



A STUDY ON ECONOMIC VALUE ADDED ANALYSIS OF SELECTED OIL AND REFINERY COMPANIES IN INDIA

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Abstract

Oil and Refinery industry is very significant sector in the world which has significance in the economy of any nation. In India, oil and gas sector has also very important role in the development of the economy. Oil and Refinery sector not only provides oil and gas to the nation but also provides lot of things which are very important like, employment, revenue in the form of tax to the government and some other benefits to the society. In India most of the quantity of crude oil is imported from other countries. So, the prices and profits of the companies are totally dependent upon the market prices of crude oil. Before 2010 the prices were regulated by the Indian government. From June 2010 onwards the prices were deregulated and the prices are fixed according to the market price of crude oil. This study includes the analysis of economic value added for the selected oil and refinery companies during the study period. Chi-square test has been applied to find out any significant difference between actual and trend value of Economic Value Added by the selected financial variables.

Keywords: Economic Value Added, Oil and Refinery Companies, Economic Growth

I. Introduction

Petroleum industry is one of largest and most complex industry around the globe and it reflects a peculiar model of business incorporating itself politics, technology, experienced personnel and environmental protection. This model imposes major challenges on oil-producing companies' profitability and sustainability because they must assure that newly discovered resources used in economical and sustainable manner where technologies are and cost efficiencies are key aspects. The most crucial thing to mention is that oil and gas plays important role in maintenance of industrial civilization therefore it is a big concern for all nations. Since the energy is the central factor of continuance of daily life, it is not surprising that energy security has become a central focus of nations'

foreign policies around the globe. The supply and demand of oil and gas is a constant concern of the administrations of both oil importing and exporting nations.

Oil and natural gas today are the most watched commodities in the global economy. Since the oil and gas are major industry driven commodities, thus far numerous empirical results suggest on direct detrimental effects on economies. Among the perfect examples, studies by International Energy Agency, suggesting on 10 percent increase would negatively affect by 0.5% percent in country's GDP. In addition, recent study shows that fluctuations over price represent fundamental barriers to economic growth. Through causing economic uncertainty, price fluctuations have adverse aggregate impact in consumption, investment and industrial production, resulting in an indirect impact on aggregate unemployment and inflation. For the last six years, the industry has seen numerous tumultuous events including political, financial, technological and environmental issues. As of today, with the escalating global crisis, the sustainability of the industry is under the question. For that reason, the industry continues to be the subject for numerous studies.

II. Purpose of the Study

The main purpose of this paper is to provide comprehensive information on performances of integrated oil and gas companies through analyzing their financial and operational disclosures. One of the underlying reasons to write this paper is to gain insights on performances of particular four major oil giants, successors of famously known seven oil companies, which once had dominated global oil and gas market. In contrast to financial crisis, the latest development in the energy sector has shown that oil and gas industry thus far has been involved in numerous issues that had the great long-term impact on both countries and on the world at large. Among the examples are recent conflicts raised in Middle East and Ukraine, which lead public to be worried about possible supply disruptions in oil and gas outputs. Considering today's world condition, it appears that global geopolitical environment is becoming more violent.

Moreover, assuming the uncertainties of future oil and gas availability, today such questions raises even more tensions among the public. Notwithstanding of significant efforts by countries to find renewable energy source, it seems to be certain is that oil and gas would remain as a major source in the following decades. Taking into account of today's geological condition, where for companies there is only 10% percent of success in finding oil, it gives additional premise to wonder on the future sustainability of oil and gas industry.

III. Objectives of the Study

The following are the specific objectives of the present study:

- 1) To examine whether the selected study units have been able to generate value of its shareholders.
- 2) To offer suitable suggestions for the improvement of oil and refinery companies in the competitive business world.

IV. Research design

The oil and refinery industry is purposively selected for the present study, considering its importance as the backbone of economic growth in any country. The database of CMIE has made compilation for top ten oil and refinery companies of which only seven companies have financial data for a continuous period of 10 years for the period 2011-12 to 2020-21. Owing to several constraints such as non-availability of financial statements or non-working of a company in a particular year, etc., the present study focused only on seven large scale oil and refinery companies in India such as Indian Oil Corporation Limited (IOCL), Oil and Natural Gas Corporation Limited (ONGC), Bharat Petroleum

Corporation Limited (BPCL), Hindustan Petroleum Corporation Limited (HPCL), Gail India Limited (GIL), Oil India Limited (OIL) and Chennai Petroleum Corporation Limited (CPCL).

V. Framework of Analysis

The data from various sources have been examined through mathematical tools like Chi-Square Analysis and Economic Value Added Analysis statistical tools and models have been applied. The Statistical Package for Social Science (SPSS) latest version statistical software package and MS-EXCEL have been used for computing various results in this study.

VI. Period of the Study

The period of study has been confined to ten years, from 2011-12 to 2020-21.

