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FINANCIAL HEALTH ANALYSIS WITH CAPITAL STRUCTURE OF SELECTED INDIAN PETROLEUM COMPANIES

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ABSTRACT

Financial Health is used as an important area which provide meaningful information about the company's profitability, solvency, liquidity and operating efficiency. The objective of this paper is to make an analytical study of the selected maharatna Indian petroleum companies. The study of financial Health is gives sufficient information about the profitability, liquidity and solvency of the company. In this study I have analyzed the data of three petroleum companies (BPCL, HPCL and IOCL) for seven years from 2014-15 to 2020-21. The financial health of the selected companies during the period 2014-15 to 2020-21 has been analyzed with respect to interrelationships. The objective of this paper is to conduct a comparative study between the petroleum companies concerned through the analysis of their financial health during the research period by ratio analysis. Financial health of a company means strength of the company regarding profitability, solvency, liquidity and operating efficiency. Capital structure means mutual ratio of different sources of long-term funds and it includes equity share capital, preference share capital and long-term borrowed capital of the company.

Keywords: *Financial Health, Capital Structure, Profitability, Solvency.*

Introduction

Financial health of a company means strength of the company regarding profitability, solvency, liquidity and operating efficiency.

According to **Dheeraj Vaidya**, "Financial health, or financial well-being, refers to the financial stability of an individual, business, or organization. Its main purpose is to inform entities about their financial size and position. Companies use different indicators for investigate their financial health."

Capital structure means mutual ratio of different sources of long-term funds and it includes equity share capital, preference share capital and long-term borrowed capital. It is the permanent financing of the firm represented by long-term debt, preferred stock and net worth. So it deals with the arrangement of capital and does not involve short-term borrowings. The relative proportion of different sources of funds used in a business is called financial structure.

The term **Profitability** can be defined as the ability of a given investment to earn returns from its use.

Solvency is a company's ability to meet its long-term debts and financial obligations. Solvency can be an important measure of financial health, as it is a way to demonstrate a company's ability to manage its operations in the near future.

The D/E ratio is a key metric used to examine a company's overall financial soundness. An increasing ratio over time indicates that a company is increasingly funding its operations through creditors rather than employing its own resources and that its assets are burdened with relatively high fixed interest rate charges. Some of the key reasons why debt/equity (D/E) ratios vary significantly from industry to industry, and even between companies within an industry, include different capital intensity levels between industries and whether the business The nature of leads to high levels of debt is relatively easy to manage.

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The objective of the study is to analyze the capital structure of selected petroleum companies in India. This study mainly relies on secondary data available on the Internet. Three companies belonging to the petroleum industry were taken for the analysis of capital structure. The debt-equity ratio is calculated to determine the nature of the capital structure of sample companies. After that, the average of the debt equity ratio was calculated by considering the weighted average based on their market capitalization.

It is therefore argued that the financial manager should identify the factors and carefully analyze the sector specific characteristics before attempting to achieve the so-called optimal capital structure. Maintaining the value of the firm in a hyper-competitive corporate environment requires a suitable capital structure of the firm.

Definitions of Capital Structure

Capital structure is the mix of long-term sources of funds used by a firm. It is composed of debt and equity securities and refers to the permanent financing of a firm. It is made up of long-term debt, preference share capital and shareholders' funds. Different authors have defined capital structure in different ways.

According to Gerstenberg, 'the capital structure of a company refers to the composition or structure of its capitalization and includes all long-term capital resources, such as debt, reserves, shares and bonds'.

In the words of P. Chandra, 'Capital structure is essentially concerned with how the firm decides to divide its cash flows into two broad components, a fixed component which is required to meet the obligations towards debt capital and a residual component that relates to equity shareholders'.

Therefore, capital structure refers to the composition of funds raised from various sources, which are broadly classified as debt and equity. It can be defined as the ratio of debt and equity to the total capital that will be invested in a business for a long period of time. Capital structure deals with the quantitative aspect. The decision regarding the proportion of these types of securities refers to the capital structure decision of an enterprise.

