INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESIS (ES)

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

LIMITATIONS

SCOPE FOR FURTHER RESEARCH

REFERENCES

APPENDIX/ANNEXURE

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BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.

- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

UNPUBLISHED DISSERTATIONS

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

TRENDS IN PRODUCTION, SALES AND COST STRUCTURE OF SELECT OIL AND GAS INDUSTRIES IN INDIA

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ABSTRACT
In this research article, the trends in production, sales, cost of sales and other costs have been analysed in detail. Trend analysis is effective only when relevant and related items are studied together. Thus, the results, which are shown, have to be viewed in conjunction with the resources employed. For the purpose of analysis, all components have been pooled. Value is calculated in select oil companies to analyze the production, sales and cost position of industry under study. 2006-07 has been chosen as the base year equal to 100. Index numbers have been calculated for the remaining years based on the base year.

KEYWORDS
oil and gas industries, oil and gas production.

JEL CODE
G30

INTRODUCTION
Financial analysis is a process of getting an insight into the operating activities of a business enterprise. It is a process of selection, relation and evaluation. The first step is to select from the total information available about a business the data relevant to the decision under consideration. The second is to arrange the relevant data in a way that will bring out significant relationships. The final step is to study these relationships and evaluate or interpret the results. The important areas of performance evaluation for the present study are Production Trends, Sales Trends, Cost Trends.

Production Trend - Production is one of the most important areas of performance. Production performance of a company can also be measured by analyzing capacity utilization. The production of a concern or sector can be compared for different years with that of the companies in the same industry and may give an idea as to how the company has performed in the particular year under consideration.

Sales Trend - The figure of sales is the index of progress made by the company. It can also be used as an indicator of managerial efficiency. Marketing of the product is also one of the most important areas of operations. In the process of performance evaluation, sale indices are computed and compared with those of other similar companies for arriving at an objective conclusion.

Cost Trend - Cost is defined as 'the amount of expenditure incurred on or attributable to a specified article, product or activity'. Thus, cost has been defined as expenditure incurred on a thing. A study of cost trends helps in measuring efficiency or inefficiency with which each task has been carried out. It also helps in having control over expenditure and in fixing prices on the basis of the study of the cost trend which plays an important role in forecasting, planning, and budgeting and in breakeven analysis; wasteful expenditure, if any, can be avoided.

OBJECTIVES OF THE STUDY
The study is carried out with the following specific objectives:
1. To analyse the trends of production, sales and cost of the selected oil and gas industries in India.
2. To present summary of the study and to make suitable suggestion for development in the competitive business world.

RESEARCH METHODOLOGY
PERIOD OF STUDY
The period 2006-07 to 2015-16 is selected for this study of oil and gas industry in India. This 10 years period is chosen in order to have a fairly long, cyclically well balanced period, for which reasonably homogenous, reliable and upto-date financial data would be available. Further, the span chosen for the study is the period of the beginning of liberalization measures introduced by the Government of India. Hence, the period 2006-07 to 2015-16 is an era of growth of Indian oil and gas industries has got genuine economic significance of its own.

SELECTION OF SAMPLE
Keeping in view the scope of the study, it is decided to include all the companies under Indian oil and gas industry working before or from the year 2006-07 to 2015-16. But, owing to several constraints such as non-availability of financial statements or non-working of a company in a particular year etc., the researcher is compelled to restrict the number of sample companies to ten. Therefore, this study is expost facto based on survey method making a survey of ten companies under Indian Oil and Gas Industry. There are more than ten companies operating in Oil and Gas Industry in India. The details of the financial data available in only ten companies of Indian oil and gas industries.

SOURCE OF DATA
The study is mainly based on secondary data. The major source of data analyzed and interpreted in this study related to all those companies selected is collected from **"PROWESS"** database, which is the most reliable on the empowered corporate database of Centre for Monitoring Indian Economy (CMIE). It contains a highly normalized database built on a sound understanding of disclosure in India, which include public, private, co-operative and joint sector companies. The database provides financial statements, ratio analysis, funds flow, cash flow, product profiles, returns and risk on the stock market etc.

Besides prowess databases, relevant secondary data have also been collected from BSE Stock Exchange Official Directory, CMIE Publications, Annual Survey of Industry, Business newspapers, Reports on Currency and Finance, Libraries of various Research Institutions, through Internet etc. The study required variety of data therefore; websites like http://indiainfoline.com, www.indiastat.com and www.google.com have been comprehensively searched.

LIMITATIONS OF THE STUDY
The data used in this study have been taken only secondary sources and as such it findings depends entirely on the accuracy of such data.

LITERATURE REVIEW

It is mandatory to review the literature available with respect to the area of the research study. Measuring the performance of the corporate sector has always been an area of controversies from the point of view of the government, shareholders, prospective inventors, creditors, employees and any other stockholders. Several studies have been undertaken to evaluate the financial performance in the corporate sector. This chapter presents some of the studies conducted by financial analysis.

Agiomirgianakis, Voulgaris and Papadogonas (2006)[1] examined financial determinants of firm profitability and employment growth are identified by using a panel of 3094 Greek manufacturing firms for 1995 and 1999, just before the country's accession to the European Monetary Union. The analysis includes stepwise regression models.

The independent variables used are size, age, location and exports, as well as a number of financial ratios describing the asset structure, capital structure, reliance on debt, employee profitability and managerial efficiency.

The results show that size, age, exports, debt structure, investment in fixed assets and profitability assets and sales contribute significantly to firm growth. Econometric results also reveal that firm size, age, exports, sales growth, reliance on debt on fixed assets and investment growth, as well as efficient management of assets, influence profitability.