VII. Limitations of the study

1. The period covered under the study is ten years only (from 2011-12 to 2020-21).
2. The study solely depends on the published financial data, so it is subject to all limitations that are inherent in the condensed published financial statement.
3. This study has focused only on selected large scale oil companies in India. So, it implies that the conclusion drawn from the present study could not be generalized to small and medium size of companies.
4. Also, in spite of being aware of the fact that inflation is so certain a factor, it could not be taken into consideration in the present study.

VIII. Review of Literature

Studying review of related literature is an important step in undertaking a research. In this section, an endeavor has been made to provide an overview of various aspects of this study through the review of existing literature. The sources referred include various journals, books, doctoral theses, working papers, reports, magazines related to finance, internet sites, newspapers etc. Here are the reviews of the previous researches related with the present study:

Manojkumar Vishnubhai Patel (2016)¹ examined in their study about industry involvement in the refining of crude petroleum and the processing of Natural Gas into a multitude of products, as well as the distribution and marketing of petroleum-derived products India has recently become the sixth largest consumer of oil and gas, with its oil consumption recording a compounded annual growth of 9.1 percent per annum. The objective of the present study has been made to analyze the liquidity and leverage performance of the Bharat Petroleum Corporation Limited and the Reliance Industries Limited. The present study attempts to analysis the performance of liquidity and leverage position of the BPCL and the RIL during the period 2006-2007 and 2010-2011. Liquidity is the company's ability to convert non cash assets into cash or to obtain cash in order to meet current liabilities.

Mwangi Samuel Macharia and Elegwa Mukulu (2016)² examined JIT use in manufacturing industries in the developed countries. However, there is limited research done on JIT implementation in manufacturing industries in the developing countries. The aim of this study was to determine the role of JIT in realization of an efficient supply chain management, to determine the role of continuous improvement, to establish the role of inventory management, to ascertain the role of quality management and to evaluate the role of supplier relationship management in realization of an efficient supply chain management in Bidco Oil Company. The research was carried out through a cross-sectional research survey design whereby the target population comprised of Bidco Oil Company top management and staff. The study used stratified random sampling and simple random

sampling where 10% of the target population representative of the entire population was studied. A Questionnaire with close-end questions and likert scales was used as the research instrument by being administered to the respondents and collected after due completion by the researcher. The collected data was analyzed using Statistical Package for the Social Sciences frequencies, percentages, means, standard deviations and regression analysis. Quality management factors notably; product design, investigation of defects at the source, immediate defects screening on occurrence and inspection of raw materials to a large extent.

Sumana Chaudhuri, Shovan Ray (2016)³ through their working paper on, "Vadinar Refinery of Essar Oil" argued that analyses the local-level economic impacts (on-site labor impacts, local revenue and supply chain impacts and induced impacts) and jobs supported by Vadinar refinery construction and ongoing operations. The methodology used for the determination of the financial returns in Cost Benefit Analysis is the Discounted Cash Flow (DCF) approach. There is abundance of scope to reflect the strategic food and oil security of India from the macroeconomic perspective; the gradual increase in investor and consumer confidence with respect to self-reliance in production and consumption of oil and natural gas resources in the country and the broader social impact of the project, which may be taken up in subsequent research. A sequel to this paper will explore an approach to integrating the methods with a CGE model framework.

Prasad et al. (2016)⁴ studied the "impact of crude oil price volatility on firm's financial performance empirical evidence from Indian petroleum refining sector". The researchers have found volatility of crude oil price were not uniformly affects the performance of the sample firms selected for the study. The reasons for it is operations of the company were directly or indirectly influenced by ownership pattern, operational diversification, economies of scale/scope, exposure to international trade and other firm specific qualitative and quantitative factors. The price crude oil is taken from Multi commodity exchange. Firms' financial data were collected from BSE and NSE website. The study period was form 2006 to 2015.

Om Prakash Agarwal, R. C. Upadhya (2017)⁵ defined "Oil and gas sector not only provides oil and gas to the nation but also provides lot of things which are very important like, employment, revenue in the form of tax to the government and some other benefits to the society. Before 2010 the prices were regulated by the Indian government. From June 2010 onwards the prices were deregulated and the prices are fixed according to the market price of crude oil. The study is also based upon the impact of deregulation on profitability, Solvency and Liquidity of the company. Due to deregulation the public sector companies has overcome the problem of losses gradually. This study included the ratio analysis to check the profitability, solvency and liquidity of Indian Oil Corporation".

Stephen C. Nwanya and Chibuiké K. Isi (2018)⁶ pointed out that optimal inventory cost framework for managing the reorder-point and order quantity policies of a petroleum products service station experiencing frequent inventory outages. The specific objectives of the study include formulating an optimal cost model for evaluating inventory performance of premium motor spirit, determining the amount of petrol emission due to evaporation and computing the optimal parameters. To realize those objectives, primary data for the study were obtained through a mix of field measurements and analytical methods. The physical measurement was carried out each operational day for one year. The methodology used involved case study strategy and physical measurements at the operational PMS retail station. The incorporation of the least square method in

the computational analysis is novel and results in better performance of optimized variables. The developed model guarantees reliable information and can be a benchmark for management of other petroleum products.