Importance of Capital Structure

Decisions related to financing the assets of a firm are very important in every business and the finance manager is often caught in the dilemma as to what should be the optimum ratio of debt and equity. As a general rule, financing a firm's assets should have a fair mix of debt and equity capital. The capital structure is generally designed to serve the interests of equity shareholders.

Therefore, instead of collecting the entire fund from the shareholders, a portion of the long-term fund can be raised in the form of debt in the form of debentures or bonds by paying a fixed annual fee. Although these payments are treated as expenses for an entity, such a method of financing is adopted to better serve the interests of common shareholders.

The importance of designing a proper capital structure is explained below:

- **Value Maximization:** Capital structure maximizes the market value of a firm, i.e. a properly designed capital structure in a firm maximizes the total value of shareholders' claims and ownership interests (Ross et al., 2005).
- **Increase in Share Value:** The capital structure maximizes the market value of a company's stock by increasing the earnings per share of common shareholders. It also increases the dividend yield of the shareholders.
- **Cost Reduction:** Capital structure minimizes the firm's cost of capital or cost of financing. By determining the appropriate mix of funding sources, a firm can keep its total cost of capital as low as possible.
- **Ensure balance between risk and return:** Increase in debt will increase the risk and expected return of the company. Higher risk means an increase in debt that can lead to a decrease in the stock price and an increase in the expected return of the stock price. (Brigham and Houston, 2001)
- **Growth of the country:** Capital structure increases the rate of investment and growth of a country by increasing the opportunity of the firm to engage in wealth-creating investments in the future.

Patterns of Capital Structure

There are usually two sources of funds used by a firm: debt and equity. A new company cannot collect enough funds to meet its needs as it has not yet established its reputation in the market; As a result, they have to rely only on equity shares, which are the simpler type of capital structure. Its capital structure gradually becomes complex once it establishes its credibility in the market. A complex capital structure pattern can be of the following forms:

- Equity Shares and Debentures,
- Equity Shares and Preference Shares
- Equity Shares, Preference Shares and Debentures.

However, regardless of the pattern of capital structure, a firm should strive to maximize earnings per share for equity shareholders and the value of the firm.

Decision on Capital Structure

Decisions on capital structure must consider several key factors such as business risk, tax situation, financial flexibility, and managerial conservatism or aggressiveness.

- **Business Risk:** Business risk is a risk that involves a company's operating activities when the company does not finance these activities with debt. Higher business risk means lower optimum debt ratio. According to Brigham and Houston (2001), business risk is the risk associated with estimating the future return on assets (ROA) or return on equity (ROE) of a company if the company does not incur any debt. Occupational exposure depends on several factors (Brigham and Houston, 2006).
- **Variability of demand:** Steady demand for a product reduces business risk.
- **Variability of selling price:** A company that sells products in a stable market can avoid business risk. Stable market refers to a company's market in an industry that is stable.
- **Variability of Input Costs:** A company with established input costs will have less business risk.
- **Ability to adjust output prices to changes in input prices:** If the company is able to adjust output prices to changes in input prices, it will reduce business risk.
- **Foreign Exposure:** Higher profits derived from overseas operations mean higher business exposure.
- **Operating leverage:** If a company incurs higher fixed costs than other types of costs and demand for its products declines, the company is more likely to experience business risk.
- **Company's tax status:** The Company’s tax status. The main reason for using debt for financing is to reduce income before taxes and increase tax savings (Brigham and Houston, 2006).
- **Financial Flexibility:** Financial flexibility is a company's ability to obtain capital to meet its needs for funds in a given situation or under less than ideal conditions (Brigham and Houston, 2006). According to Gamba and Triantis, financial flexibility indicates a company's ability to access and restructure its financing at a lower cost. Flexibility means that the capital structure should have borrowing power, which can be used in situations arising due to favorable capital market and government policies.

