

An Emperical Study on Profitability Position of Selected Petroleum Companies

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“Profit is the engine that drives the business enterprise, Profit is unalterable, permanent, and as such, the primary as well as final objective of an enterprise.” John Argenti.

Abstract

The world is facing rigorous competition and in this competitive world it is required to adjust strategies and follow a dominant financial policies for the effective survival and sustainable growth of the business concern. Recording of past profits, forecasting of future profits and measuring and evaluation of current profit is the most essential activity for a successful business concern. In today's world the perfect barometer for measuring the performance of a business concern is “profit”. The efficiency of the business concern is measured by the amount of profit earned. The greater the profits the more effective, competent and profitable the business becomes. Profits, as an absolute figure provides an exact idea of the increase or decrease in efficiency of the business concern. Therefore, Profit making is the primary objective of a business concern, profitability is considered as the strength of any organization. The proper assessment of profitability is crucially important for any business concern because it helps in forecasting the future behavior. The research paper mainly focuses on analyses of profitability of selected petroleum companies of India with the help of analysis of profitability ratios during period of 2009-10 to 2015-16. The tools used for analysis are mean, standard deviation and co-efficient of variation. Analysis of variance and student's t test are used to analyses and to explicate the importance of difference between actual and estimated values at 5 per cent level of significance. It also provides valuable and relevant suggestions to enhance.

Keywords- Profitability Ratios, Profitability based on sales, investments and from owner's point of view, Gross profit ratio, Net profit Ratio.

Introduction

Profit is the blood of a business, without which it is lifeless. The word 'profit' means the excess of revenue or selling price over related costs. Actually, the meaning of profit differs according to the use and purpose. For accounting purposes, profit is the difference between total revenues and total expenses over a period of time. The task of the management is maximization of profits. The efficiency of a business is measured by the amount of

profits earned. The greater the profit, the more efficient is the business considered to be. The profit of a business may be measured by studying the profitability of investments in it. Profitability means the efficiency of a company, firm, business concern or industry to generate earnings. The word 'Profitability' contains two different words profit and ability. Profit means to make progress whereas the word ability means capacity. Therefore in another words profitability refers to the capacity of a firm to make progress by earning more and more income. It is a significant and considerable standard to estimate and evaluate the performance of a business concern. Thus, the efficiency of management is assessed by the profitability of the business. The greater profitability indicates more of the productivity and ability. Therefore, in modern times it is very difficult for a business concern to evaluate its profitability position from time to time for creating better future prospects and to strengthen its position in the market.

Review of Literature

- Dr Pratibha Jain & Prof. Megha Mehta (2013)- In their study on financial performance esp. profitability of automobile companies finds that Hero Honda company performed well because of its usage of latest technology and Tata motors weak performance due to increased manufacturing overheads and company's inability to face competition.
- Dr. Nabi Rasool et al. (2013)- in their study identified that Net profit; EPS & Return on total assets are the responsible factors which will have significant influence on ROE of the companies
- Dr. Shishir Pandey and Vikas Kumar Jaiswall (2014)- in their paper "Comparative Study of Profitability Analysis of Indian Aluminum Industries between public and private sector" the main objective of this research paper is to analysis the profitability position of the selected Aluminum companies for 5 year (2008-2014).the study based on the secondary data the tools used for the analysis is different profitability ratios and regression analysis, the study found that Aluminum industries in India shows Satisfactory performance in concern with profitability.
- Usman Dawood (2014)- in his research paper on Factors influencing profitability of commercial banks believe that there no relationship between the cost efficiency and profitability but observes that capital adequacy and deposits do support in profitability whereas size of the bank doesn't help in profitability.
- Dr. M. Thygarajan and Mr J. Uday Kumar (2015-) in their paper "Profitability analysis of select aluminium companies in India" the main objective of this research paper is to analyse the profitability position of the selected aluminium companies for 10 years (2005-2014). The study based on the secondary data, the tools used for analysis are Mean, Standard deviation, co-efficient of variation and compound annual growth.
- Dr.T. Srinivasan Dr.M.Thiru Narayanasamy (2015) in their study has found that better utilisation of the resource can lead for enhance profitability of the organisation apart from customer satisfaction through quality service, cutting off expenses etc. clear that profitability.

Statement of Problem

There is heavy demand of petroleum products in India that's why it plays a significant role in Indian economy. This industry is the biggest contributor in India's GDP. However, around 70% of the demands are fulfilled by the imports. There is a huge demand- production gap of oil and gas in India. India can produce in larger quantity and can become self-dependent, only when there will be fine financial condition. It can be examined from the financial performance indicators, but there are no such studies are conducted which can reveal the financial conditions and performance of the industry. It is very important to conduct the study in order to find out some new ways for further enrichment and to find out lack in this regard. Therefore, this study is an attempt to analyse the financial performance and provide the valuable suggestions of the petroleum industry.