Noraini Ismail, et al. (2019)⁷ conducted a study with an aim to reveal the impact of liquidity towards profitability of oil and gas industry in Malaysia. The analysis is based on a sample of 25 oil and gas companies that are listed in Bursa Malaysia for the period of 2012 to 2018. Regression analysis was used to test the impact and the trend of financial position after and before decreasing oil price. The result shows that there is a significant impact of only quick ratio on Return on Assets (ROA), Return on Equity (ROE) and Return on Invested Capital (ROIC). The main results of the paper demonstrate that each ratio (variable) has a significant impact on the financial positions of oil and gas industry with differing amounts and that along with the liquidity ratios in the first place.

Virupaksha Goud et al. (2019)⁸ observed that crude oil prices are directly correlated with the world GDP, OPEC decisions and stability in the gulf region. Substitute petroleum products have started to make certain impact but it is limited at this moment. If the price of crude oil increases then petroleum exploration companies such as ONGC. This study used the secondary published data of oil companies, IMF reports and stock market participants. The article has made an attempt to identify the influencing factors on international crude oil prices and its effect on Indian petroleum PSU's financial performance. If the prices increase then petroleum exploration companies such as ONGC, OIL make profit else petroleum distribution companies such as BPCL, HPCL, and IOCL make profit.

Khawar Naeem, et al. (2020)⁹ briefly explained that methodology for the oil and gas businesses to keep their production plant productive with a minimum investment in carrying maintenance, repair, and operating inventory planning. The MRO inventory is the most expensive asset and it requires substantial investment. It helps in keeping the oil and gas production plant productive by performing planned and unplanned maintenance activities. The purpose of this research is to enhance the service level from 90% with a decrease in the average inventory investment. The purpose of this model is to provide a satisfactory service level to the company with a minimum average inventory investment than the company's existing policy. In this the demand uncertainty is greater for which safety stock will be kept more than the continuous review policy in which less safety stock is kept due to less demand uncertainty.

Men Thi Bui and Hieu Minh Nguyen (2020)¹⁰ made study aims to identify the relationship between different variables affecting profitability of the firms in the oil and gas sector in Vietnam. The efficiency of this industry is based on diverse factors, leading to the question of which are the key contributing factors. A major factor is considered to be the profitability of the firms. The totals of 203 samples were collected from 29 companies listed on Vietnam Stock Market during a 6-year period from 2012 to 2018. The study results show that there are four factors that have an impact on ROA, namely, leverage, government ownership, dividend, and exchange rate. Whereas leverage and exchange rate have negative influence on ROA, government ownership and dividend payment have a positive effect. The findings of this study suggest that high debt ratio in capital structure and the negative effect of exchange rate on their companies' efficiency can adversely affect the profit of enterprises.

IX. Economic Value Added Analysis – Results and Discussions

The term 'Economic Value Added' (EVA) is a registered trademark of Stern Stewart and Company of New York City (USA). Bennett Stewart in his book, "The Quest for Value" used the term EVA with a symbol TM as super script, which is the normal practice of referring to any registered trademark whenever the term is used. Hence EVA is actually Stern Stewart and Company's trade mark for a specific method of calculating economic profit. "The Quest for Value" was published in 1991. Peter Drucker claimed that he discussed EVA in 1964 in his book, "Managing for Results". However, the first concept of EVA became popular only after Stern Stewart and Company marketed it.

9.1 EVA as a concept of Profitability

EVA is based on the concept that a successful firm should earn at least its cost of capital. Firms that earn higher returns than financing costs benefit shareholders' and account for increased shareholders' value. EVA is an attempt to measure the true economic profit. It measures whether the operating profits are sufficient enough to cover the cost of capital. EVA takes cost of equity as notional cost along with the cost of debts. The residual profit after charging the overall cost of capital including the notional cost represents economic value added. From the company's perspective, EVA is a useful tool because it focuses attention on the management of capital as well as management of profit. If EVA is positive, then the firm has created value for the shareholders' over the period and if the EVA is negative, it connotes that the firm is destroying shareholders' wealth even though it may be reporting a positive and growing EPS and ROCE. One of the tools for studying shareholders' value theory in EVA and the most important feature of this theory is that it discourages payment of dividend to shareholders; because a higher dividend payment implies inefficiency on the part of management to deploy the dividend paying fund in a project which can earn more than WACC (Weighted Average Cost of Capital).

