A COMPARATIVE STUDY ON PROFITABILITY RATIOS OF SELECTED FERTILIZER COMPANIES IN GUJARAT

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ABSTRACT

The purpose of the study is to know the profitability of the selected fertilizer companies and to see how efficiently the operations of the business are carried out. In this study, two companies i.e. Gujarat Narmada Valley Fertilizers and Chemicals Ltd. and Gujarat State Fertilizers and Chemicals Ltd. are selected. The primary objective of the study is to measure significant difference if any in the performance of selected fertilizer companies in terms of Profitability. In this study t-test is conducted for Profitability ratios of selected fertilizer companies in Gujarat for the period of 2010-11 to 2019-20. In these Profitability ratios include Gross Profit Ratio, Net Profit Ratio, Return on Assets Ratio, Return on Equity Ratio, Return on Capital Employed Ratio, Dividend per Share, Earnings per Share and Dividend Payout Ratio. The statistical tool t-test is used to test the hypothesis regarding profitability of two selected companies in fertilizer industry. From the analysis of the data it is concluded that there is a significant difference in Gross Profit Ratio and Return on Assets Ratio. Overall the performance of GNFC is better than GSFC.

Keywords: *Profitability, Fertilizer Companies, t-test, Return on Capital Employed, GNFC.*

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Introduction
Financial Statement – Meaning
"The end product of financial accounting process is a set of reports which are called financial statements."

In other words, the statements prepared and presented by a business enterprise at the end of accounting year i.e. balance sheet and profit and loss account are called financial statements.

Needs of Financial Statement Analysis

- **Owners and managers** require financial statements to make important business decisions that affect its continued operations. Financial analysis is then performed on these statements to provide management with a more detailed understanding of the figures. These statements are also used as part of management's annual report to the stockholders.

- **Employees** also need these reports in making collective bargaining agreements (CBA) with the management, in the case of labour unions or for individuals in discussing their compensation, promotion and rankings.

- **Prospective investors** make use of financial statements to assess the viability of investing in a business. Financial analysis are often used by investors and are prepared by professionals (financial analysts), thus providing them with the basis for making investment decisions.

- **Financial institutions** (banks and other lending companies) use them to decide whether to grant a company with fresh working capital or extend debt securities (such as a long-term bank loan or debentures) to finance expansion and other significant expenditures.

- **Government entities** (tax authorities) need financial statements to ascertain the propriety and accuracy of taxes and other duties declared and paid by a company.

- **Vendors** who extend credit to a business require financial statements to assess the creditworthiness of the business.

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Review of Literature

The review of literature guides the researcher for getting better understanding of methodology used, limitations of various available estimation procedures and interpretation of the conflicting results.

Patel Vijay S. & Mehta Chandresh B. (2012)[i] in their study entitled "A Financial Ratio Analysis of Krishak Bharati Co-operative limited" has mainly focused on relationship between gross profit & net sales, net profit & net sales, cost of goods sold & net sales, profit after tax & number of equity shares and EBIT & capital employed for the period of 2000-01 to 2008-09. Coefficient of correlation used to find linear relation and that value is tested by t test and found that there is positive linear relation between gross profit & net sales, net profit & net sales, profit after tax & number of equity shares and EBIT & capital employed and negative relation between cost of goods sold & net sales.

Kapoor Suri Deepali and Singhal Shilpi (2013)[ii] in their study on "Comparative Analysis of Financial Performance of Indian Farmers Fertilizer Co-operative Ltd (IFFCO)" tried to identify the financial performance and how the performance is going on for last five years of IFFCO on the basis of establishing relationship between the items of balance sheet and profit and loss account by using various types of ratios such as solvency, liquidity, activity and profitability for five years period ending on 2011-12. After analyzed five year data, the researchers concluded that maximum number of financial indicator like Company's return on capital employed, profit before tax to turnover etc of IFFCO were undesirable as compare to previous years whereas operating profit to turnover ratio, fixed assets turnover ratio, debt equity ratio, current ratio, liquidity ratio etc. were at a desirable position.