Sam Luther (2007)[2] analyzed the liquidity, Risk and profitability. To measure the liquidity two important ratios are used; they are current ratio and quick ratio. There are two major categories of profitability ratios 1. profit in relation to sales, and 2. profits in relation to investments. One of the major drawbacks of the profits in relation to sales is that it ignores the Japanese electric power firms have enough managerial and financial capabilities even if the American financial standard is hypothetically introduced into the evaluation of their financial performances. However, the empirical results also indicate that the empirical results also indicate that the Japanese power industry performs barely above the American standard. Thus, corporate leaders in the Japanese power industry need to pay more serious attention to their corporate finances and financial strategies.

Such financial perspective will be increasingly important along with the current deregulation policy of the Japanese government deregulation policy of the Japanese government.

Dr. B. Ramachandra Reddy and Dr. B. Yuvaraja Reddy (2007)[3] in their study, an attempt has been made to examine the effect of selected variables on MVA of selected cement companies in India from 01.04.2003 to 31.03.2004. For the purpose of the study 3 major cement units and 7 mini plants were selected. The MVA has been taken as a dependent variable and return on net worth, capital productivity, labour productivity, earnings per shares, economic value added, return on sales (or) turnover, return on total assets and cash profits have been selected as independent variables. It can be inferred them regression analysis that none of the factors was found to have significant impact on MVA. But EPS was found to have a negative and significant effect on MVA. This implies that the MVA of cement companies is not only affected by selected independent variables but also influenced by other factors.

KasturiRangan, S.(2008)[4] in his study made an attempt to identify the factors determining the profitability of the banks through partial correlation co efficient for the period from March 2000 to 2007. These banks were categorized into 5 different groups for the purposes of analysis.

Victoria Bellou, Andronikidis,(2009)[5] depicts in their study that organizational climate, which includes the setting of values, rules and priorities to be followed by all individuals involved in the organization, has been receiving increased attention over recent years. The purpose of this paper is to look into the prevalent organizational climate within hotels and to identify variations employees' perception, based on whether they hold managerial or non-managerial positions. The results show that efficiency, reflexivity, innovation and flexibility, supervision support and quality were among the most prominent characteristics affected by organizational climate, whereas outward focus and pressure to produce were least affected. Moreover the only differences revealed between managerial and non-managerial employees were in the areas involvement and efficiency.

Ray Sarbapriya and Mihir Kumar Pal (2010)[6] in their study reflect dismal declining trend after the path -breaking economic reforms in 1991. There is an urgent need for developing a comprehensive plan for cement industry so that it can survive in the post -liberalized Indian environment and make its presence global.

Chandrakumarmangalam, P Govindasamy (2010)[7] in their study have discussed the impact of leverage on the profitability of the firm. The relationship between the debt and equity ratio and earnings per share and how effectively the firm be financing. The leverage and profitability and growth are related and the leveraging impact on the profitability of the firm.

Glocker, Daniela (2011)[8] in this paper I evaluate the effect of student aid on the success of academic studies. I focus on two dimensions, the duration of study and the probability of actually graduating with a degree. To determine the impact of financial student aid, I estimate a discrete-time duration model allowing for competing risks to account for different exit states (graduation and dropout) using individual level panel data from the German Socio-Economic Panel (SOEP) for the years 1984-2007. My findings suggest that the duration of study is responsive to the type of financial support a student receives. There are three main results. First, student aid recipients finish faster than comparable students who are supported by the same amount of parental/private transfers only. Second, although higher financial aid does on average not affect the duration of study, this effect is (third) dominated by the increased probability of actually finishing university successfully.

Rai Sandeep Kumar and Dwivdei Shailesh K, (2011)[9] in their study, stated that the Cement Industry in India is moment. Driven by a booming real estate sector, global demand and increased activity in his fracture development such as state and national highways, the cement industry has witnessed tremendous growth. The realty sector boomed but could not sustain for long and it collapsed because of the loan defaults. This situation spread like wild fiber and put the Indian economy in danger like the US economy. The US financial crises have affected many countries of the world and India is no exception to it. Because of these financial crises, Indian economy has lost more than 2% of GDP growth. Almost all sectors of the Indian economy have been affected by this crisis.

N.VenkataRamana(2012)[10] Bankruptcy is a situation where the liabilities exceed the assets in the company, generally it happens due to under capitalization, not maintain sufficient cash, sources are not utilize properly, in efficient management in all activities, sales decline and market situation etc. Predicting bankruptcy is a dire vital for taking curative and corrective measures for better financial planning, profitability, liquidity and solvency efficiency of the firm. In this study an attempt have been made know the financial performance and also to predict the risk of bankruptcy for selected cement companies from 2001-to-2010.

Liquidity Ratios; Working Capital Ratios, Solvency Ratios and Altman Z-Score Analysis was made to diagnose the problem of bankruptcy. The result reveals that liquidity, working capital turnover efficiency and solvency position of the selected cement companies are not satisfactory. In this study the Z-Score analysis results shows that KCP Ltd and Kesoram Industries Ltd have poor financial performance and Dalmia Bharat Ltd is at the edge of bankruptcy.

Sachin Mittal, (2012)[11] Indian cement industry is the second largest cement industry in the world. The paper attempts to examine the working capital trends on the basis of size of working capital, ratio of working capital to total assets, fitting trend line analysis, and correlation amongst the profit, sales and current assets. The present study opined that in India, cement industry has low level of profitability due to mismanagement of current assets and current liabilities. The main objective of working capital management is to arrange the needed funds at right time from the right sources and for the right period so that tradeoff between liquidity and profitability may be realized. The study unearthed that the cement industry in India are failing to maintain the required level of working capital.