Research Sample Design

The current study has been carried out by taking a sample of three major petroleum companies in India, viz, Bharat Petroleum Corporation Limited (BPCL), Indian Oil Corporation Limited (IOCL) and Hindustan Petroleum Corporation Limited (HPCL). The relevant data have been mainly gathered from the published annual reports and accounts of these petroleum companies. The other sources of information are trade journals, newspaper and other published information.

Research Methodology

Sample Design - The present study has drawn a sample of three petroleum companies IOCL, BPCL and HPCL for the period of period of seven years, from 2009-10 to 2015-16.

Source of Data - The financial data for the study are drawn purely from the secondary data and annual reports of the companies.

Tools of Data Analysis - The study used for the descriptive analysis of Mean, Standard Deviation, coefficient of variance and Analysis of variance and student's t test are used to analyses and to explicate the importance of difference between actual and estimated values at 5 per cent level of significance.

Objectives of the Study

This study has the following extensive objectives -

- To study the overall proportion of Profitability maintained by the Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL).
- To compare the profitability position of these three companies.
- To explore the profitability management of these three companies with the help of ratio analysis technique.
- To compare the different profitability ratios of these three companies.

- Test the significance of difference by using parametric Student's 't' test and Analysis of Variance.
- To analyse the consistency in profitability maintained by the companies during the period of study by applying statistical tool of coefficient of variation (C.V.).
- To derive important conclusions and suggestions to improve the efficiency and effectiveness of profitability management of these three companies.

Research Hypothesis and Testing

Hypothesis testing begins with an assumption called hypothesis that we make about a population parameter. A hypothesis is a supposition made as a basis for reasoning. Hypothesis testing enables a decision maker to draw inferences more precisely. In the present world, it is not possible to draw any conclusion accurately without proving it objectively. To test the validity of the conclusion or claim, hypothesis testing is applied to decide whether the claim is true or false. Hypotheses testing enable a decision maker to draw inferences more precisely. The following Hypotheses have been set and tested on 5% level of significance and the degree of freedom has been taken to 12 in the present study.

H₀: There is no significant difference between the different liquidity aspects of the selected petroleum companies.

H₁: There is a significant difference between the different liquidity aspects of the selected petroleum companies.

Profitability Ratio Analysis of IOCL, BPCL and HPCL

According to R.N. Anthony, "A ratio is simply one number expressed in terms of another. It is found by dividing one number, the base, by another. A percentage is one kind of ratio in which the base is taken as equaling 100 and the quotient is expressed as per hundred of the base." Ratio analysis is the widely and commonly used technique for analysis of the performance of the business organization. With the help of ratio analysis a performance or profitability analyst can analyse the financial growth and development and the present condition of a firm or to assess the adequacy of profits earned by the company and also to discover whether profitability is increasing or decreasing. In other words these ratios measure the operational efficiency of the firm. Thus, profitability ratios evaluate the firm's ability to generate profits. This study identifies the factors that fetch benefits or harms of the profitability position of selected petroleum companies with help of profitability ratios by applying nine different profitability ratios viz. gross profit ratio, net profit margin ratio, operating profit ratio, operating ratio, expense ratio, return on capital employed (ROCE) and return on equity ratio or return on shareholder's funds (ROE), earning per share and dividend per share.

(1.) Gross Profit Ratio -

The gross profit margin ratio expresses the relationship of gross profit with sales or net sales. The gross profit margin ratio reflects the efficiency with which the management produces each unit of production. A high gross profit margin ratio is a sign of good management. A low gross profit margin may reflect a higher cost of goods sold due to a firm's inability to purchase raw materials at favourable terms, inefficient utilisation of plant and machinery or over-investment in plant and machinery, resulting in higher cost of production.

Table-1
Gross Profit Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16
(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	1.58	11.18	4.53
2010-11	-1.42	9.18	1.55
2011-12	11.26	6.99	8.13
2012-13	9.32	7.31	5.80
2013-14	11.7	8.59	8.10
2014-15	8.18	9.24	7.23
2015-16	16.39	14.15	12.42
Mean	8.14	9.52	6.82
S.D.	6.14	2.47	3.39
C.V.	0.75	0.26	0.50
Minimum	-1.42	6.99	1.55
Maximum	16.39	14.15	12.42

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 1 is showing the gross profit ratio of IOCL, BPCL and HPCL during the study period. The gross profit ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for IOCL 0.75, followed by HPCL 0.50 and BPCL 0.26. The standard Deviation is highest of IOCL 6.14, followed by HPCL 3.39 and BPCL 2.47. The mean is highest of BPCL 9.52 followed by IOCL 8.14 and HPCL 6.82. The ratio of IOCL ratio varied between -1.42 to 16.39, BPCL ratio varied between 6.99 to 14.15 and HPCL ratio varied between 1.55 to 12.42. The mean is highest for BPCL so we can conclude that the profits and management of BPCL are satisfactory followed by IOCL and HPCL, both of these companies should change their strategies so that they can improve their profitability.

(2.) Net Profit Margin Ratio-

The net profit margin ratio establishes a relationship between the net profit and the sales and indicates the management's efficiency, or otherwise, in manufacturing, administering and selling the products. This ratio is the overall measurement of a firm's ability to turn each rupee of sales into net profit. A firm with a high net profit margin ratio would be in an advantageous position to survive, whereas low ratio indicates that a firm will fail to achieve satisfactory return on funds invested.