Patel Ankit D. (2015)[iii] has used six Profitability ratios (Operating Profit Margin Ratio, Gross Profit Margin Ratio, Net Profit Margin Ratio, Return on Capital Employed Ratio, Return on Net worth Ratio and Return on Assets Ratio) to analyze financial performance of selected fertilizer companies in India for the period of 2004-05 to 2013-2014. From the analysis, the researcher concluded that there is significant difference in Profitability of selected fertilizer Companies.

- The Operating Profit Ratio of GNFC, GSFC and Deepak fertilizer company was satisfactory because Operating Profit Ratio of these companies was higher than Industry Ratio.

- Gross Profit Margin Ratio of the Industry was 10.76. As compare to all selected companies only three companies are on satisfactory level and other three companies like Rashtriya Fertilizer Ltd., Coromandal International and National Fertilizer Company's Gross Profit Margin Ratio was not satisfactory.

- Deepak Fertilizer's performance regarding Net Profit Ratio was very good because its Net Profit Ratio was 10.55 which was higher than Industry ratio.

- Coromandal International's performance was excellent. Its Return on Capital Employed Ratio was 22.76 which was higher than Industry ratio followed by GSFC that was 22.07. Other selected four company performance was not satisfactory because its Return on Capital Employed Ratio was very poor.

- Return on Net worth Ratio of the Industry was 15.43. In this sense only Deepak Fertilizer Ltd.'s performance was satisfactory and other companies' ratio was very poor.

- Return on Assets Ratio of all selected companies was very good except two companies i.e. Rashtriya Fertilizer Ltd and National Fertilizer Ltd. GSFC performance regarding this ratio was very good that was 212.20. It is very high than the industry Ratio.

Chavda K. N. and Shah Mehul B. (2015)[iv] in their study entitled, "A Financial Ratio Analysis of Gujarat Narmada valley Fertilizers & Chemicals Ltd." used two liquidity ratios namely Current ratio and liquid ratio and two profitability ratios namely gross profit ratio and net profit ratio of GNFC Limited for the period 2009-10 to 2013-14. In this study researchers tried to find relation between Gross profit & Net Sales, Net Profit & Net sales, Current assets & Current liability and liquid assets & liquid liabilities and also this relation tested by t test and result came that only gross profit and net sales are related whereas others were not related. Researchers also examined the growth of these ratios and concluded that during these five years gross profit ratio and net profit ratio increased averagely 9.91% and 6.71% respectively. Average of Current ratio and liquid ratio was 1.50 and 1.17 respectively.

Statement of Problem

A Comparative Study on Profitability Ratios of Selected Fertilizer Companies in Gujarat

Objectives of the Study

- To analyze the profitability of the selected fertilizer companies.
- To make inter-firm comparison of profitability of the selected fertilizer companies and measure the significant difference in their financial performance.

Hypothesis

H_0: There is no significant difference in financial performance of selected fertilizer companies.
H_1: There is significant difference in financial performance of selected fertilizer companies.

Research Methodology

The present study is based on Secondary Data which are collected through various sources such as websites, annual reports of the selected companies, journals, similar research studies, etc. Statistical Techniques (i.e. t-test) is applied in order to support the hypothesis and derive suitable conclusion.

Data Analysis and Interpretation

In the present study, t-test is applied to analyze the profitability of the two selected fertilizer companies i.e. Gujarat Narmada Valley Fertilizers and Chemicals Limited and Gujarat State Fertilizers and Chemicals Limited for the period of 10 years starting from 2010-11 to 2019-20. Tabulated data and its interpretation is discussed below:

- **Gross Profit Ratio**

H_0: There is no significant difference in Gross Profit Ratio
H_1: There is significant difference in Gross Profit Ratio

Table 1: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.124	10	.200[*]	.970	10	.891
GSFC	.166	10	.200[*]	.918	10	.338