9.2 EVA a measure of Shareholders Wealth

Economic Value Added is a measure of financial performance that combines the familiar concept of residual income with principles of modern corporate finance specifically that all capital has a cost and that earnings more than the cost of capital create value for shareholders. One of Economic Value Added most powerful property is its strong relation with the share prices. Economic value added is a measure that tells what has happened to the wealth of the shareholders. Just earning profit is not enough, a business should earn sufficient profit to cover its cost of capital and create surplus to grow. Stated simply, profit earned over and above the cost of capital is economic value added. According to this theory earning a return greater than the cost of capital increases the value of a company and earning less than the cost of capital diminishes the value.

The Economic value added of a company is just a measure of the incremental return on investment earned over the market value of return on companies' fund their investment from equity, debt or retained earnings. The returns, equity investors expect from a company, are at the very least, equal to what they will achieve by investing in the market – index although the actual figure relies on the risk profile of the company. Economic value added appears to provide the modus operandi for this self-propelling growth mode. EVA holds a company accountable for the cost of capital it used to expand and operate its business and attempts to show whether a company is creating a real value for its shareholders'. Maximizing EVA consistently would lead to maximization of market capitalization.

EVA introduced by Stern Stewart and Company is an incarnation of residual income concept. Stewart defined 'EVA as an estimate of true economic profit, the amount by which earnings exceed or

fall short of required minimum rate of return investors could get by investing in other securities of comparable risk'. It is the net operating profit minus the appropriate charge for the opportunity cost of capital invested in an enterprise (both debt and equity).

Expressed as a formula, EVA for a given period can be written as:

$$\begin{aligned} \text{EVA} &= \text{NOPAT} - (\text{Weighted Average Cost of Capital} \times \text{Capital Employed}) \\ &= \text{NOPAT} - (\text{WACC} \times \text{CE}) \end{aligned}$$

Where

NOPAT = Net Operating Profit After Taxes but before financing costs

WACC = Weighted Average Cost of Capital; and

CE = Capital Employed (Or)

Equivalently, if rate of return is defined as NOPAT/CAPITAL, this turns into a perhaps more revealing formula:

$$\text{EVA} = (\text{RATE OF RETURN} - \text{COST OF CAPITAL}) \times \text{CAPITAL}$$

Where

Rate of return - NOPAT/CAPITAL EMPLOYED

Capital Employed - Total of balance sheet minus non-interest bearing debt in the beginning of the year.

Cost of Capital - (Cost of equity X proportion of equity from capital) + [(Cost of debt X proportion of debt from capital X (1-tax rate)]

Cost of capital or weighted average cost of capital is the average cost of both equity capital and interest bearing debt.

9.2.1 Cost of debt (K_d)

Cost of debt refers to the average rate of interest the company pays for its debt obligations.

Cost of debt (K_d) has been computed as:

$$K_d = \text{Total interest expenses} \times (1 - \text{Effective tax rate}) / \text{Beginning total borrowings}$$

While scheming borrowings all short-term as well as long-term borrowings have to be included as all debts are interests bearing. Therefore, interest paid in the financial year has been considered as total interest expenses.

9.2.2 Cost of equity (K_e)

To find out cost equity (K_e), Capital Assets Pricing Model (CAPM) has been used. This model holds that firms' equity cost is the composition of risk free rate of return for a stock plus premium representing the volatility of share prices. According to this model, K_e is the shareholders' expected rate of return and this expected rate of return (R_j) is as follows:

$$R_j = R_f + \beta \times (R_m - R_f)$$

Where, R_f = Risk free rate of return,

R_m = Market rate of return, and

β = Sensitivity of the share price in relation to the market Index

The interest rate of Government securities has been considered as a proxy for risk free rate of return. The market rate of return has been intended by using index Numbers of Security Prices (Bombay Stock Exchange) from year basis. The yearly return of the index numbers has been computed by using the following formula:

$$R_m = \left[\frac{\text{Index number for current year} - \text{Index number for previous Year}}{\text{Index number of previous year}} \right] \times 100$$

Beta (β) is the risk - free co-efficient which measures the volatility of a given script of a company with respect to volatility of market. It is calculated by comparing return on a share to return in the stock market. Mathematically, beta is the statistical measure of volatility. It is computed as covariance of daily return on the stock market indices and the return on daily share prices of a particular company, divided by variance of return on daily stock market indices. The Beta co-efficient has been calculated as follows:

$$\beta_j = \text{COV}_{im} / \sigma_m^2$$

Where,

- β_j - is the Beta of the security in the question
- COV_{im} - Stands for co-variance between the return of security and return of market, and
- σ_m^2 - Stands for the variance of market return

9.3 EVA Analysis of Sample Companies

EVA created by the selected automobile companies during the study period from 2011-12 to 2020-21 is furnished in Table 1. The Table indicates that out of seven oil and refinery companies ONGC and IOCL has a high EVA among the selected sector in throughout the period of study. Other selected companies have low EVA compared to ONGC and IOCL, that is declined their shareholders' wealth during the period from 2011-12 to 2015-16. It would be worthwhile to mention here that during this period the economy of the nation faced showery political instability at union Government level and Central Government problem and also world economy crises, may be the grounds to such downhill state of affairs in the economy. The above mentioned years, Indian economy disclosed the optimistic wind.

