14	1.69	4.09	3.328	1.35

Source: www.moneycontrol.com

The data presented in the table 5 reveals that the gross profit margin ratio of the CFCL company was 15.19 in 2005-2006. In the next four years the gross profit margin ratio decreased continuously up to 2008-2009. In the last year gross profit margin ratio of CFCL was 11.93.

During the year 2005-2006 the gross profit margin ratio of Deepak Fertilizer and Petrochemicals Corporation Limited company was 20.94. In the next two years the gross

profit margin ratio decreased to 12.87. In the last year gross profit margin ratio of the DFPCL was 16.86.

In the case of GNFCL the gross profit margin in 2005-2006 was 21.92. In the next three years the gross profit margin ratio continuously decreased to 11.86. In the last year gross profit margin ratio of GNFCL was 6.00.

For the Mangalore Chemicals and Fertilizer Limited quick ratio in the year 2005-2006 was 4.77. In the next year 2006-2007 the gross profit margin ratio decreased to 4.01. After that next two years gross profit margin ratio increased to 7.03. In the last year gross profit margin ratio of MCFL was 3.72.

In the initial year 2005-2006 the Nagarjuna Fertilizer and Chemicals Limited had the gross profit margin ratio of 11.53. In the next three years the gross profit margin ratio decreased to 8.76. In the last year gross profit margin ratio of NFCL was 12.00.

In the case of Gujarat State Fertilizer and Chemicals Limited in 2005-2006 was 18.26. In the next two years the gross profit margin ratio decreased to 9.63. In the next year gross profit margin ratio increased to 14.28. In the last year gross profit margin ratio of GSFCL was 7.68.

The gross profit margin ratio of Zuari Fertilizer Limited in the year 2005-2006 was 2.45. In the next two years the gross profit margin ratio had substantially increased to 2007-2008. During 2009-2010 it has increased up to 4.09.

TEST FOR SIGNIFICANCE OF GROSS PROFIT MARGIN

Table 6 gives the relevant details whether the gross profit margin ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of gross profit margin ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of gross profit ratio margin during the different years.

Table 6
ANOVA –Gross Profit Margin Ratio

	Sum Degrees Square	of of	Degrees Freedom	of	Mean Square	F-Ratio
Between Column	104.06951		6		17.34492	2.49690
Within Row	892.24068		4		223.06017	32.11083
Residual	166.71779		24		6.94657	
Total	1163.02798		34			

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the calculated value is less than the table value, so the null hypothesis is accepted. There is no difference among the companies.

Set-2: Ho: The table value of 'F' at 5% for V1=6, V2=24 is 2.51. Since the calculated value is more than the table value of Ho is rejected. Hence the values of gross profit margin differ significantly during the study period.

NET PROFIT MARGIN RATIO OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

The Net Profit Margin is indicative of management's ability to operate the business with sufficient success not only to recover from revenues of the period, the cost of merchandise or services, the expenses of operating the business and the cost of the borrowed funds, but also to leave a margin of reasonable compensation to the owners for providing their capital at risk. The ratio of net profit (after interest and taxes) to sales essentially expresses the cost price effectiveness of the operation

The Net Profit Margin Ratio is calculated as follows:

$$\text{Net Profit ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

Table 7

**Net Profit Margin Ratio of Selected Private Sector Fertilizer Companies
For the year 2005-2006 to 2009-2010**

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	7.36	5.80	7.41	4.89	6.83	6.458	1.08
DFPCL	13.61	10.76	9.31	10.26	13.09	11.406	1.86
GNFCL	13.57	11.81	10.74	7.65	4.58	9.67	3.57
MCFL	2.31	1.99	2.47	1.13	2.71	2.122	0.61
NFCL	4.55	1.73	1.01	1.36	3.30	2.39	1.49
GSFCL	10.20	7.89	6.57	8.39	6.15	7.84	1.61
ZFL	1.18	16.28	2.74	1.50	3.58	5.056	6.35

Source: www.moneycontrol.com

The data presented in the table 7 reveals that the net profit margin ratio of the Chambal Fertilizer and Chemicals Limited company was 7.36. In the next year 2006-2007 the net profit margin ratio decreased to 5.80. CFCL had fluctuating net profit margin ratio.