Factors Affecting Capital Structure

Company characteristics such as asset structure variables, growth, profitability, company size, age, revenue, employees and liquidity can influence decisions on the source of capital.

- **Company Age:** Company age is a standard measure of reputation for the capital structure model. The company has identified this by tracing the year it commenced its operations. Age is used to identify the relationship between a company's age and total long-term debt. (Talberg, 2008).
- **Company Size:** There are many reasons why company size is related to a company's capital structure. Most large companies have higher credit ratings than smaller companies. Thus, they have easy access to debt financing due to low information asymmetry. Because they diversify their businesses into a variety of forms, these companies are expected to borrow more debt to benefit from the tax shield.

- **Cost of Debt:** A company's ability to borrow depends on the cost of debt. If the rate of interest on loan capital is low, more debt capital can be used and vice versa.
- **Cost of Equity Capital:** The cost of equity capital (the expectations of the equity shareholders of the company) is affected by the use of debt capital. If debt capital is overused, it will increase the cost of equity capital. The simple reason for this is that the higher use of debt capital increases the risk of equity shareholders.
- **Control:** While preparing the capital structure, it should be ensured that the control of the existing shareholders (owners) over the affairs of the company is not adversely affected. If funds are raised by issuing equity shares, the number of shareholders of the company will increase and this directly affects the control of the existing shareholders. This position will not be acceptable to the existing shareholders. Conversely, when funds are raised through debt capital, there is no effect on the control of the company as the debenture holders have no control over the affairs of the company. Thus, debt capital is best for those who support this theory.
- **Regulatory framework:** Capital structure is also influenced by government regulations such as it may be mandatory for companies to maintain a given debt-equity ratio while raising funds.
- **Capital structure of other companies in the same industry:** The capital structure is affected by the industry to which a company belongs. All companies belonging to a given industry produce approximately the same product, have similar cost of production, depend on the same technology, have similar profitability, and therefore have almost the same pattern of their capital structure.
- **Stock Market Conditions:** Stock market conditions reflect the up or down trend in the capital market. Both these conditions have their own impact on the selection of sources of finance. When the market is sluggish, investors are afraid to invest in share capital because of the high risk. Conversely, when the conditions in the capital market are favorable, they consider investment in share capital as the best option to earn profit. Therefore companies should choose capital sources keeping in mind the prevailing conditions in the capital market.
- **Growth:** A company with a high growth level counters the position of the company by having a low debt level to avoid issuing new stock to finance future investments. Although the company requires debt financing to finance its business activities, keep in mind that this does not mean that the company will be free of risk. The use of debt financing creates risk that can result in higher anticipated returns (Hall et al., 2004). Based on pecking order theory, this is because issuing new shares of a company can cause its share price to fall and, subsequently, cause the company to experience losses.

Literature under review

It is mandatory to review the available literature about the field of the research study. Measuring corporate sector performance has always been an area of disputes from the point of view of the government, shareholders, prospective investors, creditors, employees, and any other stakeholder.

Thilagaraj, A. (2010), in his study on Steel Potential Untapped revealed that the steel industry has performed very well in recent years due to liberalisation measures.

Colombo, Jefferson, & Caldeira, Joao (2016), published their article titled "The Role and Interdependence of Taxes between Corporate Financial Policies: Evidence from a Natural Experiment" in the "SSRN Electronic Journal" in July 2016. In this paper, they examine whether post-tax reform for pension funds in Brazil responds to an exogenous tax variation by examining their financial decisions at the investor level.

Ambrose, Alejandro Herasi (2017), published their article entitled “Capital Structure: Implications of the Different” in the Journal “ICADE Business School” in July 2017. Through this paper, he seeks to provide the lecturer with a holistic view of the main principles that have attempted to provide a scientific and quantitative approach to the problem of optimum capital structure.

Gap in Research

According to the review of the literature, it was concluded that no prior research has been done in relation to the objectives mentioned in the proposed study, or rather, the research before the change of circumstances is not meaningful at the present time.