It depicts that industry average of EVA has recorded a high fluctuation trend. In the year 2011-12 onwards it was increase value throughout the study period except in the year 2019-20. In the EVA, it was minimum of (34388.58) during the year 2011-12 and its maximum was (64826.28) during the year 2020-21. It states that during the first eight year of the study period, i.e., 2011-12 to 2018-19 all the selected companies have increase trend in EVA. But 2019-20 only one year have decreasing trend in EVA, in the meantime all the selected year have high and positive EVA, it expressed satisfactory position in selected oil and refinery companies in India.

The mean value of industry average of economic value added was 48987.85 and among the selected oil and refinery companies it was maximum of 156244.15 gained by ONGC and minimum of 2453.94 gained by CPCL. The computation of coefficient of variation of EVA reveals that industry average during the study period was 9.49 and its maximum of (12.00) got by ONGC and it was minimum of (6.14) obtained by CPCL. It explains that EVA reveals high fluctuating trend throughout the study period.

The EVA of IOCL has recorded an increasing trend and small fluctuations in during the period of study. It was maximum 99228.49 recorded in the year 2020-21 and it was minimum 57856.54 during the year 2011-12. The mean value of EVA was 77702.84 and its coefficient of variation was 0.18 during the period under study. The EVA of ONGC has recorded a high fluctuating trend. All the selected years of the study period have gradually increasing trend creating the high EVA. In the value of EVA, it was maximum 194187.68 during the year 2020-21 and it was minimum 111784.13 during the year 2011-12. The mean value of EVA was 156244.15 this is high mean value compare to other oil and refinery sectors and its coefficient of variation was 0.18 during the period under study. The EVA of BPCL has recorded an ideal increasing trend except in the year 2019-20. In the value of EVA, it was

maximum 54544.55 during the year 2020-21 and it was minimum 14913.86 during the year 2011-12. The mean value of EVA was 28861.38 and its coefficient of variation was 0.41 during the period under study.

The EVA of HPCL has recorded as a highly increasing trend. In the first five year of the study period there has been slowly increasing trend and then it started to have an increasing trend creating the high EVA. In the value of EVA, it was maximum 36186.11 during the year 2020-21 and it was minimum 13029.04 during the year 2011-12. The mean value of EVA was 21278.20 and its coefficient of variation was 0.37 during the period under study. The EVA of GIL has recorded as a highly increasing as well as fluctuating trend. In the value of EVA, it was maximum 44092.94 during the year 2018-19 and it was minimum 21625.83 during the year 2011-12. The mean value of EVA was 34578.60 and its coefficient of variation was 0.24 during the period under study.

The EVA of OIL has recorded an increasing trend and small fluctuations in during the period of study. It was maximum 24418.69 recorded in the year 2020-21 and it was minimum 17721.34 during the year 2011-12. The mean value of EVA was 21795.85 and its coefficient of variation was 0.09 during the period under study. The EVA of CPCL has recorded a decreasing trend except in the year 2015-16, 2016-17 and 2017-18. In the value of EVA, it was maximum 3835.22 during the year 2017-18 and it was minimum 1162.31 during the year 2019-20. The mean value of EVA was 2453.94 this is low mean value compare to other oil and refinery sectors and its coefficient of variation was 0.41 during the period under study.

The analysis of actual and trend value of economic value added as percentage of average capital employed (EVACE), chi-square test has been publicized in Table 2. In order to test the hypothesis, "There is no significant difference between the actual and trend values of EVACE". Among the selected companies, the chi-square values were CPCL with (24.41), BPCL with (21.35), HPCL with (19.49), IOCL with (14.62), GIL with (10.14), OIL with (6.71) and ONGC with (4.27). The critical value of chi-square with $(10-1) = 9$, degree of freedom is 16.919. All the selected oil and refinery companies, calculated chi-square value is greater than the critical value except IOCL, GIL, OIL and ONGC. Therefore, the hypothesis is rejected. It is concluded that "There is significant difference between the actual and trend values of EVACE". It means the IOCL (14.62), GIL (10.14), OIL (6.71) and ONGC (4.27) calculated values are less than critical value. Hence the hypothesis is accepted that is "There is no significant difference between the actual and trend values of EVACE". It is concluded that the CPCL, BPCL and HPCL calculated values are more than the critical value.