Sarangarajan (2013)[12] Indian cement industry is the second largest cement industry in the world. The paper attempts to examine the performance and management of assets of the select cement companies in Tamilnadu with the support of Trend analysis. Data employed in this study are all secondary in nature which is frequently inspected by Institute of Charted Accountants of India and Security Exchange Board of India. The pooled data collection is to assess the impact of regulation on performance of asset of cement companies in Tamil Nadu over the time horizon viz., 1996-97 to 2005-06 The variables used in this study are Land, plant, stock, cash and debtors. The authors have chosen four cement companies in Tamilnadu and using a statistical technique as Trend analysis with the aid of Minitab software version 15. On an analysis it is found that cement plants taken first study have procured land not only for plant construction but also mining lands keeping the future expansion/new plant on a long term basis. It is natural for Tamil Nadu cement factories to hold higher inventory of limestone because of various factors involved in mining operation and location of the mining land from the factory. As found in the Trend Analysis the cement plants had changed their marketing policy from "Cash and Carry" to credit sales. This change in policy of offering credit to large consumers is a major cause for higher debtors balance in the recent years.

The cement plants in Tamil Nadu in their efforts to increase their market share started offering credit to the consumers especially for real estate builders, which has resulted in low cash balance. It is expected that change in cement customer mix will result in a comfortable cash balance in future. It is found that so many small cement industries have been closed because of improper cash management. This has resulted in cash crunch In Cash Trend Analysis. The consumption of cement by government increases, this trend may be expected to decline.

Dr. P. Krishna Kumar (2013)[13] The study was designed to investigate the progress of Indian cements industry since 1991, in terms of its growth in installed capacity, production, exports, and value additions; In detail the research methodology used for the study that has focused on the past, present and the future performance of Indian Cement Industry (ICI) at the macro level and the Chettinadu Cement Corporation Limited (CCCL) at the micro level as a case firm. The study purely relies on secondary data. The secondary data were collected for a period of fifteen years (1991-92 to 2005-06) from the database maintained and made available by several organizations viz., Cement Manufacturers Association, Export Import Bank of India, Center for Monitoring Indian Economy etc. for the purpose of effective periodical analysis. In order to know the progress of ICI, annual time series data for the six variables were.

Studied for trend, cyclical variation and random variation, as seasonal variation was not observable in the annual data. The estimated trend equations were evaluated for their goodness of fit and predictive power and found valid to draw inferences. The values of the six variables were projected to the next five years. Estimated values were adjusted for the likely effects of cyclical variations (c) the reliability of predicted values were evaluated with the help of forecasting error. In the end of the study implications and conclusion were provided.

Acharekar Sachin Vilas Vijaya (2013)[14] Working capital is considered to be life -giving force to an economic entity and managing working capital one of the most important functions of corporate management. Working capital management (WCM) is the management of short – term financing requirements of a firm which includes maintaining optimum balance of working capital components –receivables, inventory and payables – and using the cash efficiently for day – to -day operations. The main objectives of this study are to examine and evaluate the working capital management in Cement Industries Limited, examine the management pattern of inventory, liquidity position and receivables management. This also finds the relationship between Working Capital Efficiency and Profitability, Profitability.

RESULTS AND DISCUSSIONS

1. TRENDS IN PRODUCTION

Production may be considered as the backbone of a manufacturing enterprise. In business enterprise, production will be considered to be very effective and useful when it serves the dual purpose: 1) It must operate primarily to satisfy customer demands and 2) It must permit production activities to operate in an economical and efficient manner. In the economic sense "production" means both making goods and rendering services that add value to a product even though there are no utilities and utilization of resources such as, labour, energy, materials, equipment and machinery, etc. Utilities are goods and services which have want satisfying powers.[15]

Ho: There is no significant difference between actual value of production and the trend value of production among different years.

The trends in production of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It exhibits that the highest mean value of production was Rs.351459.65 crores in IOCL which accounts of total industrial production, followed by Rs.175672.80 crores in BPCL production. The remaining production of industry by HPCL was Rs.156523.32 crores, followed by ONGC with Rs. 71338.54 crores, GAIL with Rs.37040.86 crores and OIL with Rs.8872.69 crores. On the basis of average production, the maximum contribution together by IOCL and BPCL of industrial production.

The value of production of the oil industry for the period of study from 2006-07 to 2015-16 has been shown in Table 1. The production of oil industry has marked an increasing as well as fluctuating trend throughout the period. In the year 2006-07 the production was Rs.481121.71 crores which increased to Rs.861354.42 crores in 2015-16, marking an increase of 179.03 per cent in the indices. The mean value of production of oil industry during the study period was Rs.800907.88 crores. The compound annual growth rate of production was 15.85 per cent. The CV value of actual value of production was 28.11 per cent which indicates more fluctuation in the production of oil industry during study period.

The comparison of actual value of production has been shown in Table 1 which depicts that the trend values differed materially from the actual production. The original values of production were lower than the trend values in 2006-07, 2007-08, 2008-09, 2009-10 and 2010-11. It may be pointed out that in the remaining year, the original values of production were higher than the trend values. The calculated χ^2 value comes to 492079.25 which is higher than the table value of 16.919 at 5 per cent level. It indicates that the differences between actual values of production and trend values of production in different years were significant. Further the fitted linear regression can be used for prediction of production.

2. TRENDS IN SALES

'Sales' is the value of output supplied to the customers. It is the life blood of a business enterprise without which the business cannot survive. Further, 'Sales' is the indicator of the operational efficiency of management in how efficiently the management has used the assets of the business. The higher volume of sales is more efficient the management. Sale is also related to profitability of an enterprise. The higher amount of sales more profitable the business is and vice versa. The matching of costs incurred during a certain period with sales generated during that period reveals the net income or net loss. The trend of sales indicates the direction in which a concern is going and on the basis of which forecast can be made. The trend analysis of sales helps to understand the growth of a business enterprise.