Objective of the Study

The objective of this paper is to conduct a comparative study between the financial health of petroleum companies concerned through the ratios analysis during the research period.

Methodology

- **Sample Size:** In this study I have analyzed the data of three petroleum companies (BPCL, HPCL and IOCL).
- **Period of Study:** From 2014-15 to 2020-21.
- **Collection of Data:** The present paper is based on secondary data which is arranged from annual reports and official website. To make the data more reliable, we selected data from the same website (www.moneycontrol.com) and verified it with other websites providing similar information. Also, all these figures have been taken on a single day to avoid the possibility of market volatility.
- **Useful Statistical Tools** Mean, standard deviation and coefficient of variance, ANOVA tests for significance analysis and accounting financial tools for the study of capital structure Ratios have been used to measure profitability, solvency, liquidity and operating efficiency.

Hypothesis

The 'Single Factor ANOVA' model has been used to examine significant differences in the capital structure of selected petroleum companies. The hypotheses are as follows:

H_0: There is no significant difference in the financial health of the petroleum companies under study.

Limitations of the Study

This study pertains to only three selected public sector Indian petroleum companies BPCL, HPCL and IOCL. Apart from these, there are other petroleum companies in India and they do not have any special role if seen globally. The time taken in this study is also limited to 7 years, which is not enough time to draw meaningful conclusions.

Analysis and Interpretation

In the words of **Robert N. Anthony**, "A ratio is simply a number expressed in terms of another." ***(Mehta, 2017, p. 126)***

Capital structure ratios are designed to examine the long-term solvency or financial condition of an institution, so they are also called long-term solvency ratios.

The debt-equity ratio is an indicator of the soundness of the configuration of the debt-equity pair.

The data related to selected companies which is collected from annual reports have been tested using ANOVA as shown below:

Table 1: Analysis of the Variance of Debt Equity Ratio

Summary	Count	Sum	Average	Variance
2014-15	3	2.83	0.943	0.012
2015-16	3	2.06	0.687	0.017
2016-17	3	2.44	0.813	0.049
2017-18	3	2.38	0.793	0.053
2018-19	3	2.82	0.940	0.023
2019-20	3	4.18	1.393	0.014
2020-21	3	2.88	0.96	0.042
Summary	**Count**	**Sum**	**Average**	**Variance**
BPCL	7	7.08	1.011	0.072
HPCL	7	6.89	0.985	0.042
IOCL	7	5.62	0.803	0.080

ANOVA: Two-Factor Without Replication						
Source of Variation	**Sum of Squares**	**Degrees of Freedom (df)**	**Mean Square (MS)**	**F- ratio**	**F- Critic (α = 5%)**	**P-value**
Between Rows	0.922	6	0.154	**7.641**	**2.996**	0.002
Between Columns	0.180	2	0.090	**4.476**	**3.885**	0.035
Residual or Error	0.241	12	0.020			
Total	1.343	20				

It is clear from Table 1 that the calculated value of F_C (4.48) is more than the table value of 'F' (3.89) at the significance level of 5%. Therefore, the null hypothesis (H_0) is rejected and thus, the difference between the debt equity ratios among the companies is significant. Furthermore, the calculated value of F_R (7.64) is more than the table value of 'F' (3.00) at the significance level of 5%. Hence the null hypothesis (H_0) is rejected means the alternative hypothesis (H_1) is accepted, and thus, the difference between the debt equity ratios between years is significant.

H_0: There is a significant difference in the Debt Equity Ratio between companies and between years. Therefore, the Capital Structure of selected petroleum companies as measured through debt equity ratio is satisfactory and significant between companies and between years during the study period.