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Table 2: Gross Profit Ratio

Name of Company	N	Mean	Std. Deviation	Std. Error Mean
GNFC	10	46.2820	6.16444	1.94937
GSFC	10	38.5040	4.89511	1.54797

Table 3: Independent Sample t-test for Gross Profit Ratio

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.691	.417	3.125	18	.006	7.77800	2.48923	2.54833	13.00767
Equal variances not assumed			3.125	17.121	.006	7.77800	2.48923	2.52902	13.02698

Interpretation

In the above Table No. 1, Shapiro-wilk's test shows p-value 0.891 for GNFC and p-value 0.338 for GSFC. Here the p-value for both the fertilizer companies is greater than significance level 0.05, hence the data of both the companies are normal and t-test (i.e. parametric test) is conducted. Table No. 2 represent the statistical data related to t-test in which mean of GNFC is 46.2820, which is higher than that of GSFC which is 38.5040. Table No. 3 shows p-value 0.006 which is lower than significance level 0.05, hence the null hypothesis H_0 is rejected. So there is a significant difference in Gross Profit Ratio of selected fertilizer companies.

- **Net Profit Ratio**

H₀: There is no significant difference in Net Profit Ratio.

H₁: There is significant difference in Net Profit Ratio.

Table 4: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.271	10	.036	.781	10	.008
GSFC	.273	10	.033	.894	10	.190

a. Lilliefors Significance Correction

Table 5: Net Profit Ratio

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	10.60	106.00
GSFC	10	10.40	104.00
Total	20		

Table 6: Mann-Whitney U Test[b]

	Net Profit Ratio
Mann-Whitney U	49.000
Wilcoxon W	104.000
Z	-.076
Asymp. Sig. (2-tailed)	.940
Exact Sig. [2*(1-tailed Sig.)]	.971[a]

a. Not corrected for ties.
b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 4, Shapiro-wilk's test shows p-value 0.008 for GNFC and p-value 0.190 for GSFC. Here the p-value for GNFC is lower than significance level 0.05 while p-value for GSFC is greater than significance level 0.05, hence the data of both the companies' are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 5 represent the statistical data related to Mann-Whitney U Test in which mean rank of GNFC is 10.60, which is higher than that of GSFC which is 10.40. Table No. 6 shows p-value 0.940 which is higher than significance level 0.05, hence the null hypothesis H₀ is accepted. So there is no significant difference in Net Profit Ratio of selected fertilizer companies.

- **Return on Assets Ratio**

H₀: There is no significant difference in Return on Assets Ratio.

H₁: There is significant difference in Return on Assets Ratio.

Table 7: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.221	10	.180	.901	10	.225
GSFC	.270	10	.037	.817	10	.023

a. Lilliefors Significance Correction

Table 8: Return on Assets Ratio

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	9.85	98.50
GSFC	10	11.15	111.50
Total	20		

Table 9: Mann-Whitney U Test[b]

	Net Profit Ratio
Mann-Whitney U	43.500
Wilcoxon W	98.500
Z	-.492
Asymp. Sig. (2-tailed)	.623
Exact Sig. [2*(1-tailed Sig.)]	.631[a]

a. Not corrected for ties.
b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 7, Shapiro-wilk's test shows p-value 0.225 for GNFC and p-value 0.023 for GSFC. Here the p-value of GNFC is greater than significance level 0.05 while p-value of GSFC is less than significance level 0.05, hence the data of both the companies are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 8 represent the statistical data related to Mann-Whitney U Test in which mean rank of GNFC is 9.85, which is lower than that of GSFC which is 11.15. Table No. 9 shows p-value 0.623 which is higher than significance level 0.05, hence the null hypothesis H_0 is accepted. So there is no significant difference in Return on Assets Ratio of selected fertilizer companies.

- **Return on Equity Ratio**

H_0:   There is no significant difference in Return on Equity Ratio.

H_1:   There is significant difference in Return on Equity Ratio.