Table-2**Net Profit Margin Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16**

(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	4.71	1.26	1.28
2010-11	2.46	1.02	1.24
2011-12	0.91	0.62	0.51
2012-13	1.12	1.10	0.44
2013-14	1.48	1.56	0.78
2014-15	1.21	2.14	1.32
2015-16	2.97	3.93	2.15
Mean	2.12	1.66	1.10
S.D.	1.37	1.11	0.59
C.V.	0.64	0.67	0.54
Minimum	0.91	0.62	0.44
Maximum	4.71	3.93	2.15

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 2 is showing the net profit margin ratio of IOCL, BPCL and HPCL during the study period. The net profit margin ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for BPCL 0.67, followed by IOCL 0.64 and HPCL 0.54. The standard Deviation is highest of IOCL 1.37, followed by BPCL 1.11 and HPCL 0.59. The mean is highest of IOCL 2.12 followed by BPCL 1.66 and HPCL 1.10. The ratio of IOCL ratio varied between 0.91 to 4.71, BPCL ratio varied between 0.62 to 3.93 and HPCL ratio varied between 0.44 to 2.15. The mean is highest for IOCL so we can conclude that the profits and management of IOCL are satisfactory followed by BPCL and HPCL, both of these companies should change their strategies so that they can improve their profitability.

(3.) Operating Profit Ratio -

This ratio measures the profitability and soundness of the business. It indicates the overall operational efficiency of the business concern. It measures the rate of net operating profit to sales. Higher the ratio, the better is the profitability of the business and lower ratio shows the inefficiency of the business.

Table-3**Operating Profit Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16**

(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	7.19	2.79	3.20
2010-11	3.88	2.29	2.62
2011-12	1.95	1.75	1.52
2012-13	2.46	2.45	1.79

2013-14	2.84	2.85	1.94
2014-15	2.40	3.40	2.38
2015-16	5.22	6.04	3.58
Mean	3.71	3.08	2.43
S.D.	1.90	1.40	0.76
C.V.	0.51	0.45	0.31
Minimum	1.95	1.75	1.52
Maximum	7.19	6.04	3.58

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 3 is showing the operating profit ratio of IOCL, BPCL and HPCL during the study period. The operating profit ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for IOCL 0.67, followed by BPCL 0.45 and HPCL 0.31. The standard Deviation is highest of IOCL 1.90, followed by BPCL 1.40 and HPCL 0.76. The mean is highest of IOCL 3.71 followed by BPCL 3.08 and HPCL 2.43. The ratio of IOCL ratio varied between 1.95 to 7.19, BPCL ratio varied between 1.75 to 6.04 and HPCL ratio varied between 1.52 to 3.58. The mean is highest for IOCL so we can conclude that the profits and management of IOCL are satisfactory followed by BPCL and HPCL, both of these companies should change their strategies so that they can improve their profitability.

(4.) Operating Ratio-

The operating ratio explains the changes in the profit margin ratio. The operating profit is a yardstick of the operating efficiency. A high operating ratio is regarded as unfavourable because it would leave a small amount of operating income to meet the interest, dividends, etc. Whereas low operating ratio is regarded as favourable because it would lead a high amount of operating income to meet the interest, dividends, etc.

Table-4

Operating Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16
(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	99.97	98.01	104.10
2010-11	103.03	98.01	105.83
2011-12	95.34	98.78	97.58
2012-13	97.77	97.94	100.36
2013-14	97.09	96.80	97.53
2014-15	103.31	99.46	101.11
2015-16	97.89	95.42	97.36
Mean	99.20	97.77	100.55
S.D.	3.03	1.32	3.39
C.V.	0.04	0.01	0.03
Minimum	95.34	95.42	97.36

Maximum	103.31	99.46	105.83
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Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 4 is showing the operating ratio of IOCL, BPCL and HPCL during the study period. The operating ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for IOCL 0.04, followed by HPCL 0.03 and BPCL 0.01. The standard Deviation is highest of HPCL 3.39, followed by IOCL 3.03 and BPCL 1.32. The mean is highest of HPCL 100.55 followed by IOCL 99.20 and BPCL 97.77. The ratio of IOCL ratio varied between 95.34 to 103.31, BPCL ratio varied between 95.42 to 99.46 and HPCL ratio varied between 97.36 to 105.83. The mean is highest for HPCL so we can conclude that the higher ratio is unfavourable because it would leave a small amount of operating income to meet the interest, dividends, etc. management of HPCL change their strategies so that they can improve this ratio.

(5.) Expense Ratio -

The expense ratio indicates the average aggregate variations in expenses, where some of the expenses may be increasing, while others may be falling. Therefore, to find out the behaviour of specific expense items, the ratio of expenses to sales is calculated. This ratio, when compared year-to-year, throws light on managerial policies and programme. Lower expenses ratios are beneficial for the firms and higher expense ratio means the expenses are high.