During the year 2005-2006 the net profit margin ratio of Deepak Fertilizer and Petrochemicals Corporation Limited company was 13.61. In the next two years the net profit margin ratio decreased to 9.31. In the last year net profit margin ratio of the DFCL was 13.09.

In the case of Gujarat Narmada Valley Fertilizer Co. Limited the net profit margin in 2005-2006 was 13.57. In the next three years the net profit margin ratio continuously decreased to 7.65. In the last year net profit margin ratio of the GNFC was 4.58.

In the initial year 2005-2006 the net profit margin ratio of Mangalore Chemicals and Fertilizer Limited Company was 2.31. In the next year 2006-2007 the net profit margin decreased to 1.99. MCFL performance is, year after year, fluctuating trend.

In the initial year 2005-2006 the Nagarjuna Fertilizer and Chemicals Limited had the net profit margin ratio of 4.55. In the next three years the net profit margin ratio decreased to 1.36. In the last year net profit margin ratio of the NFCL was 3.30.

During the year 2005-2006 the net profit margin ratio of Gujarat State Fertilizer and Chemicals Limited Company was 10.20. In the next three years the net profit margin ratio continuously decreased to 8.39. In the last year net profit margin ratio of the GSFCL was 6.15.

The net profit margin ratio of Zuari Fertilizer Limited in the year 2005-2006 was 1.18. In the next year net profit margin ratio increased to 16.28. But in the next two years the net profit margin ratio had substantially decreased to 1.50. In the last year net profit margin ratio was

3.58. But possible figures throughout the net profit margin ratio to show a mixed possible trend.

TEST FOR SIGNIFICANCE OF NET PROFIT MARGIN

Table 8 gives the relevant details whether the net profit margin ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of net profit margin ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of net profit ratio margin during the different years.

Table 8
ANOVA –Net Profit Margin Ratio

	Sum Degrees Square	of of	Degrees Freedom	of	Mean Square	F-Ratio
Between Column	46.993		4		11.7482	1.3792
Within Row	370.0737		6		61.6789	7.2411
Residual	204.4285		24		8.5178	
Total	621.4952		34			

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the calculated value is less than the table, so the null hypothesis is accepted.

Set-2: Ho: The table value of 'F' at 5% for v1=6, V2=24 is 2.51. Since the calculated value is more than the table value the null hypothesis is rejected. Hence the ratio differs significantly during the study period.

OPERATING PROFIT MARGIN RATIO OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

The operating profit margin represents the "pure profits" earned on each sales, operating profits are "pure" because they measure only the profits earned on operations and ignore interest taxes and preferred stock dividends. A high operating profit margin is preferred the operating profit margin is calculated as

$$\text{Operating Profit Margin} = \frac{\text{Operating Profit}}{\text{Sales}} \times 100$$

This ratio is a complementary of net profit ratio. In case the net profit ratio is 20% operating ratio will be 80% operating cost include direct materials, direct labour and other overheads.

Table 9

**Operating Profit Margin Ratio of Selected Private Sector Fertilizer companies
For the year 2005-2006 to 2009-2010**

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	16.99	18.37	17.56	15.26	19.12	17.46	1.47
DFPCL	18.44	17.24	17.12	21.62	21.85	19.254	2.32
GNFCL	22.74	21.18	19.04	15.96	10.47	17.878	4.86
MCFL	5.05	4.96	5.73	7.71	4.60	5.61	1.24
NFCL	19.83	15.43	13.84	13.86	18.45	16.282	2.73
GSFCL	19.84	15.13	13.64	16.71	11.18	15.3	3.25
ZFL	4.01	4.35	5.80	1.98	4.55	4.138	1.38

Source: www.moneycontrol.com

The data presented in the table 9 reveals that the operating profit margin ratios of Chambal Fertilizer and Chemicals Limited (CFCL) was 16.99. After that the next year operating profit margin increased to 18.37. But in the next two years operating profit margin ratio was decreased to 15.26. After that the last year operating profit margin ratio was 19.12.