Table 10: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.267	10	.042	.864	10	.085
GSFC	.188	10	.200[*]	.926	10	.412

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Table 11: Return on Equity Ratio

Name of Company	N	Mean	Std. Deviation	Std. Error Mean
GNFC	10	221.3890	222.52874	70.36976
GSFC	10	581.5150	241.35794	76.32408

Table 12 Independent Sample t-test for Return on Equity Ratio

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	.070	.417	-3.469	18	.003	-360.12600	103.81363	-578.23034	-142.02166
Equal variances not assumed			-3.469	17.883	.003	-360.12600	103.81363	-578.33307	-141.91893

Interpretation

In the above Table No. 10, Shapiro-wilk's test shows p-value 0.085 for GNFC and p-value 0.412 for GSFC. Here the p-value for both the fertilizer companies is greater than significance level 0.05, hence the data of both the companies are normal and t-test (i.e. parametric test) is conducted. Table No. 11 represent the statistical data related to t-test in which mean of GNFC is 221.3890, which is lower than that of GSFC which is 581.5150. Table No. 12 shows p-value 0.003 which is lower than significance level 0.05, hence the null hypothesis H_0 is rejected. So there is a significant difference in Return on Equity Ratio of selected fertilizer companies.

- **Return on Capital Employed Ratio**

H_0:   There is no significant difference in Return on Capital Employed Ratio.

H_1:   There is significant difference in Return on Capital Employed.

Table 13: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.182	10	.200[*]	.939	10	.538
GSFC	.296	10	.013	.835	10	.039

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Table 14: Return on Capital Employed Ratio

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	11.00	110.00
GSFC	10	10.00	100.00
Total	20		

Table 15: Mann-Whitney U Test[b]

	Return on Capital Employed Ratio
Mann-Whitney U	45.000
Wilcoxon W	100.000
Z	-.378
Asymp. Sig. (2-tailed)	.705
Exact Sig. [2*(1-tailed Sig.)]	.739[a]

a. Not corrected for ties.
b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 13, Shapiro-wilk's test shows p-value 0.538 for GNFC and p-value 0.039 for GSFC. Here the p-value of GNFC is greater than significance level 0.05 while p-value of GSFC is lower than significance level 0.05, hence the data of both the companies are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 14 represent the statistical data related to Mann-Whitney U test in which mean rank of GNFC is 11.00, which is higher than that of GSFC which is 10.00. Table No. 15 shows p-value 0.705 which is higher than significance level 0.05, hence the null hypothesis H_0 is accepted. So there is no significant difference in Return on Capital Employed Ratio of selected fertilizer companies.

- **Dividend Per Share**

H_0:　　There is no significant difference in Dividend Per Share.
H_1:　　There is significant difference in Dividend Per Share.

Table 16; Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GNFC	.193	10	.200[*]	.950	10	.672
GSFC	.452	10	.000	.630	10	.000

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Table 17: Dividend Per Share

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	12.30	123.00
GSFC	10	8.70	87.00
Total	20		

Table 18: Mann-Whitney U Test[b]

	Dividend Per Share
Mann-Whitney U	32.000
Wilcoxon W	87.000
Z	-1.377
Asymp. Sig. (2-tailed)	.169
Exact Sig. [2*(1-tailed Sig.)]	.190[a]

a. Not corrected for ties.
b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 16, Shapiro-wilk's test shows p-value 0.672 for GNFC and p-value 0.000 for GSFC. Here the p-value of GNFC is greater than significance level 0.05, while p-value of GSFC is lower than significance level 0.05, hence the data of both the companies are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 17 represent the statistical data related to Mann-Whitney U test in which mean rank of GNFC is 12.30, which is higher than that of GSFC which is 8.70. Table No. 18 shows p-value 0.169 which is higher than significance level 0.05, hence the null hypothesis H_0 is accepted. So there is no significant difference in Dividend Per Share of selected fertilizer companies.

- **Earnings Per Share**

H_0:   There is no significant difference in Earnings Per Share.

H_1:   There is significant difference in Earnings Per Share.