Table-5

Expense Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16

Year	IOCL	BPCL	HPCL
2009-10	2.30	10.04	9.74
2010-11	2.50	7.89	8.09
2011-12	7.69	6.64	6.54
2012-13	8.29	6.02	7.23
2013-14	9.53	5.95	6.39
2014-15	12.06	8.99	8.71
2015-16	14.98	9.98	10.15
Mean	8.19	7.93	8.12
S.D.	4.66	1.78	1.49
C.V.	0.57	0.22	0.18
Minimum	2.30	5.95	6.39
Maximum	14.98	10.04	10.15

(in percentage)

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 5 is showing the expense ratio of IOCL, BPCL and HPCL during the study period. The expense ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for IOCL 0.57,

followed by BPCL 0.22 and HPCL 0.18. The standard Deviation is highest of IOCL 4.66, followed by BPCL 1.78 and HPCL 1.49. The mean is highest of IOCL 8.19 followed by HPCL 8.12 and BPCL 7.93. The ratio of IOCL ratio varied between 2.30 to 14.98, BPCL ratio varied between 5.95 to 10.04 and HPCL ratio varied between 6.39 to 10.15. The mean is highest for IOCL followed by HPCL so we can conclude that both of these companies should control their expenses and BPCL expenses are in a controlled position.

(6.) Return on Capital Employed -

This ratio shows the relationship between net profit before tax and net capital employed. It measures the managerial capacity to utilise the capital employed in the firm to earn profits. It is also known as Return on Investment. It reflects the productivity of capital employed in the firm. Higher ratio is beneficial for the firms because it shows more rate of return on capital employed and lower ratio shows lesser rate of returns.

Table-6

Return on Capital Employed Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16

(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	15.37	17.08	4.79
2010-11	10.29	10.21	4.05
2011-12	10.52	19.58	2.37
2012-13	11.01	24.25	3.09
2013-14	11.48	21.93	3.83
2014-15	8.52	21.82	5.39
2015-16	14.25	25.82	6.59
Mean	11.63	20.10	4.30
S.D.	2.38	5.22	1.42
C.V.	0.20	0.26	0.33
Minimum	8.52	10.21	2.37
Maximum	15.37	25.82	6.59

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 6 is showing the return on capital employed ratio of IOCL, BPCL and HPCL during the study period. The return on capital employed ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for HPCL 0.33, followed by BPCL 0.26 and IOCL 0.20. The standard Deviation is highest of BPCL 5.22, followed by IOCL 2.38 and HPCL 1.42. The mean is highest of BPCL 20.10 followed by IOCL 11.63 and HPCL 4.30. The ratio of IOCL ratio varied between 8.52 to 15.37, BPCL ratio varied between 10.21 to 25.82 and HPCL ratio varied between 2.37 to 6.59. The mean is highest for BPCL so we can conclude that the returns of BPCL are high and satisfactory followed by IOCL and HPCL, both of these companies should change their strategies so that they can improve their profitability through improving their returns on capital employed.

(7.) Return on Equity Shares or Return on Shareholder's Funds -

The return on equity (ROE) ratio examines the profitability from the perspective of equity investors. It indicates how well the funds of the owners have been used by the firm. This ratio is an important yardstick of performance for equity shareholders since it indicates the return on the funds employed by them. Higher ratio will be able to attract more and more investors and maintaining lower ratio will show decrease in the investments.

Table-7

Return on Shareholder's Fund Ratio of the Petroleum Companies under Study from 2008-09 to 2015-16
(in percentage)

Year	IOCL	BPCL	HPCL
2009-10	17.33	45.67	10.12
2010-11	11.86	34.63	10.93
2011-12	6.40	20.96	6.49
2012-13	7.57	23.13	6.18
2013-14	9.61	26.51	10.35
2014-15	7.20	19.01	14.57
2015-16	12.33	27.69	17.38
Mean	10.33	28.23	10.86
S.D.	3.85	9.24	4.04
C.V.	0.37	0.33	0.38
Minimum	6.40	19.01	6.18
Maximum	17.33	45.67	17.38

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 7 is showing the return on shareholder's fund ratio of IOCL, BPCL and HPCL during the study period. The return on shareholder's fund ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for HPCL 0.38, followed by IOCL 0.37 and BPCL 0.33. The standard Deviation is highest of BPCL 9.24, followed by HPCL 4.04 and IOCL 3.85. The mean is highest of BPCL 28.23 followed by HPCL 10.86 and IOCL 10.33. The ratio of IOCL ratio varied between 6.40 to 17.33, BPCL ratio varied between 19.01 to 45.67 and HPCL ratio varied between 6.18 to 17.38. The mean is highest for BPCL so we can conclude that the returns of BPCL are high and satisfactory that means BPCL is able to attract more investors as compared to other companies, followed by HPCL and IOCL, both of these companies should change their strategies so that they can improve their profitability through improving their returns on capital employed.

(8.) Earning Per Share -

The earning per share is generally used to measure the profitability of a firm from the shareholders' point of view. The higher the earning per share, the better are the performance and prospects of the company and the greater is the market price of a company's share and vice-versa.