Ho: There is no significant difference between the actual value and trend value of sales among different years.

The trends in sales of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It exhibits that the highest mean value of sales was Rs.350707.47 crores in IOCL which accounts of total industrial sales, followed by Rs.175378.60 crores in BPCL sales. The remaining sales of industry by HPCL was Rs.156127.04 crores, followed by ONGC with Rs. 71292.02 crores, GAIL with Rs.36960.75 crores and OIL with Rs.8870.14 crores. On the basis of average sales, the maximum contribution together by IOCL and BPCL of industrial sales.

The value of sales of the oil industry for the period of study from 2006-07 to 2015-16 has been shown in Table 1. The actual sales of oil industry have marked an increasing trend throughout the period. In the year 2006-07 the sales were Rs.480800.12 crores which increased to 866319.53 crores in 2015-16, marking an increase of 180.18 indices. The mean value of sales during the study period was Rs.799336.02. The SD and CV value were 227194.47 and 28.42 per cent which indicate more fluctuation in the sales of oil industry during the study period. The CAGR values were registered at 2.93 per cent.

The comparison of actual value of sales and trend value of sales has been shown in Table 1 which depicts that the trend values differed materially from the actual sales except in the year 2007-08 and 2011-12. The original values of sales were lower than the trend values in the year 2006-07, 2007-08, 2009-10, 2010-11 and 2015-16. In the remaining years, the original values of sales were higher than the trend values. The calculated χ^2 value comes to 124986.30 which is higher than the table value of 16.919 at 5 per cent level. It indicates that the differences between actual value of sales and trend value of sales in different years were significant.

3. TRENDS IN COST OF PRODUCTION

The price for the product is usually fixed by taken into account the cost of the production and adding a mark-up which may be stated as a percentage of the cost for profit. The cost of production value is determined by the sum of the cost of the resources that went into making it. The cost can be composed of the cost of any of the factors of production including prime cost, work cost, administrative cost and selling cost, etc. Broadly, the determinants of cost of production are: the size of the plant, the level of production, that is, the utilization of the plant, the nature of technology used the process of the various inputs like raw materials, labour, power and fuel, managerial and labour efficiency, etc. For instance, the larger the size of the plant, the greater are the internal economies of production and consequently. The large firm will experience increasing returns of decreasing cost. In other words, the average physical product will rise and correspondingly, the average cost will decline. Likewise, there will be better utilization of plant, the use of better technology, and fall in the cost of production. In the same manner, a fall of prices of inputs like raw materials, or a fall in transport charges will also reduce the average cost of production.[16]

Ho: There is no significant difference between actual values and trend values of cost of production among different years.

The trends in cost of production of select oil companies for the periods from 2006-07 to 2015-16 have been shown in Table 1. It depicts that the highest mean value of cost of production was Rs.332971.16 crores in IOCL, which accounts of total industrial cost of production, followed by Rs.165920.26 crores in BPCL cost

of production. The remaining cost of production of industry by HPCL was Rs.148289.77 crores, followed by GAIL with Rs.31905.46 crores, ONGC with Rs.26857.06 crores and OIL with Rs.3091.64 crores. On the basis of average cost of production, the maximum contribution together by IOCL and BPCL of industrial cost of production.

The value of cost of production of oil industry for the period of study from 2006-07 to 2015-16 has been shown in Table 1. The cost of production of oil industry has marked an increasing trend throughout the period. The mean value of cost of production of oil industry during the study period was Rs.709035.39 crores. The SD and CV values of cost of production were 208317.49 and 29.38 per cent respectively during the study period. The CAGR value was marked 15.10 per cent.

The comparison of actual value and trend value of cost of production has been depicted in Table 1 which shows that the trend value differed materially from the actual value of cost of production except during the year 2006-07 to 2015-16. The original values of cost of production were lower than the trend values from 2006-07, 2007-08, 2009-10, 2010-11 and 2015-16. It may be pointed out that the lower cost of production incurred in the oil industry. In the remaining year, the original values of cost of production were higher than the trend values. The calculated χ^2 value comes to 133072.55 which is higher than the table value of 16.919 at 5 per cent level of significance. It indicates that the difference between the actual and trend values of cost of production in different years were significant.

4. TRENDS IN RAW MATERIAL EXPENSES

Raw material is a very important factor of production. It includes physical commodities used to manufacture the final end product. It is the starting point from which the first operations start. It is the first and most important element of cost. According to the Indian Association of Materials Management, 64 paise in a rupee are spent on raw materials by Indian industries. Materials are the principal substances used in production, and are transferred into finished goods. Raw material consumed consists of the amount spent on various types of raw materials and components consumed during the course of manufacturing. Further, the figure has been arrived at by adding the cost of opening stock of raw materials to the purchase of raw material and deducting the cost of closing stock. It includes the amount spent on coal, dolomite, iron ore, coke, limestone, etc.

Ho: There is no significant difference between actual values and trend values of raw material expenses among different years.

The trends in raw material expenses of select oil companies for the periods from 2006-07 to 2015-16 have been shown in Table 1. It depicts that the highest mean value of raw material expenses was Rs.308259.82 crores in IOCL, which accounts of total industrial raw material expenses, followed by Rs.148934.94 crores in HPCL raw material expenses. The remaining raw material expenses of industry by GAIL was Rs.28220.69 crores, followed by BPCL with Rs.11479.03 crores, OIL with Rs.8731.93 crores and ONGC with Rs.5681.67 crores. On the basis of average raw material expenses, the maximum contribution together by IOCL and HPCL of industrial raw material expenses.