During the year 2005-2006 the operating profit margin ratio of Deepak Fertilizer and Petrochemicals Corporation Limited Company (DFCL) was 18.44. In the next two years the operating profit margin ratio decreased to 17.12. In the last year operating profit margin ratio is slightly increased up to 21.85.

The Operating Profit Margin ratio (OPM) of the Gujarat Narmada Valley Fertilizer Co. Limited (GNFCL) company performance on this score has been one of consistent rise from just 22.74 in 2005-2006, before falling down to 10.47 in 2009-10.

For the Mangalore Chemicals and Fertilizer Limited the operating profit margin ratio was 5.05 in 2005-2006. In the next year operating profit margin ratio decreased to 4.96. After that in the next two years operating profit margin ratio increased to 7.74. In the last year operating profit margin ratio of MCFL was 4.60.

In the case of Nagarjuna Fertilizer and Chemicals Limited the operating profit margin in 2005-2006 was 19.83. In the next three years operating profit margin ratio continuously decreased to 13.86. After that the last year operating profit margin ratio was 18.45.

In the case of Gujarat State Fertilizer and Chemicals Limited the operating profit margin in 2005-06 was 19.84%. In the next four years operating profit margin ratio decreased continuously up to 2009-10. The last year operating margin ratio was 16.71%.

In the initial year 2005-2006, the Zuari Fertilizer Limited (ZFL) had the operating profit margin of 4.01. In the next two years operating profit margin is increased to 5.80. After that the next year operating profit margin ratio decreased to 1.98. In the last year operating profit margin ratio was 4.55.

TEST FOR SIGNIFICANCE OF OPERATING PROFIT MARGIN

Table 10 gives the relevant details whether the operating profit margin ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of operating profit margin ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of operating profit margin ratio during the different years.

Table 10
ANOVA –Operating Profit Margin Ratio

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	24.5323	4	6.1331	0.448
Within Row	1142.734	6	190.4556	13.9033
Residual	328.7672	24	13.6986	
Total	1496.0335	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for $V_1=4, V_2=24$ is 2.78. Since the Calculated value is less than the table value. Hence Ho is accepted. There is no longitudinal difference in the operating profit margin ratio.

Set-2: Ho: The table value of 'F' at 5% for $V_1=6, V_2=24$ is 2.51. The calculated value is more than the table value the null hypotheses is rejected. Hence the values of operating profit margin ratio differ significantly during the study period.

RETURN ON EQUITY OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

Return on Equity (ROE), or Return on Shareholder's Funds (ROSF), measures the return the firm is earning on the equity funds invested by its share holders the firm's owners. In this case net profit, or earnings, represents the residual profit debt available for distribution to the ordinary shareholders after provision has been made for all other financial obligations such as taxation interest and any preference share dividend.

$$\text{Return on Equity} = \frac{\text{Profit after Interest and Taxes}}{\text{Ordinary Shareholders funds}}$$

The Profitability from the point of view of the Equity Shareholders will be judged after taking into account the amount of dividend payable to the Preference Shareholders.

$$\text{Return on Investment} = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

Table 11

Return on Equity of Selected Private Sector Fertilizer companies For the year 2005-2006 to 2009-2010

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	21.13	14.78	17.90	18.68	17.92	18.08	2.27
DFPCL	13.90	14.62	14.35	18.51	18.49	15.97	2.32
GNFCL	25.03	20.78	20.20	11.30	5.96	16.65	7.79
MCFL	7.60	7.90	10.85	7.24	13.15	9.35	2.56
NFCL	3.62	1.79	1.34	1.99	4.19	2.59	1.24
GSFCL	25.76	19.55	16.18	25.85	11.87	19.84	6.09
ZFL	6.60	50.37	8.61	10.06	14.68	18.08	18.29

Source: www.moneycontrol.com

The data presented in the table 11 reveals that the return on equity of the Chambal Fertilizer and Chemicals Limited (CFCL) company was 21.13 in 2005-2006. In the next year return on equity decreased in 2006-2007, the amount was 14.78. After that the next year return on equity is increased to 17.90. CFCL's performance is, year after year, fluctuating trend.