Table-8

Earning Per Share of the Petroleum Companies under Study from 2008-09 to 2015-16

(in rupees)

Year	IOCL	BPCL	HPCL
2009-10	44.12	42.53	38.43
2010-11	30.67	42.78	45.45
2011-12	16.29	36.27	26.92
2012-13	20.61	36.55	26.72
2013-14	28.91	56.16	51.20
2014-15	21.72	70.32	80.72
2015-16	42.83	102.78	114.07
Mean	29.31	55.34	54.79
S.D.	10.85	24.20	31.93
C.V.	0.37	0.44	0.58
Minimum	16.29	36.27	26.72
Maximum	44.12	102.78	114.07

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 8 is showing the earning per share ratio of IOCL, BPCL and HPCL during the study period. The earning per share ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for HPCL 0.58, followed by BPCL 0.44 and IOCL 0.37. The standard Deviation is highest of HPCL 31.93, followed by BPCL 24.20 and IOCL 10.85. The mean is highest of BPCL 55.34 followed by HPCL 54.79 and IOCL 29.31. The ratio of IOCL ratio varied between 16.29 to 44.12, BPCL ratio varied between 36.27 to 102.78 and HPCL ratio varied between 26.72 to 114.70. The mean is highest for BPCL so we can conclude that the returns of BPCL are high and satisfactory that means BPCL is able to attract more investors as compared to other companies, followed by HPCL and IOCL, both of these companies should change their strategies so that they can improve their profitability through improving their returns on capital employed.

(9.) Dividend Per Share-

The dividend per share represents the dividend paid to the shareholders on per share basis. An investor desiring more income prefers to invest in the shares of a high dividend-paying company. Higher the ratio shows higher dividend distributed by the companies which attracts higher investments whereas lower ratios shows lower dividend distributed by the companies.

Table-9
Dividend Per Share of the Petroleum Companies under Study from 2008-09 to 2015-16

(in rupees)

Year	IOCL	BPCL	HPCL
2009-10	4.49	7.87	6.17
2010-11	15.09	16.02	13.96
2011-12	10.98	15.98	16.25
2012-13	5.8	6.29	9.86
2013-14	7.26	12.76	9.92

2014-15	10.18	19.72	18.10
2015-16	14.5	45.34	51.60
Mean	9.76	17.71	17.98
S.D.	4.13	13.07	15.38
C.V.	0.42	0.74	0.86
Minimum	5.80	6.29	6.17
Maximum	15.09	45.34	51.60

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16.

The table 9 is showing the dividend per share ratio of IOCL, BPCL and HPCL during the study period. The dividend per share ratio is showing fluctuating trend during the study period. The coefficient of variation is highest for HPCL 0.86, followed by BPCL 0.74 and IOCL 0.42. The standard Deviation is highest of HPCL 15.38, followed by BPCL 13.07 and IOCL 4.13. The mean is highest of HPCL 17.98 followed by BPCL 17.71 and IOCL 9.76. The ratio of IOCL ratio varied between 5.80 to 15.09, BPCL ratio varied between 6.29 to 45.34 and HPCL ratio varied between 6.17 to 51.60. The mean is highest for HPCL so we can conclude that the dividend per share is highest for HPCL, that means HPCL is able to attract more investors as compared to other companies, followed by BPCL and IOCL.

Hypotheses Testing

(1.) Student's t-test

Student's t-test, in [statistics](#) is a method of testing [hypotheses](#) which compares two [averages \(means\)](#) of a small sample and conclude, if they are different from each other. The t-test also tells you how [significant](#) the differences are. This paper has made an attempt to analyze inter-company profitability positions by making 3 different combinations of two companies from the selected three sample petroleum companies IOCL, BPCL and HPCL for examining the intercompany profitability positions and also to determine the significance of difference in the nine types of ratio of the companies. . For this purpose total 27 different Hypotheses have been formulated and statistically tested at 5% level of significance. These nine tables present the results of this test along with the conclusion whether the null hypotheses have been accepted or rejected.

Student's 't' Test for Inter-Company Comparison of Different Profitability Ratios

't' Table 10:- Gross Profit Ratio of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed

Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.592	0.627	0.115
Values	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)
Result, Ho is	Accepted	Accepted	Accepted
Descriptive Conclusion	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 10 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of gross profit ratios of IOCL, BPCL and HPCL.

't' Table 11:-Net Profit Ratio of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed
Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.501	0.095	0.262
Values	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)
Result, Ho is	Accepted	Accepted	Accepted
Descriptive Conclusion	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 11 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of net profit ratios of IOCL, BPCL and HPCL.

't' Table 12:- Operating Profit Ratio of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed
Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.497	0.125	0.303
Values	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)
Result, Ho is	Accepted	Accepted	Accepted
Descriptive Conclusion	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 12 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of operating profit ratios of IOCL, BPCL and HPCL.

't' Table 13:- Operating Ratio of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed
Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.277	0.447	0.066

Values	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)
Result, Ho is	Accepted	Accepted	Accepted
Descriptive Conclusion	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 13 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of operating ratios of IOCL, BPCL and HPCL.