The value of raw material expenses of oil industry during the study period from 2006-07 to 2015-16 has been shown in Table 1. The raw material expenses of oil industry have marked an increasing trend throughout the period. In the year 2006-07, raw material expenses was Rs.312565.31 crores which crossed the mark of Rs.587812.41 crores during the year 2011-12 and reached Rs.526539.78 crores in the year 2015-16, marking an increase of 168.46 indices. The mean value of raw material expenses was Rs.511308.07 crores. The SD and CV values were 138740.85 and 27.13 per cent respectively, which indicates more fluctuation in the raw material expenses of oil industry during the study period. The CAGR value was 13.35 per cent.

The actual and trend value of raw material expenses comparison shown in the Table 1 depicts that the trend value differed from the actual value of raw material. The original values were lower than the trend values from 2006-07, 2007-08, 2009-10, 2010-11 and 2015-16. It indicates during the years the lower raw material expenses were incurred. In the remaining years, the original values were higher than the trend values. The calculated χ^2 value comes to 90682.93 which is higher than the table value of 16.919 at 5 per cent level. It indicates that the differences between actual value and trend value of raw material expenses in different years were significant.

5. TRENDS IN WAGES AND SALARIES EXPENSES

Wages and salaries as a means of providing income for the workers become the only sources of income, which determines their economic survival in the society; so they try to force the employers to follow a method of payment, which entitles them to higher wages. High wages and salaries are given to workers to become efficient and produce more. Increased production will result in lower cost per unit. Thus, cost of production per unit will come down. The amount paid to employees by way of salaries, wages, bonus, gratuities, and contribution towards the provident funds, superannuation funds, family pension scheme, staff welfare expenses, Voluntary Retirement Service (VRS) compensation funds have been classified as 'Wages and Salaries' in the present study.

Ho: There is no significant difference between actual value and trend value of wages and salaries expenses among different years.

The trends in wages and salaries expenses of select oil companies for the periods from 2006-07 to 2015-16 have been shown in Table 1. It depicts that the highest mean value of wages and salaries expenses was Rs.6534.31 crores in ONGC, which accounts of total industrial wages and salaries expenses, followed by Rs.5700.51 crores in IOCL wages and salaries expenses. The remaining wages and salaries expenses of industry by HPCL was Rs.1803.33 crores, followed by OIL with Rs.1514.16 crores, GAIL with Rs.802.33 crores and BPCL with Rs.298.80 crores. On the basis of average wages and salaries expenses, the maximum contribution together by ONGC and IOCL of industrial wages and salaries expenses.

The value of wages and salaries expenses of oil industry for the period of study from 2006-07 to 2015-16 has been shown in Table 1. The wages and salaries expense of oil industry have marked an increasing trend from 2006-07 to 2010-11, which reached the mark of 205.28 indices. In the year 2011-12 and 2013-14, the wages and salaries expenses declined to Rs.15772.01 crores and Rs.21794.75 respectively again increased to Rs.22160.49 crores in 2015-16, marking an increase of 268.22 indices from 2006-07 to 2015-16. The mean value of wages and salaries expenses was Rs.16653.44 crores. The SD and CV values were 5215.79 and 31.32 per cent, which indicates the fluctuation found during the study period. The CAGR value was 21.23 per cent.

The comparison of actual value and trend value of wages and salaries expenses is depicted in the Table 1 which shows that the trend values differed materially from the actual wages and salaries expenses except the years from 2006-07 to 2015-16. The actual value of wages and salaries expenses is lower than the trend value during the year 2006-07, 2007-08 to 2011-12, 2013-14, 2014-15 and 2015-16. The actual value is higher than the trend value in 2008-09, 2009-10, 2010-11 and 2012-13. It may be pointed out that the higher wages and salaries expenses were incurred the oil industry. The calculated χ^2 value is 1136.57 which is higher than the table value of 16.919 at 5 per cent level of significance. It indicates that the difference between actual and trend values of wages and salaries in different years were significant.

6. TRENDS IN MANUFACTURING EXPENSES

The manufacturing expenses include freight inwards and transportation, packaging materials, job work/contract/processing charges, stores consumed, repairs on plant and machinery/buildings, technical fees paid, license fee/operation charges and other operating expenses have been grouped as manufacturing expenses for the purpose of the study.

Ho: There is no significant difference between actual value and trend value of manufacturing expenses among different years.

The trends in manufacturing expenses of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It depicts that the highest mean value of manufacturing expenses was Rs.11695.95 crores in IOCL which accounts of total industrial manufacturing expenses, followed by Rs.11633.69 crores in ONGC manufacturing expenses. The remaining manufacturing expenses of industry by HPCL was Rs.1484.85 crores, followed by GAIL with Rs.1044.52 crores, OIL with Rs.965.85 crores and BPCL with Rs.229.36 crores. On the basis of average wages and salaries expenses, the maximum contribution together by IOCL and ONGC of industrial wages and salaries expenses.

The manufacturing expenses of oil industry for the period of study from 2006-07 to 2015-16 have been shown in Table 1.The manufacturing expenses marked an increasing trend throughout the study period except in the year 2011-12. In the year 2006-07, the manufacturing expenses were Rs.16582.93 crores which increased to Rs.37766.77 crores in 2015-16, marking an increase of 227.74 per cent in the indices. The mean value was Rs.27054.21 crores. The CAGR value was 16.55 per cent. The SD and CV values were 7535.50 and 27.85 per cent which shows more fluctuation in the manufacturing expenses of Oil industry during the period under study.