During the year 2005-06 the return on equity Deepak Fertilizer and Petrochemicals Corporation Limited company (DFPCL) was 13.90. After that in the year 2006-2007 return on equity slightly increased to 14.62. In the next year return on equity decreased to 14.35. After that in the last two years, return on equity ratio continuously increased to 18.49.

In the case of Gujarat Narmada Valley Fertilizer Co. Limited the return on equity in 2005-2006 was 25.03. In the next three years the return on equity continuously decreased to 11.30. In the last year return on equity of GNFCL was 5.96.

The return on equity of Mangalore Chemicals and Fertilizer Limited in the year 2005-2006 was 7.60. After that in the year 2008-2009 return on equity slightly increased to 10.85. In the next year return on equity decreased to 7.24. The last year return on equity of the MCFL was 13.15.

In the initial year 2005-2006 the Nagarjuna Fertilizer and Chemicals Limited had the return on equity of 3.62. In the next three years return on equity decreased continuously to 1.99. In the last year return on equity of NFCL was 4.19.

In the case of Gujarat State Fertilizer and Chemicals Limited the return on equity in 2005-2006 was 25.76. In the next two years the return on equity decreased to 16.18. After that in the next year the return on equity had substantially increased to 25.85. In the last year return on equity of GSFCL was 11.87.

The return on equity ratio of Zuari Fertilizer Limited in the year 2005-2006 was 6.60. In the next year the return on equity increased to 50.37. In the next year return on equity decreased to 8.69. After that in the year 2008-2009 return on equity slightly increased to 10.06. The last year return on equity of the ZFL was 14.68.

TEST FOR SIGNIFICANCE OF RETURN ON EQUITY

Table 12 gives the relevant details whether the return on equity of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of return on equity of the selected companies.

Set-2: Ho: There is no significant difference in the values of return on equity during the different years.

Table 12

ANOVA – Return on Equity

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	176.9279	4	44.2319	0.6524
Within Row	1146.79146	6	191.13191	2.8191
Residual	1627.1418	24	67.7975	
Total	2950.8612	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the Calculated value is less than the table value, the null hypothesis is accepted.

Set-2: Ho: The table value of 'F' at 5% for V1=6, V2=24 is 2.51. The calculated value is more than the table value. Hence the Ho is accepted. There is no longitudinal difference in the return on equity.

EARNINGS PER SHARE OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

Earnings per share measures the profit available to the equity shareholders on a per share basis, that is, the amount that they can get on every share held. It is calculated by the profits available to the equity shareholders by the number of the outstanding shares. The profits available to the ordinary shareholders are represented by net profits after taxes and Preference dividend.

$$\text{Earnings per share} = \frac{\text{Net Profit available to Equity - Holders}}{\text{Number of Equity shares outstanding}}$$

Table 13

Earnings per share of Selected Private Sector Fertilizer Companies For the year 2005-2006 to 2009-2010

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	4.88	3.63	4.90	5.54	5.98	4.99	0.89
DFPCL	9.04	10.54	11.37	16.86	19.51	13.46	4.49
GNFCL	20.12	21.01	23.99	14.64	7.97	17.546	6.33
MCFL	2.12	2.32	3.41	2.38	4.77	3.00	1.11
NFCL	1.56	0.74	0.53	0.76	1.55	1.028	0.49
GSFCL	36.86	33.49	29.92	62.66	31.93	38.972	13.48

ZFL	8.89	133.67	24.94	31.69	53.31	50.5	49.15
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Source:www.moneycontrol.com

The data presented in the table 13 reveals that the earnings per share of the Chambal Fertilizer and chemicals Limited was 4.28 in 2005-2006. In the next year the earnings per share decreased to 3.63. In the next two years the earnings per share increased to 5.54. In the last year earnings per share of Chambal Fertilizer and Chemicals Limited was 5.98.