't' Table 14:- Expense Ratio of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed
Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.891	0.970	0.831
Values	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)
Result, Ho is	Accepted	Accepted	Accepted
Descriptive Conclusion	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 14 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of the expense ratios of IOCL, BPCL and HPCL.

't' Table 15:- Return on Capital Employed of the Petroleum Companies

<i>Particular</i>	<i>IOCL - BPCL</i>	<i>IOCL - HPCL</i>	<i>BPCL - HPCL</i>
<i>Ho (Null Hypotheses)</i>	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
<i>H1 (Alternative Hypotheses)</i>	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
<i>Degree of Freedom (n1 + n2 = 2)</i>	12	12	12
<i>Level of significance</i>	5%	5%	5%
<i>Type of test</i>	One-tailed	One-tailed	One-tailed
<i>Sig. Value(S.V)</i>	0.05	0.05	0.05
<i>Calculated value of 't'(t.V.)</i>	0.002	0.001	0.001
<i>Values</i>	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)
<i>Result, Ho is</i>	Rejected	Rejected	Rejected
<i>Descriptive Conclusion</i>	There is a Difference between Means of the Ratios of IOCL & BPCL	There is a Difference between Means of the Ratios of IOCL & HPCL	There is a Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 15 concludes that our null hypotheses in all the three companies have been rejected therefore we can conclude that there is a significant difference between the means of return on capital employed of IOCL, BPCL and HPCL.

't' Table 16:- Return on Shareholders Fund Ratio of the Petroleum Companies

<i>Particular</i>	<i>IOCL - BPCL</i>	<i>IOCL - HPCL</i>	<i>BPCL - HPCL</i>
<i>Ho (Null Hypotheses)</i>	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
<i>H1 (Alternative Hypotheses)</i>	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
<i>Degree of Freedom (n1 + n2 = 2)</i>	12	12	12
<i>Level of significance</i>	5%	5%	5%
<i>Type of test</i>	One-tailed	One-tailed	One-tailed
<i>Sig. Value(S.V)</i>	0.05	0.05	0.05
<i>Calculated value of 't'(t.V.)</i>	0.000	0.805	0.001
<i>Values</i>	t.V \geq S.V (Accepted)	t.V \geq S.V (Accepted)	t.V \geq S.V (Accepted)

	t.V ≤ S.V (Rejected)	t.V ≤ S.V (Rejected)	t.V ≤ S.V (Rejected)
Result, Ho is	Rejected	Accepted	Rejected
Descriptive Conclusion	There is a Difference between Means of the Ratios of IOCL & BPC	There is no Difference between Means of the Ratios of IOCL & HPCL	There is a Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:-Table 16 concludes that our null hypotheses in the two combinations (IOCL-BPCL) and (BPCL HPCL) have been rejected therefore we can conclude that there is a significant difference between the means of these two combinations of three petroleum companies, but our one hypotheses between (IOCL-HPCL) is accepted that means there is not any significant difference between means of return on shareholders fund ratios of these two companies.

't' Table 17:- Earning Per Share of the Petroleum Companies

Particular	IOCL - BPCL	IOCL - HPCL	BPCL - HPCL
Ho (Null Hypotheses)	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
H1 (Alternative Hypotheses)	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
Degree of Freedom (n1 + n2 = 2)	12	12	12
Level of significance	5%	5%	5%
Type of test	One-tailed	One-tailed	One-tailed
Sig. Value(S.V)	0.05	0.05	0.05
Calculated value of 't'(t.V.)	0.023	0.069	0.971
Values	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)	t.V ≥ S.V (Accepted) t.V ≤ S.V (Rejected)
Result, Ho is	Rejected	Accepted	Accepted
Descriptive Conclusion	There is a Difference between Means of the Ratios of IOCL & BPC	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Means of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:-Table 17 concludes that our null hypotheses in the two combinations (IOCL -HPCL) and (BPCL - HPCL) have been accepted therefore we can conclude that there is not any significant difference between these two combinations of three petroleum companies, but our one hypotheses between (IOCL-BPCL) is rejected that means there is a difference between means of earning per share of these two companies.

't' Table 18:- Dividend Per Share of the Petroleum Companies

<i>Particular</i>	<i>IOCL - BPCL</i>	<i>IOCL - HPCL</i>	<i>BPCL - HPCL</i>
<i>Ho (Null Hypotheses)</i>	$\mu_{IOCL} = \mu_{BPCL}$	$\mu_{IOCL} = \mu_{HPCL}$	$\mu_{BPCL} = \mu_{HPCL}$
<i>H1 (Alternative Hypotheses)</i>	$\mu_{IOCL} \neq \mu_{BPCL}$	$\mu_{IOCL} \neq \mu_{HPCL}$	$\mu_{BPCL} \neq \mu_{HPCL}$
<i>Degree of Freedom (n1 + n2 = 2)</i>	12	12	12
<i>Level of significance</i>	5%	5%	5%
<i>Type of test</i>	One-tailed	One-tailed	One-tailed
<i>Sig. Value(S.V)</i>	0.05	0.05	0.05
<i>Calculated value of 't'(t.V.)</i>	0.151	0.197	0.972
<i>Values</i>	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)	t.V \geq S.V (Accepted) t.V \leq S.V (Rejected)
<i>Result, Ho is</i>	Accepted	Accepted	Accepted
<i>Descriptive Conclusion</i>	There is no Difference between Means of the Ratios of IOCL & BPCL	There is no Difference between Means of the Ratios of IOCL & HPCL	There is no Difference between Mean of the Ratios of BPCL & HPCL

Source: Annual reports and accounts of the companies under study for the period 2008-09 to 2015-16 and t-test is computed with the help of SPSS.