X. Recommendations

Based on the findings and conclusion of this study, the following recommendations are made which may be useful to the managers, management at all levels as a whole, investors, market analysts, and policy makers, therefore this study recommend as follows:

Managers: The managers in the Oil and Gas industry and related companies in India should pay particular attention and review their credit sales policies and their age analysis. The study heightened much of the negative and insignificant effect of receivables collection periods on each of the proxies of corporate sustainability. This could imply that there are lapses on the receivables management by the sampled companies. When the control variable of firm size was introduced, there was no much difference. Therefore, irrespective of the size of the quoted oil and gas companies, liquidity management is very important and time lag between credit sales and the receivables are actually collected is critical to the corporate sustainability of the companies. This position was reinforced in a few model, the result exhibited negative and insignificant effect of cash conversion cycle with profitability of the companies. The managers should revisit the conversion cycle of between

sales and fund committed to operations to the time lag of realizing and collections of some credit sales to liquidity assets.

Policy makers: Indian government and those saddled with policy making and regulations should tailor same to ensure corporate sustenance of oil and gas companies, in particular the unstable of foreign exchange rates these companies face in course of importing equipment and refined petroleum products. Therefore, policies like unhealthy multiplicity of taxes, ensuring tax incentives and at the same time remove double taxation. These should be directed towards making friendly and attainable policies that could positively affect the companies' operations and ensure that they maximize their resources economically and efficiently in other to report earnings and good turnover to enable them comply with their tax obligations and thereby increase government tax revenue.

Investors: The investors are advised to mindful of credit policies and corporate sustainability profile in terms of profitability, assets growth trend of the quoted oil and c=gas companies in India over the years to ascertain their corporate sustainability as a guide in making investment and portfolio diversification decisions. Efficient and effective resource management will reveal optimal lots of investment guide.

Contribution to Knowledge: The results of this study is considered useful to investors, market analysts, economic regulators, policy maker and managers and the entire management of companies, who are desirous of a manufacturing companies who performs excellently, where the managers are efficient and effectively in cash management that translate to effective performance.

Policy Markers: Capital market stakeholders and potential investors in the capital market in particular who are concerned about the uninterrupted quality performance of companies in the Indian capital market, desire to invest in companies meeting their profitability objective and positively influenced by liquidity management towards corporate sustainability. The performance of companies in an economy in most cases is a reflection of the economic policies in place.

Theoretical Contribution: From the theoretical perspective, this study contributes to the theoretical body of knowledge having reviewed by five theories of liquid assets theory, institutional theory of corporate sustainability, signaling theory, resource-based theory and pecking order theory. The study also made the following theoretical and practical contributions by explaining the relevance of each of the reviewed five theories, by stating the proponents of the theories, the opponents and allies supporting the ideology of each of the theories. The study equally posited the relevance of each of them as they relates to the hypothesized variables of the study. The study theorized that liquidity management can make significant effect on corporate sustainability if liquidity management positive effects profitability, assets growth and economic value added of the quoted oil and gas companies in India.

Conceptual Contribution: From the viewpoint of conceptual contribution, each of the various dependent and independent variable concepts related to the study was carefully explained in details. This study were carried out from different angle peculiar from prior study in Indian studies, by using different variable s different from the ones used as no two conceptual literature could be the same, otherwise, the essence is defeated. Therefore, this current study is unique as it concentrated on liquidity management and its proxies of cash conversion cycle, receivables collection period, cash ratio and quick ratio and its joint effect on each of profitability, assets growth and economic value added.

Empirical Contribution: The study with the help of regression analysis, using descriptive and inferential analyzed six models exhibiting different results. From the empirical findings from models formulated as shown in models one to six, various results were obtained, making each model unique and distinct from each other judging from the different results found from the regression analysis carried out. While some models results exhibited significant effect, others revealed negative effects. The introduction of the controlling variable of firm size brought some robustness to the study. The

empirical results contribute the mixed results that could be obtained using different measuring variables different from what had been used before now. The empirical results obtained were analyzed with detailed syntheses with prior studies, while some of the study results were found to be consistent with some prior studies, other were found inconsistent, thereby making new contributions to the body literature.

XII. Conclusion

It is concluded from the study that the oil and refinery sectors have achieved greater penetration. The high growth achieved in recent year is because of the development of petroleum companies. The Indian petroleum companies play a meaningful role. In the meantime India has been among the world's fastest growing economies. With expanding economy comes an increasing demand for energy and, if current trends continue, India will be the world's third largest energy consumer by 2025. Due to the expected strong growth in demand, India's dependency on oil imports is likely to increase further. Rapid economic growth is leading to greater outputs, which in turn is increasing the demand of oil for production and transportation. Moreover, the Indian oil and refinery companies are maintain sufficient stock for a current emergency situation like price increases due to Ukraine and Russia war.