During the year 2005-2006 the earnings per share of Deepak Fertilizer and Petrochemicals Corporation Limited company was 9.04. In the next three years the earnings per share continuously increased to 16.86. In the last year earnings per share of the Deepak Fertilizer and Petrochemicals Limited company was 19.51.

In the case of Gujarat Narmada Valley Fertilizer Co. Limited to earnings per share in 2005-2006 was 20.12. In the next two years the earnings per share increased to 23.99. In the last year earnings per share of the Gujarat Narmada Valley Fertilizer Co. Limited company was 7.97.

The earning per share ratio of Mangalore Chemicals and Fertilizer Limited in the year was 2.12. In the next two years earnings per share increased to 3.41. Then in the next year earnings per share decreased to 2.38. In the last year earnings per share of the MCFL was 4.77.

In the initial year 2005-2006 the Nagarjuna Fertilizer and chemicals Limited had the earnings per share of 1.56. In the next three years the earnings per share continuously decreased to 0.76. In the last year earnings per share of the Nagarjuna Fertilizer and chemicals Limited was 1.55.

In the case of Gujarat State Fertilizer and Chemicals Limited Earning per share in 2005-2006 was 36.86. In the next two years earnings per share decreased to 29.92. In the next year earnings per share increased to 62.66. In the last year earnings per share of the GSFCL was 31.93.

The earnings per share ratio of Zuari Fertilizer Limited in the year 2005-2006 was 8.89. In the next year the earnings per share increased to 133.67. In the next year the earnings per share decreased to 24.94. In the last year earnings per share of Zuari Fertilizer Limited was 53.31.

TEST FOR SIGNIFICANCE OF EARNINGS PER SHARE

Table 14 gives the relevant details whether the Earnings per share of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of Earnings per share of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of Earnings per share during the different years.

Table 14
ANOVA – Earnings per Share

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	1269.7879	4	317.4469	1.0225
Within Row	10987.6159	6	1831.2692	5.8984
Residual	9370.9614	24	390.4569	
Total	21628.3652	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the Calculated value is less than the table value the null hypothesis is accepted.

Set-2: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.51. The calculated value is more than the table value null hypothesis is rejected. Hence the values of earnings per share differ significantly during the study period.

RETURN ON INVESTMENT OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

The Profitability ratios can also be computed by relating the profits of a firm to its investments. This is also known as the "Primary Ratio". It is also sometimes referred to as return on assets (ROA) or return on capital employed (ROCE). However expressed, the ratio is attempting to measure the overall return the firm is generating on the amount of money invested in its assets ROI there many ways of calculating return of investment and the common one is

$$\text{Return on Investment} = \frac{\text{Profit before Interest and Tax}}{\text{Net Investment}}$$

$$\text{i.e. Net Investment} = \text{Total assets} - \text{Total Liabilities}$$

Table 15

Return on Investment of Selected Private Sector Fertilizer companies

For the year 2005-2006 to 2009-2010

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	14.51	7.12	8.81	8.51	8.96	9.582	2.85
DFPCL	14.38	13.28	14.45	15.03	14.31	14.29	0.63
GNFCL	27.33	25.35	26.55	14.88	8.27	20.475	8.48
MCFL	7.10	7.29	7.75	5.50	16.02	8.732	4.16
NFCL	1.49	0.28	0.28	1.61	4.33	1.598	1.65
GSFCL	17.57	14.53	17.23	32.49	13.85	19.134	7.64
ZFL	2.53	24.85	6.60	10.01	10.21	10.84	8.57

Source: www.moneycontrol.com

The data presented in the table 15 reveals that the return on investment of the Chambal Fertilizer and Chemicals Limited company was 14.51 in 2005-2006. After that the return on investment figures year after year have decreased continuously till the year 2009-2010. In the last year return on investment of the CFCL was 8.96.

During the year 2005-2006 the return on investment of Deepak Fertilizer and Petrochemicals Corporation Limited Company was 14.38. In the next year the return on investment decreased to 13.28. After that next two years the return on investment increased to 15.03. In the last year return on investment of the DFPCL was 14.31.