Inference:- Table 18 concludes that our null hypotheses in all the three combinations have been accepted therefore we can conclude that there is not any significant difference between the means of dividend per share of IOCL, BPCL and HPCL.

(2.) ANOVA (Analysis of Variance):-

ANOVA is a statistical technique which helps in figuring out if you need to reject or accept the null hypothesis. The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. In other words we can say that it is a test of groups to see if there is a difference between them or not. The objective of employing ANOVA test is to test whether the performance of all the samples of the firms differ significantly or there is no significant difference, across study period.

ANNOVA TEST

Table19:- ANOVA results for the Gross Profit Ratio of the Petroleum Companies

<i>Source of Variation</i>	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	25.46447	2	12.73223333	0.690785	0.513987	3.554557
Within Groups	331.7679	18	18.43155079			
Total	357.2324	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the gross profit ratio of sample companies do not differ significantly.

Table20:- ANOVA results for the Net Profit Margin Ratio of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	3.65241	2	1.826205	1.58839	0.231586	3.554557
Within Groups	20.69497	18	1.149721			
Total	24.34738	20				

Source: ANNOVA test is computed with the help of Ms Excel Software

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the net profit margin ratio of sample companies do not differ significantly.

Table21:- ANOVA results for the Operating Profit Ratio of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	5.671267	2	2.835633	1.387937	0.275054	3.554557
Within Groups	36.775	18	2.043056			
Total	42.44627	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the operating profit ratio of sample companies do not differ significantly.

Table22:- ANOVA results for the Operating Ratio of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	27.0278	2	13.5139	1.805892	0.192858	3.554557
Within Groups	134.6981	18	7.483229			
Total	161.7259	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the operating ratio of sample companies do not differ significantly.

Table23:- ANOVA results for the Expense Ratio of the Petroleum Companies

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.258629	2	0.129314	0.014316	0.985797	3.554557
Within Groups	162.5928	18	9.032935			
Total	162.8515	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the expense ratio of sample companies do not differ significantly.

Table24:- ANOVA results for the Return on Capital Employed of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	874.9175	2	437.4588	37.57621	3.76E-07	3.554557
Within Groups	209.5543	18	11.64191			
Total	1084.472	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \geq F_{crit}$ We reject null hypothesis H_0 and conclude that the return on capital employed of sample companies differ significantly.

Table 25:- ANOVA results for the Return on Shareholders fund ratio of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	1452.173	2	726.0863	18.69643	4.04E-05	3.554557
Within Groups	699.04	18	38.83555			
Total	2151.213	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \geq F_{crit}$ We reject null hypothesis H_0 and conclude that the return on equity shares of sample companies differ significantly.

Table 26:- ANOVA results for the Earning Per Share of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	3097.084	2	1548.542	2.695701	0.094612	3.554557
Within Groups	10340.08	18	574.4488			
Total	13437.16	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the earning per share of sample companies do not differ significantly.

Table27:- ANOVA results for the Dividend Per Share of the Petroleum Companies

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	305.5691	2	152.7845	1.079689	0.36071	3.554557
Within Groups	2547.142	18	141.5079			
Total	2852.711	20				

Source: ANNOVA test is computed with the help of Ms Excel Software.

Inference:- $F_{cal} \leq F_{crit}$ We accept null hypothesis H_0 and conclude that the dividend per share of sample companies not differ significantly.

After applying ANOVA we can conclude that in some tests profitability ratios, null hypothesis is accepted and in some cases it has been rejected.

Conclusion and Suggestions:-

The period in which the study was conducted was considered as the sensitive and challenging period for the Indian economy. This was a depressional phase at the national as well as at the international level. It was getting very difficult for the government as well as private organisations to run business efficiently and effectively. The basic object of the study conducted was to analyze the overall profitability positions of the three petroleum firms IOCL, BPCL and HPCL and for this the seven year time period from 2009-10 to 2015-16 had been chosen. The ratio analysis, statistical techniques, standard deviation, coefficient of variation, student's t-test and ANOVA test had been applied to get purified results of profitability positions of three sample companies.