Table 19: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
GNFC	.267	10	.042	.864	10	.085
GSFC	.450	10	.000	.586	10	.000

a. Lilliefors Significance Correction

Table 20: Earnings Per Share

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	12.70	127.00
GSFC	10	8.30	83.00
Total	20		

Table 21: Mann-Whitney U test[b]

	Earnings Per Share
Mann-Whitney U	28.000
Wilcoxon W	83.000
Z	-1.664
Asymp. Sig. (2-tailed)	.096
Exact Sig. [2*(1-tailed Sig.)]	.105[a]

a. Not corrected for ties.

b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 19, Shapiro-wilk's test shows p-value 0.085 for GNFC and p-value 0.000 for GSFC. Here the p-value for GNFC is greater than significance level 0.05, while p-value for GSFC is lower then significance level 0.05, hence the data of both the companies are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 20 represent the statistical data related to Mann-Whitney U test in which mean rank of GNFC is 12.70, which is higher than that of GSFC which is 8.30. Table No. 21 shows p-value 0.096 which is higher than significance level 0.05, hence the null hypothesis H_0 is accepted. So there is no significant difference in Earnings Per Share of selected fertilizer companies.

- **Dividend Payout Ratio**

H_0:   There is no significant difference in Dividend Per Share.

H_1:   There is significant difference in Dividend Per Share.

Table 22: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
GNFC	.311	10	.007	.720	10	.002
GSFC	.377	10	.000	.703	10	.001

a. Lilliefors Significance Correction

Table 23: Dividend Payout Ratio

Name of Company	N	Mean Rank	Sum of Ranks
GNFC	10	8.60	86.00
GSFC	10	12.40	124.00
Total	20		

Table 24: Mann-Whitney U test[b]

	Dividend Payout Ratio
Mann-Whitney U	31.000
Wilcoxon W	86.000
Z	-1.437
Asymp. Sig. (2-tailed)	.151
Exact Sig. [2*(1-tailed Sig.)]	.165[a]

a. Not corrected for ties.

b. Grouping Variable: Name of Company

Interpretation

In the above Table No. 22, Shapiro-wilk's test shows p-value 0.002 for GNFC and p-value 0.001 for GSFC. Here the p-value for both the fertilizer companies is lower than significance level 0.05, hence the data of both the companies are not normal and Mann-Whitney U test (i.e. Non-parametric test) is conducted. Table No. 23 represent the statistical data related to Mann-Whitney U test in which mean rank of GNFC is 8.60, which is lower than that of GSFC which is 12.40. Table No. 24 shows p-value 0.151 which is higher than significance level 0.05, hence the null hypothesis H_0 is accepted. So there is no significant difference in Dividend Payout Ratio of selected fertilizer companies.

Findings and Conclusions

Findings

Test	Result
t-test	
Gross Profit Ratio	H_0 Rejected
	H_1 Accepted
Return on Equity Ratio	H_0 Rejected
	H_1 Accepted
Mann-Whitney U test	
Net Profit Ratio	H_0 Accepted
	H_1 Rejected
Return on Assets Ratio	H_0 Accepted
	H_1 Rejected
Return on Capital Employed Ratio	H_0 Accepted
	H_1 Rejected
Dividend Per Share	H_0 Accepted
	H_1 Rejected
Earnings Per Share	H_0 Accepted
	H_1 Rejected
Dividend Payout Ratio	H_0 Accepted
	H_1 Rejected

Conclusions

From the analysis we conclude that there is a significant difference in Profitability ratios of two selected fertilizer companies in Gujarat except in Gross Profit Ratio and Return on Equity Ratio. The performance of GNFC is better than GSFC with reference to Gross Profit Ratio, Net Profit Ratio, Return on Capital Employed Ratio, Dividend Per Share, Earnings Per Share while the performance of GSFC is better than GNFC with reference to Return on Assets Ratio, Return on Equity Ratio and Dividend Payout Ratio. The overall performance of GNFC is better.

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