In the case of Gujarat Narmada Valley Fertilizer Co. Limited the return on investment in 2005-2006 was 27.33. In the next three years the return on investment continuously decreased to 14.88. In the last year return on investment of GNFCL was 8.27.

In the initial year 2005-2006 the Mangalore Chemicals and Fertilizer Limited had the return on investment of 7.10. In the next two years return on investment decreased to 5.50. In the last year return on investment of MCFL was 16.02.

The return on investment of Nagarjuna Fertilizer and Chemicals Limited in the year 2005-2006 was 1.49. In the next two years the return on investment decreased to same figures of 0.28. But in the next years the return on investment had substantially increased to 1.61. In the last year return on investment was 4.33.

In the case of Gujarat State Fertilizer and Chemicals Limited the return on investment in 2005-2006 was 17.57. In the next year return on investment decreased to 14.53. After that the next two years return on investment increased to 32.49. In the last year return on investment of GSFCL was 13.85.

The return on investment of Zuari Fertilizer Limited in the year 2005-2006 was 2.53. In the next year return on investment increased to 24.85. But in the next year return on investment decreased to 6.60. In the next year return on investment continuously increased to 10.01. In the last year return on investment was 10.21.

TEST FOR SIGNIFICANCE OF RETURN ON INVESTMENT

Table 16 gives the relevant details whether the Return on investment of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of Return on investment of the selected Private Sector Fertilizer Companies.

WORKING CAPITAL TURNOVER RATIO OF SELECTED PRIVATE SECTOR FERTILIZER COMPANIES IN INDIA

Working Capital, also known as circulating capital is the amount of money which a business needs to survive on a day-to-day basis. Working capital represents the money available to a business to run its daily operations and, as such, it is used to measure of the efficiency and the short-term financial health of a company. It is calculated as

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales}}{\text{Net Working Capital}}$$

Table 16

Working Capital Turnover Ratio of Selected Private Sector Fertilizer Companies in the year 2005-2006 to 2009-2010

COMPANY NAME	As on March 2006	As on March 2007	As on March 2008	As on March 2009	As on March 2010	Mean	SD
CFCL	8.45	5.20	6.95	14.76	5.83	8.238	3.85
DFPCL	22.13	6.82	10.06	5.01	3.87	9.578	7.40
GNFCL	6.49	4.29	6.87	7.52	7.56	6.546	1.34
MCFL	4.41	5.11	3.80	5.49	14.57	6.676	4.46
NFCL	6.63	8.97	6.90	14.25	15.69	10.488	4.22
GSFCL	4.42	3.89	6.56	14.86	3.51	6.648	4.74
ZFL	4.12	3.05	3.00	17.00	4.67	6.368	5.98

Source: www.moneycontrol.com

The data presented in the table 16 reveals that the working capital turnover ratio of the Chambal Fertilizer and Chemicals Limited (CFCL) was 8.45 2006 March. In the next year working capital turnover ratio decreased to 5.20. After that the next two years working capital

turnover ratio increased to 14.76. In the last year working capital turnover of CFCL was 5.83. The company average working capital turnover ratio was 8.238 for the five year period. During the year 2005-2006 the working capital turnover ratio of the Deepak Fertilizer and Petrochemicals Corporation Limited company was 22.13. In the next year the working capital turnover ratio decreased to 6.82, then in the last year a study 2009-2010 says the ratio fell down to 3.87.

The Gujarat Narmada Valley Fertilizer Co. Limited (GNFCL) working capital turnover ratio was 6.49 in March 2006. In the next year working capital turnover ratio decreased to 4.29. But in the next two years the working capital turnover ratio continuously increased to 7.56. The GNFCL's average working capital turnover ratio was 6.546.

In the initial year 2005-2006 the working capital turnover ratio of the Mangalore Chemicals and Fertilizer Limited Company was just 4.41. In the next year the working capital turnover ratio increased to 5.11. After that the next year working capital turnover ratio decreased to 3.80. But in the next two years the working capital turnover ratio increased to 14.57.