It is a known fact that the financial decision of any firm is a complex affair that involves the analysis of different variables. There is variation in the financial facts reported by the above firms. All the firms should keep an eye on the Net Profit and Net Worth as it is showed a fluctuating tendency at a high percentage. Now-a-days the petroleum sectors should reduce its Manpower cost gradually so as to remove the burden of operating expenses. There should be a more efficient utilization of Employed Capital by the oil and refinery companies and the requirement should be properly assessed. During the study period, profitability measured on the basis of Profit Before Interest and Tax to Net Sales had declined from time to time, which shows that the financial structure of the company failed to increase profitability. High fluctuation has been observed in case of EPS and these shortcomings can impact the enterprise market value adversely. On the basis of above analysis, it is clear that the selected ratios on which the study has been made are not similar for the two firms but the results supported the null hypothesis and proved that all the companies were approaching the same in their financial performance.

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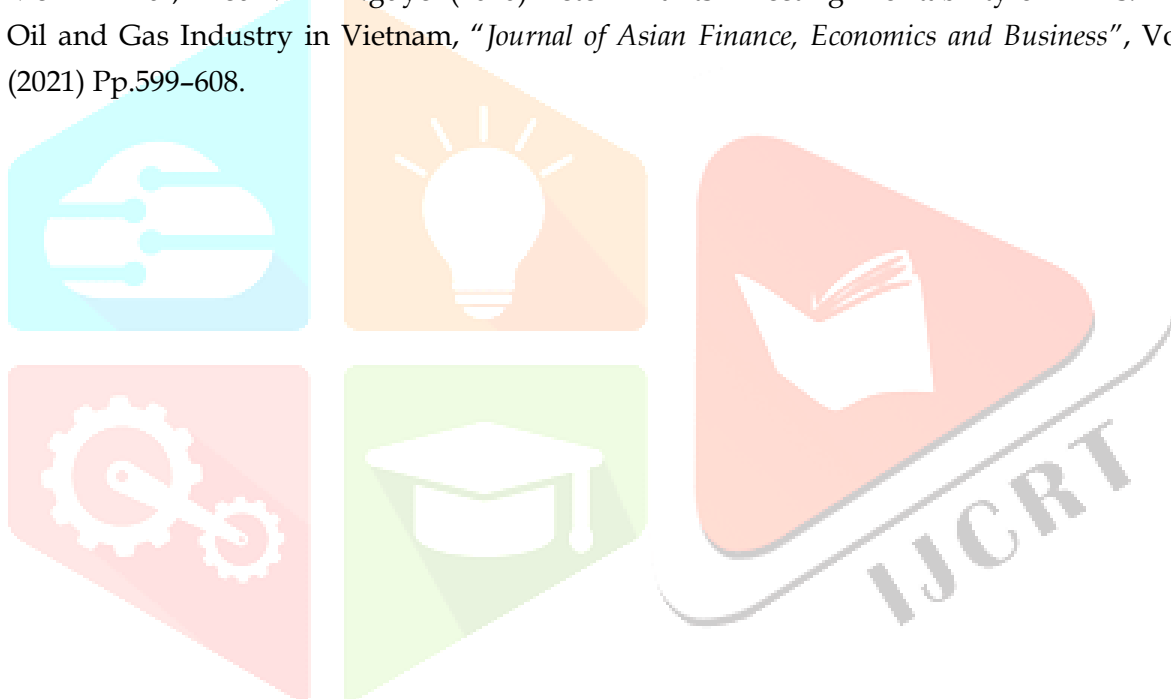


Table 1

Analysis of Economic Value Added (EVA)

(Value Rupees in Crores)

Year / Company	IOCL		ONGC		BPCL		HPCL	
	Value	% as Average Capital Employed	Value	% as Average Capital Employed	Value	% as Average Capital Employed	Value	% as Average Capital Employed
2011-12	57856.54	8.50	111784.13	19.80	14913.86	2.82	13029.04	1.90
2012-13	61124.31	2.98	122967.37	16.13	16577.13	6.88	13607.54	1.58
2013-14	65895.95	3.50	135631.15	15.59	19325.78	9.65	14787.89	3.79
2014-15	67828.01	2.17	143622.85	11.84	22366.26	11.56	15816.15	6.24
2015-16	74636.52	7.68	154721.09	10.78	27322.96	18.02	17969.81	9.63
2016-17	80945.41	14.60	160868.93	8.62	29574.14	16.55	20314.30	15.26
2017-18	91026.38	12.90	171810.63	10.14	34052.50	13.61	23933.99	14.37
2018-19	91732.85	9.30	181677.36	13.16	36722.27	11.34	28174.82	12.04
2019-20	86753.97	10.59	185170.31	9.15	33214.38	2.70	28962.36	1.68
2020-21	99228.49	11.29	194187.68	4.78	54544.55	12.27	36186.11	14.20
Mean	77702.84	8.35	156244.15	12.00	28861.38	10.54	21278.20	8.07
CV	0.18	0.51	0.18	0.36	0.41	0.49	0.37	0.70
MAX	99228.49	14.60	194187.68	19.80	54544.55	18.02	36186.11	15.26
MIN	57856.54	2.17	111784.13	4.78	14913.86	2.70	13029.04	1.58

Sources: Computed Contd.....