The comparison of actual and trend value of manufacturing expenses of oil industry has been shown in Table 1 which depicts that the trend value differed materially from the actual manufacturing expenses. The original values of manufacturing expenses were lower than the trend values from 2006-07 to 2008-09 and 2011-12 to 2014-15. In the remaining years the original values were higher than the trend values. It may be pointed out that higher manufacturing expenses were incurred

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the oil industry. The χ^2 value comes to 4869.12 which is found to be statistically significant. It indicates that the differences between the actual and trend of manufacturing expenses in different years were significant.

7. TRENDS IN POWER AND FUEL EXPENSES

Electricity expenses in oil industry play a vital role. For the purpose of analysis, any expenses related to electricity and for other fuel have been considered under this study.

Ho: There is no significant difference between the actual and trend value of power and fuel expenses among different years.

The trends in power and fuel expenses of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It exhibits that the highest mean value of power and fuel expenses was Rs.3202.24 crores in IOCL which accounts of total industrial power and fuel expenses, followed by Rs.1607.40 crores in GAIL power and fuel expenses. The remaining power and fuel expense of industry by HPCL was Rs.658.48 crores, followed by ONGC with Rs.338.81 crores, BPCL with Rs.268.28 crores and OIL with Rs.38.37 crores. On the basis of average power and fuel expenses, the maximum contribution together by IOCL and GAIL of industrial power and fuel expenses.

The power and fuel expenses of oil industry for the period of study from 2006-07 to 2015-16 have been shown in Table 1. The power and fuel expenses of oil industry have marked an increasing trend throughout the period. In the year 2006-07, the power and fuel expenses were Rs.1954.05 crores which increased to Rs.9125.37 crores marking an increase of 467.00 per cent of the indices. The mean value of power and fuel of oil industry during the study period was Rs.6113.58. The SD and CV were 3417.64 and 55.90 per cent respectively, which indicates that there was fluctuation found during the study period. The CAGR value was 16.67 per cent.

The actual and trend values of power and fuel expenses comparison are depicted in Table 1, which shows that the trend value differed materially from the actual value of power and fuel expenses except in the year 2006-07. The original values of power and fuel expenses were lower than the trend values from 2007-08 to 2010-11 and 2015-16. In the remaining years, the original values of power and fuel expenses were higher than the trend values. The calculated χ^2 value comes to 1716.87 which is found to be statistically significant. It indicates that the differences between actual and trend values of power and fuel expenses in different years were significant.

8. TRENDS IN SELLING AND ADMINISTRATIVE EXPENSES

Selling and distribution expenses include the amount spent during the course of sales, boosting the sales and delivery of goods sold has been termed as selling and distribution expenses. The expenses relating to advertisement, commission to selling agents, marketing expenses, service charges, delivery charges, freight and transportation etc. are covered under the above head. The expenses relating to office and general administration of companies like the director's remuneration, legal expenses, rent, rates, taxes and depreciation of office building and equipment have been grouped as administrative expenses.

Ho: There is no significant difference between actual value and trend value of selling and administrative expenses among different years.

The trends in selling and administrative expenses of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It exhibits that the highest mean value of selling and administrative expenses was Rs.27662.55 crores in ONGC, which accounts of total industrial selling and administrative expenses, followed by Rs.6575.02 crores in IOCL selling and administrative expenses. The remaining selling and administrative expense of industry by HPCL was Rs.4388.74 crores, followed by OIL with Rs.2845.16 crores, BPCL with Rs.1341.43 crores and GAIL with Rs.746.72 crores. On the basis of average selling and administrative expenses, the maximum contribution together by ONGC and IOCL of industrial selling and administrative expenses.

The selling and administrative expenses of oil industry during the study period from 2005-06 to 2014-15 have been shown in Table 1. The selling and administrative expenses of oil industry marked an increasing trend throughout the period. In the year 2006-07 the selling and administrative expenses were Rs.24501.83 crores which increased to Rs.59245.38 crores in 2015-16, marking an increase of 241.80 per cent of indices. The mean value was Rs.43559.62 crores. The SD and CV values were 13880.46 and 31.87 per cent respectively, which indicates that fluctuation was found in the selling and administrative expenses of oil industry during the study period. The CAGR value was 14.24 per cent.

The actual and trend value of selling and administrative expenses comparison is depicted in the Table 1, which shows that the trend value differed materially from the actual value of selling and administrative expenses. The original values lower than the trend values are 2008-09, 2010-11, 2011-12, 2014-15 and 2015-16. It indicates that the lower selling and administrative expenses growth were found in oil industry. In the remaining years, the original values were higher than the trend values. The calculated χ^2 value comes to 1749.13 which is found to be statistically significant. It indicates that the differences between actual value and trend value of selling and administrative expenses in different years were significant.

9. TRENDS IN MISCELLANEOUS EXPENSES

The miscellaneous expenses include donations, loss on sale of assets, loss on sale of investments, loss on revaluation of investment, bad debts, expenses amortized, provision on doubtful loan/deposit/advances and other provision for contingency have been considered under this head for the purpose of the study.

Ho: There is no significant difference between actual value and trend value of miscellaneous expenses among different years.

The trends in miscellaneous expenses of select oil companies for the periods from 2006-07 to 2015-16 have been presented in Table 1. It exhibits that the highest mean value of miscellaneous expenses was Rs.12951.77 crores in ONGC, which accounts of total industrial miscellaneous expenses, followed by Rs.4020.30 crores in IOCL miscellaneous expenses. The remaining miscellaneous expense of industry by HPCL was Rs.1198.41 crores, followed by OIL with Rs.744.11 crores, GAIL with Rs.656.96 crores and BPCL with Rs.39.10 crores. On the basis of average miscellaneous expenses, the maximum contribution together by ONGC and IOCL of industrial miscellaneous expenses.