In the case of Nagarjuna Fertilizer and Chemicals Limited the working capital turnover ratio in 2005-2006 was 6.63. In the next year the working capital turnover ratio slightly increased to 8.97. In the next year the working capital turnover ratio decreased to 6.90. After that in the next two years the working capital turnover ratio increased to 15.69.

Gujarat State Fertilizer and chemicals Limited working capital turnover ratio in the year 2005-2006 was 4.42. In the next year the working capital turnover ratio decreased to 3.89. But in the next two years the working capital turnover ratio increased to 14.86. The Company's average working capital turnover ratio was 6.648.

The working capital turnover ratio of Zuari Fertilizer Limited in the year 2005-2006 was 4.12. In the next two years the working capital turnover ratio decreased to 3.00. In the next two years working capital turnover ratio increased to 17.00. The ZFL's average working capital turnover ratio was 6.368.

TEST FOR SIGNIFICANCE OF WORKING CAPITAL TURNOVER RATIO

Table 17 gives the relevant details whether the Working capital turnover ratio of the seven Private Fertilizer Companies differed significantly and whether the ratio differed across the five years. Two way ANOVA was used.

Two sets of Null Hypothesis

Set-1: Ho: There is no significant difference in the values of Working capital turnover ratio of the selected Private Sector Fertilizer Companies.

Set-2: Ho: There is no significant difference in the values of Working capital turnover ratio during the different years.

Table 17

ANOVA –Working Capital Turnover Ratio

	Sum of Degrees of Square	Degrees of Freedom	Mean Square	F-Ratio
Between Column	143.29488	4	35.82372	1.52741
Within Row	47.09636	6	7.84939	0.33467
Residual	562.89596	24	23.4539	
Total	753.2872	34		

Source: Computed

RESULT

Set-1: Ho: The table value of 'F' at 5% for V1=4, V2=24 is 2.78. Since the Calculated value is less than the table value the null hypothesis is accepted. There is no difference among the companies.

Set-2: Ho: The table value of 'F' at 5% for V1=6, V2=24 is 2.51. The calculated value is less than the table value. Hence the Ho is accepted.

Co-efficient of Variation

The Researcher compares the performance of Private Sector Fertilizer Companies by using statistical tool of co-efficient of variation. It is used to compare the performance of the Private Fertilizer Companies in India.

$$C.V = \frac{SD}{Mean} \times 100$$

The following table 18 gives the particulars of Private Fertilizer Companies Operating Profit during the period of 2005-2006 to 2009-2010.

Table 18

Operating Profit of the Private Fertilizer Companies

Year	CFCL	DFPCL	GNFCL	MCFL	NFCL	GSFCL	ZFL
2005-2006	467.33	103.79	488.46	54.74	290.94	562.65	88.08
2006-2007	479.36	143.63	580.39	68.06	279.99	502.70	104.30
2007-2008	481.07	180.16	653.91	93.18	303.48	488.82	151.96
2008-2009	708.03	306.01	465.91	190.61	328.57	488.11	121.14
2009-2010	636.85	281.76	361.61	95.68	366.87	984.77	153.64
Mean	554.528	203.07	510.056	100.454	313.97	605.41	123.824
SD	110.67	87.61	111.91	53.25	34.66	214.27	28.92
C.V	19.96	43.14	21.94	53.01	11.04	35.39	23.35

Among the seven Private Fertilizer Companies, the Operating Profit of Nagarjuna Fertilizer and Chemicals Limited (NFCL) are more consistent as the co-efficient of variation is less. Gujarat State Fertilizer and Chemicals Limited (GSFCL) is having better Operating Profit as the average is higher.

CONCLUSION

By the present study the researcher concludes that DFPCL, GNFCL, and GSFCL have higher profitable performance when compared to other selected Private Fertilizer companies in India. As far as the liquidity and turnover are concerned ZFL, MCFL and GSFCL are at high level performance and other companies are to improve their liquidity and turnover performance. In the comparative analysis of Private Fertilizer Companies the operating profit of the GSFCL has high growth rate during the study period.

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