Table 2: Analysis of the Variance of Return on Capital Employed Ratio

Summary	**Count**	**Sum**	**Average**	**Variance**
2014-15	3	16.8	5.6	16.632
2015-16	3	38.18	12.727	2.346
2016-17	3	71.26	23.753	10.321
2017-18	3	65.17	21.723	6.7799
2018-19	3	52.98	17.66	3.274
2019-20	3	19.01	6.337	0.474
2020-21	3	56.57	18.857	3.596
Summary	**Count**	**Sum**	**Average**	**Variance**
BPCL	7	106.26	15.18	27.554
HPCL	7	110.77	15.824	83.055
IOCL	7	102.94	14.706	59.111

ANOVA: Two-Factor Without Replication						
Source of Variation	**SS**	**df**	**MS**	**F-ratio**	**F critic (α=5%)**	**P-value**
Between Rows	935.888	6	155.981	**22.707**	**2.996**	6.82E-06
Between Columns	4.413	2	2.206	**0.321**	**3.885**	0.731
Residual or Error	82.431	12	6.869			
Total	1022.732	20				

It is clear from Table 2 that the calculated value of F_C (0.32) is less than the table value of 'F' (3.89) at the significance level of 5%. Therefore, the null hypothesis (H_0) is accepted and thus, the difference between the return on capital employed ratios among the companies is not significant. Furthermore, the calculated value of F_R (22.71) is more than the table value of 'F' (3.00) at the significance level of 5%. Hence the null hypothesis (H_0) is rejected means the alternative hypothesis (H_1) is accepted, and thus, the difference between the return on capital employed ratio between years is significant.

H_0: There is no significant difference in the return on capital employed ratio between companies and significant difference between years. Therefore, the profitability of selected petroleum companies as measured through the return on capital employed ratio is satisfactory with no significant difference between companies and significant between years during the study period.

Table 3: Analysis of the Variance of Solvency Ratio

Summary	**Count**	**Sum**	**Average**	**Variance**
2014-15	3	2.27	0.76	0.005433
2015-16	3	2.03	0.68	0.005833
2016-17	3	2.06	0.69	0.003733
2017-18	3	2.01	0.67	0.0031
2018-19	3	2.08	0.69	0.000933
2019-20	3	2.18	0.73	0.000233
2020-21	3	2.07	0.69	0.0007

Summary	Count	Sum	Average	Variance
BPCL	7	4.88	0.70	0.00089
HPCL	7	5.23	0.75	0.00189
IOCL	7	4.59	0.66	0.001829

ANOVA: Two-Factor Without Replication						
Source of Variation	**SS**	**Df**	**MS**	**F-ratio**	**F critic (α=5%)**	**P-value**
Between Rows	0.02	6	0.00	**3.22**	**3.00**	0.0400
Between Columns	0.03	2	0.01	**16.62**	**3.89**	0.0003
Residual or Error	0.01	12	0.00			
Total	0.06	20				

It is clear from Table (4.4) that the calculated value of F_C (16.62) is more than the table value of 'F' (3.89) at the significance level of 5%. Therefore, the null hypothesis (H_0) is rejected and thus, the difference between the solvency ratios among the companies is significant. Furthermore, the calculated value of F_R (3.22) is more than the table value of 'F' (3.00) at the significance level of 5%. Hence the null hypothesis (H_0) is rejected means the alternative hypothesis (H_1) is accepted, and thus, the difference between the solvency ratios between years is significant.

H_0: There is a significant difference in the solvency ratio between companies and between years. Therefore, the Solvency Position of selected petroleum companies as measured through solvency ratio is satisfactory and significant between the companies and between years during the study period.

Findings

Following are the important findings of this study:

- There is a significant difference in the Debt Equity Ratio between companies and between years.
- There is no significant difference in the Return on Capital Employed Ratio between companies and significant difference between years.

Conclusion

The aim of this study was to assess whether there is a significant relationship between capital structure and the profitability of selected petroleum companies during the study period, that is, whether capital structure has a significant impact on profitability and solvency. At the 5% significance level, the study shows that there is significant difference in capital structure of selected companies but no significant difference in profitability.

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