The miscellaneous expenses of oil industry during the study period from 2006-07 to 2015-16 have been shown in Table 1. The miscellaneous expenses of oil industry have marked a decreasing trend during the year 2009-10, 2010-11, 2012-13, 2013-14 and 2014-15 then slightly increase in 2015-16 finally, it shows a fluctuating trend throughout the study period 2006-07 to 2015-16. In the year 2006-07, the miscellaneous expense were Rs.14501.74 crores which increased to Rs.19531.63 crores in 2015-16. In 2009-10, 2010-11, 2012-13, 2013-14 and 2014-15indices value showed decreasing and finally an index of the study period was 134.68 per cent. The mean value was Rs.19892.25 crores. The SD and CV values were 4092.38 crores and 20.57 respectively, which indicates that fluctuation was found in the miscellaneous expenses of oil industry during the study period. The CAGR value was 11.73 per cent.

The actual and trend value of miscellaneous expenses comparison is depicted in the Table 1 which shows that the trend value differed materially from the actual value of miscellaneous expenses except in 2011-12.The original values were lower than the trend values in the year 2006-07, 2007-08, 2013-14, 2014-15 and 2015-16. In the remaining years, the original values were higher than the trend values. The calculated χ^2 value comes to 7174.92 which is higher than the table value of 16.919 at 5 per cent significant level. It indicates that the differences between actual value and trend value of miscellaneous expenses in different years were significant.

FINDINGS AND SUGGESTIONS

1. The production of oil industry has marked an increasing as well as fluctuating trend throughout the period. The mean value of production of oil industry during the study period was Rs.800907.88 crores. The compound annual growth rate of production was 15.85 per cent. The CV value of actual value of production was 28.11 per cent, which indicates more fluctuation in the production of oil industry during study period.
2. The actual sales of oil industry have marked an increasing trend throughout the period. The mean value of sales during the study period was Rs.799336.02. The SD and CV value were 227194.47 and 28.42 per cent, which indicate more fluctuation in the sales of oil industry during the study period. The CAGR values were registered at 2.93 per cent.
3. The cost of production of oil industry has marked an increasing trend throughout the period. The mean value of cost of production of oil industry during the study period was Rs.709035.39 crores. The SD and CV values of cost of production were 208317.49 and 29.38 per cent respectively during the study period. The CAGR value was marked 15.10 per cent.

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4.   The raw material expenses of oil industry have marked an increasing trend throughout the period. The mean value of raw material expenses was Rs.511308.07 crores. The SD and CV values were 138740.85 and 27.13 per cent respectively, which indicates more fluctuation in the raw material expenses of oil industry during the study period. The CAGR value was 13.35 per cent.

5.   The wages and salaries expense of oil industry have marked an increasing trend from 2006-07 to 2010-11, which reached the mark of 205.28 indices. The mean value of wages and salaries expenses was Rs.16653.44 crores. The SD and CV values were 5215.79 and 31.32 per cent, which indicates the fluctuation found during the study period. The CAGR value was 21.23 per cent.

6.   The manufacturing expenses marked an increasing trend throughout the study period except in the year 2011-12. The mean value was Rs.27054.21 crores. The CAGR value was 16.55 per cent. The SD and CV values were 7535.50 and 27.85 per cent, which shows more fluctuation in the manufacturing expenses of Oil industry during the period under study.

7.   The power and fuel expenses of oil industry have marked an increasing trend throughout the period. The mean value of power and fuel of oil industry during the study period was Rs.6113.58. The SD and CV were 3417.64 and 55.90 per cent respectively, which indicates that there was fluctuation found during the study period. The CAGR value was 16.67 per cent.

8.   The selling and administrative expenses of oil industry marked an increasing trend throughout the period. The mean value was Rs.43559.62 crores. The SD and CV values were 13880.46 and 31.87 per cent respectively, which indicates that fluctuation was found in the selling and administrative expenses of oil industry during the study period. The CAGR value was 14.24 per cent.

9.   The miscellaneous expenses of oil industry have marked a decreasing trend during the year 2009-10, 2010-11, 2012-13, 2013-14 and 2014-15 then slightly increase in 2015-16 finally, it shows a fluctuating trend throughout the study period 2006-07 to 2015-16. The mean value was Rs.19892.25 crores. The SD and CV values were 4092.38 crores and 20.57 respectively, which indicates that fluctuation was found in the miscellaneous expenses of oil industry during the study period. The CAGR value was 11.73 per cent.

CONCLUSION

(Table 2) After going through the above discussion on production and sales of oil industry in India, it is found that there has been an increasing trend throughout the study period except in 2006-07 and 2007-08. The cost structure analysis reveals a significant increasing trend during the study period. The cost structure of oil industry, the proportion of raw material cost with 83.94 per cent got the first place followed by wages and salaries with 2.73 per cent, manufacturing expenses with 1.91 per cent, power and fuel with 1.00 per cent, selling and administrative expenses with 7.15 per cent and miscellaneous expenses with 3.27 per cent during the study period.