Table 1

Analysis of Economic Value Added (EVA)

(Value Rupees in Crores)

Year / Company	GIL		OIL		CPCL		Industry Average	
	Value	% as Average Capital Employed	Value	% as Average Capital Employed	Value	% as Average Capital Employed	Value	% as Average Capital Employed
2011-12	21625.83	14.70	17721.34	20.00	3789.32	3.53	34388.58	10.18
2012-13	24227.80	13.51	19211.48	18.81	2026.29	2.89	37105.99	8.97
2013-14	27072.33	11.70	20708.18	11.59	1722.44	4.57	40734.82	8.63
2014-15	29119.52	7.59	21497.56	8.28	1655.07	1.45	43129.35	7.02
2015-16	35094.55	4.93	22732.59	8.19	2358.41	10.49	47833.70	9.96
2016-17	38149.37	8.17	23062.93	6.37	3313.80	13.86	50889.84	11.92
2017-18	40328.12	10.36	22669.96	9.20	3835.22	11.20	55379.54	11.68
2018-19	44092.94	14.20	22888.71	8.01	3282.63	6.21	58367.37	10.61
2019-20	42250.99	15.60	23047.05	7.90	1162.31	4.41	57223.05	7.43
2020-21	43824.56	9.26	24418.69	5.23	1393.88	2.83	64826.28	8.55
Mean	34578.60	11.00	21795.85	10.36	2453.94	6.14	48987.85	9.49
CV	0.24	0.32	0.09	0.49	0.41	0.69	0.21	0.18
MAX	44092.94	15.60	24418.69	20.00	3835.22	13.86	64826.28	11.92
MIN	21625.83	4.93	17721.34	5.23	1162.31	1.45	34388.58	7.02

Sources: Computed

Table 2

Chi - Square Analysis of Actual and Trend Values of EVA as Percentage of Capital Employed

Year / Company	IOCL			ONGC			BPCL			HPCL		
	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E
2011-12	8.50	4.36	3.94	19.80	17.55	0.29	2.82	8.66	3.94	1.90	3.09	0.46
2012-13	2.98	5.24	0.98	16.13	16.31	0.00	6.88	9.08	0.53	1.58	4.19	1.63
2013-14	3.50	6.13	1.13	15.59	15.08	0.02	9.65	9.50	0.00	3.79	5.30	0.43
2014-15	2.17	7.02	3.35	11.84	13.85	0.29	11.56	9.91	0.27	6.24	6.41	0.00
2015-16	7.68	7.91	0.01	10.78	12.62	0.27	18.02	10.33	5.72	9.63	7.52	0.59
2016-17	14.60	8.79	3.83	8.62	11.38	0.67	16.55	10.75	3.13	15.26	8.62	5.11
2017-18	12.90	9.68	1.07	10.14	10.15	0.00	13.61	11.17	0.53	14.37	9.73	2.21
2018-19	9.30	10.57	0.15	13.16	8.92	2.02	11.34	11.58	0.01	12.04	10.84	0.13
2019-20	10.59	11.46	0.07	9.15	7.68	0.28	2.70	12.00	7.21	1.68	11.94	8.82
2020-21	11.29	12.35	0.09	4.78	6.45	0.43	12.27	12.42	0.00	14.20	13.05	0.10
X²	14.62			4.27			21.35			19.49		
Critical Value of X² with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level												

Sources: Computed

Contd.....

Table2

Chi - Square Analysis of Actual and Trend Values of EVA as Percentage of Capital Employed

Year / Company	GIL			OIL			CPCL		
	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E	Actual EVACE (O)	Trend Value (E)	(O-E) ² /E
2011-12	14.70	11.28	1.04	20.00	16.53	0.73	3.53	4.91	0.39
2012-13	13.51	11.22	0.47	18.81	15.16	0.88	2.89	5.19	1.02
2013-14	11.70	11.16	0.03	11.59	13.79	0.35	4.57	5.46	0.15
2014-15	7.59	11.10	1.11	8.28	12.41	1.38	1.45	5.73	3.20
2015-16	4.93	11.03	3.38	8.19	11.04	0.74	10.49	6.01	3.35
2016-17	8.17	10.97	0.72	6.37	9.67	1.13	13.86	6.28	9.15
2017-18	10.36	10.91	0.03	9.20	8.30	0.10	11.20	6.55	3.29
2018-19	14.20	10.85	1.04	8.01	6.93	0.17	6.21	6.83	0.06
2019-20	15.60	10.78	2.15	7.90	5.56	0.99	4.41	7.10	1.02
2020-21	9.26	10.72	0.20	5.23	4.19	0.26	2.83	7.38	2.80
X²	10.14			6.71			24.41		
Critical Value of X² with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level									

Sources: Computed