It is being analyzed from the ratio analysis of the sample companies that-

- Gross profit ratio is highest for BPCL followed by IOCL and HPCL so we can conclude that BPCL is in good and better position for effective and optimum use of the resources. We suggest that IOCL and HPCL should effectively control their policies so that they can improve their profit positions.
- Net profit ratio shows that IOCL is highest followed by BPCL and HPCL. The higher ratio firm is in advantageous position therefore we suggest that BPCL and HPCL should increase their net profits by minimizing the expenditures and implementing the effective policies.
- Operating profit ratio shows that IOCL is highest followed by BPCL and HPCL. The higher ratio firm is in advantageous position therefore we suggest that BPCL and HPCL should increase their operating profits by minimizing the expenditures and implementing the effective policies.
- The Operating ratio analysis predicts that BPCL has the lowest operating ratio as followed by IOCL and HPCL. The low operating ratio is regarded as favourable because it would lead a high amount of operating income to meet interest dividend etc.
- BPCL has the lowest expense ratio followed by HPCL and IOCL so we can conclude that IOCL should try to take some innovative steps and formulate policies to decrease the expenses.
- BPCL has the highest return on capital employed, equity shares and earning per share and HPCL has the lowest return on capital employed and IOCL has the lowest return on equity shares and earning per shares.
- HPCL has the highest dividend per share which attracts higher investments large number of shareholders.

It is evident from above analysis that BPCL and IOCL is in good profitability position as compared to HPCL. Therefore, It is suggested that HPCL should increase investments, sound liquidity position, increase in short-

term investments, increase in working capital, provide cushions to creditors, provide adequate margin of safety to creditors, optimum utilization of resources and decrease the cost of productions by fair means, all these steps should be taken with great care etc. as to improve the profitability positions.

The result of student's t-test conclude that the profitability management of sample petroleum companies is not equally efficient and effective.

ANOVA test is applied to present the clear picture if there is any significant differences within among or the sample petroleum companies in profitability management practices over the study period. After analyzing test we can conclude that, there are significant differences (among or within companies) in profitability management policies therefore we can state that sample companies manage their profitability positions in a very different manner according to their comfort.

References:-

- Dr. Pratibha Jain and Prof. Megha Mehta(2013), “An analytical study of profitability position of the selected automobile companies in India,” Journal of Finance Vol No 1 December 2013 pp. 1-12.
- Dr. Nabi Rasool, D., Dr. Prabhakar, D. and Narayana Gowd, T. (2013), “Profitability performance analysis of Hyderabad industries limited at Hyderabad, India”, International Journal of Current Research Vol. 5, Issue, 5, pp.1229-1231, May, 2013.
- Dr. Shishir Pandey and Vikas Kumar Jaiswall (2014) “Comparative Study of Profitability Analysis of Indian Aluminium Industries between public and private sector” GE international Journal of management research Vol No 2 issue 12 December 2014 pp.143 to 150.
- Usman Dawood (2014) “Factors influencing profitability of commercial banks in Pakistan for the period of (2009-12)”. International Journal of Scientific and Research Publications, Volume 4, Issue 3, March 2014 1 ISSN 2250-3153.
- Dr.M. Thygarajan and Mr J.Uday Kumar (2015), “Profitability analysis of select aluminium companies in India” Indian journals of Applied Research vol No 5 issue 4 April 2015 pp: 807 to 809.
- Dr.T. Srinivasan Dr.M.Thiru Narayanasamy (2015), “An Empirical Study of Profitability Analysis of Neyveli Lignite Corporation Limited (Nlc Ltd.)” GJRA - GLOBAL JOURNAL FOR RESEARCH ANALYSIS, Volume-4, Issue-6, June-2015.
- Accounting Research and Terminology Bulletin, Published by American Institute of Certified Public Accountants, New York, 1961.
- Agarwal, N.K, “Management of Working Capital”, (New Delhi: Sterling Publisher Pvt. Ltd., 1983).
- AICPA - Accounting Bulletin No. 43, Chapter 3, Section 4.
- Allen, R. Derbin and B. Harold, “Managerial Accounting – An Introduction”, (Philadelphia: W.D. Saunders Company, 1975).
- Archer, S.H. and D. Ambrosis, “Business Finance”, (New York: The McMillan Co., 1967).

- Bardia, S.C., “*Liquidity of Working Capital: An Overview of Five Indian Petrochemical Companies*”, Economic Administration Review, vol. 1, No.2, Jaipur, 2001.
- Bardia, S.C., “*Liquidity Trends in the Iron and Steel Industry: A Comparative Study of SAIL and TISCO*”, The ICFAI Journal of Financial Economics, 2006.
- Batty, J., “*Management Accounting*”, (London: Donald and Evans Ltd., 1966).
- Bierman, Harold, Jr. and Seymour Swidt, “*Capital Budgeting Decision*”, (New York: Macmillan, 1975).
- Bolten, S.E., “*Managerial Finance*”, (Boston: Houghton Mifflin Co., 1976).
- Brigham, E.F., “*Financial Management – Theory and Practice*”, (New York: The Dryden Press, 1988).
- Burns, R. and J. Walker, “*A Survey of Working Capital Policy among Small Manufacturing Firms*”, The Journal of Small Business Finance, 1(1).
- Centre for Monitoring, “*Report on Industry Analysis*”, Indian Economy, April 2002.