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ANNEXURE

TABLE 1: ACTUAL VALUE AND TREND VALUE OF PRODUCTION, SALES, COST PRODUCTION, EXPENSES OF RAW MATERIAL, WAGES & SALARIES, MANUFACTURING, POWER & FUEL, SELLING & ADMINISTRATIVE AND MISCELLANEOUS OF OIL AND GAS INDUSTRY (Values Rs. In Crores)

Year	Value of Production (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Sales (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Cost of Production (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Raw Material Expenses (Rupees In Crores)	Indices	Trend Values (Yc)
2006-07	481121.71	100.00	772181.71	480800.12	100.00	507444.33	415732.91	100.00	447604.32	312565.31	100.00	340316.77
2007-08	550198.07	114.36	778565.30	546106.84	113.58	572309.15	480500.77	115.58	505700.11	362054.84	115.83	378314.83
2008-09	656456.23	136.44	784948.89	661277.46	137.54	637173.97	582372.15	140.08	563795.90	432117.09	138.25	416312.90
2009-10	606140.42	125.98	791332.49	594282.78	123.60	702038.79	525343.88	126.37	621891.70	386869.99	123.77	454310.97
2010-11	741953.13	154.21	797716.08	731332.33	152.11	766903.61	656194.55	157.84	679987.49	479447.46	153.39	492309.03
2011-12	925951.47	192.46	804099.68	921075.54	191.57	831768.43	816531.66	196.41	738083.28	587812.41	188.06	530307.10
2012-13	1046622.74	217.54	810483.27	1040633.00	216.44	896633.25	939373.64	225.96	796179.08	667068.07	213.42	568305.16
2013-14	1117955.64	232.36	816866.86	1113683.20	231.63	961498.07	1005357.74	241.83	854274.87	710159.53	227.20	606303.23
2014-15	1021324.96	212.28	823250.46	1037849.42	215.86	1026362.89	923483.01	222.13	912370.66	648446.17	207.46	644301.30
2015-16	861354.42	179.03	829634.05	866319.53	180.18	1091227.71	745463.56	179.31	970466.46	526539.78	168.46	682299.36
Mean	800907.88	Computed χ^2 Value = 492079.25		799336.02	Computed χ^2 Value = 124986.30		709035.39	Computed χ^2 Value = 133072.55		511308.07	Computed χ^2 Value = 90682.93	
SD	225132.89			227194.47			208317.49			138740.85		
CV (%)	28.11	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level		28.42	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	2.93	29.38	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	15.10	27.13	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	13.35
CAGR (%)	15.85	Result : H$_O$ is Rejected			Result : H$_O$ is Rejected			Result : H$_O$ is			Result : H$_O$ is Rejected	

Year	Value of Wages and Salaries Expenses (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Manufacturing Expenses (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Power & Fuel Expenses (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Selling & Administrative Expenses (Rupees In Crores)	Indices	Trend Values (Yc)	Value of Miscellaneous Expenses (Rupees In Crores)	Indices	Trend Values (Yc)
2006-07	8262.13	100.00	9226.12	16582.93	100.00	17409.89	1954.05	100.00	1286.67	24501.83	100.00	23480.25	14501.74	100.00	18395.79
2007-08	9910.88	119.96	10876.63	18241.99	110.00	19553.07	2222.54	113.74	2359.32	27957.43	114.10	27942.33	14618.79	100.81	18728.34
2008-09	13127.29	158.89	12527.15	21505.43	129.68	21696.26	2451.54	125.46	3431.96	30489.38	124.44	32404.41	22790.51	157.16	19060.88
2009-10	14733.18	178.32	14177.66	27170.41	163.85	23839.44	3670.05	187.82	4504.61	37154.87	151.64	36866.49	20754.70	143.12	19393.43
2010-11	16960.38	205.28	15828.18	33377.32	201.28	25982.62	4935.91	252.60	5577.26	39651.38	161.83	41328.58	20467.64	141.14	19725.98
2011-12	15772.01	190.90	17478.69	22005.78	132.70	28125.80	7367.53	377.04	6649.90	43017.75	175.57	45790.66	28451.81	196.20	20058.52
2012-13	22004.04	266.32	19129.21	26117.51	157.50	30268.98	9281.22	474.97	7722.55	52935.67	216.05	50252.74	21509.86	148.33	20391.07
2013-14	21794.75	263.79	20779.72	30847.98	186.02	32412.16	9949.03	509.15	8795.20	61752.81	252.03	54714.82	19217.57	132.52	20723.62
2014-15	21809.21	263.97	22430.24	36925.96	222.67	34555.34	10178.57	520.90	9867.84	58889.67	240.35	59176.90	17078.26	117.77	21056.17
2015-16	22160.49	268.22	24080.76	37766.77	227.74	36698.52	9125.37	467.00	10940.49	59245.38	241.80	63638.99	19531.63	134.68	21388.71
Mean	16653.44	Computed χ^2 Value = 1136.57		27054.21	Computed χ^2 Value = 7535.50		6113.58	Computed χ^2 Value = 3417.64		43559.62	Computed χ^2 Value = 13880.46		19892.25	Computed χ^2 Value = 7174.92	
SD	5215.79			7535.50			3417.64			1716.87			1749.13		
CV (%)	31.32	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	27.85	27.85	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	16.55	55.90	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	16.67	31.87	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	14.24	20.57	Critical Value of χ^2 with (n-1)=9, Degree of freedom is 16.919 at 5% Significant Level	11.73
CAGR (%)	21.23	Result : H$_O$ is Rejected			Result : H$_O$ is Rejected			Result : H$_O$ is Rejected			Result : H$_O$ is Rejected			Result : H$_O$ is Rejected	

TABLE 2: COST STRUCTURE OF OIL INDUSTRY (2006-07 to 2015-16)

S.No	Cost Structure	Average Values (Rs. In Crores)	Percentage as Total
1	Raw Material Expenses	511308.07	83.94
2	Wages & Salaries Expenses	16653.44	2.73
3	Manufacturing Expenses	11633.69	1.91
4	Power & Fuel Expenses	6113.58	1.00
5	Selling & Administrative Expenses	43559.62	7.15
6	Miscellaneous Expenses	19892.25	3.27
Total		609160.64	100.00

Sources: Computed

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