Findings and Suggestions

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8.3 Suggestions
8.1 Introduction

This chapter is the heart of whole study. It gives its emerging conclusion based on the analysis carried out during the study. The effort has been made to summaries and conclude the whole study and to give some suggestions to achieve the objectives of the study. Thus, this chapter contains major findings and suggestions regarding improving efficiency, effectiveness and profitability.

8.2 Main Findings

8.2.1 Result of hypotheses testing (Profitability analysis)

<table>
<thead>
<tr>
<th>No</th>
<th>Areas</th>
<th>$H_0/H_1$</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gross Profit</td>
<td>$H_1$</td>
<td>Gross profit generating capacities of all sample units are different under study period.</td>
</tr>
<tr>
<td>2</td>
<td>Operating Profit</td>
<td>$H_1$</td>
<td>Operating efficiency of all sample units are not same during study period.</td>
</tr>
<tr>
<td>3</td>
<td>Net Profit</td>
<td>$H_1$</td>
<td>Net profit figure of all the sampled units different significantly.</td>
</tr>
<tr>
<td>4</td>
<td>Cash Flow Margin</td>
<td>$H_0$</td>
<td>A cash flow margin ratio of all sample units remains same under study period.</td>
</tr>
<tr>
<td>5</td>
<td>Operating Expenses</td>
<td>$H_1$</td>
<td>All the sampled units are differently work regards to factory expenses, administrative expenses and selling expenses.</td>
</tr>
<tr>
<td>6</td>
<td>Return on Fixed Assets</td>
<td>$H_0$</td>
<td>Utilizations of fixed assets are same for all the sampled units.</td>
</tr>
<tr>
<td>7</td>
<td>Return on Net Worth</td>
<td>$H_0$</td>
<td>The returns generated from share holder fund are same for all sampled units under study period.</td>
</tr>
<tr>
<td>8</td>
<td>Return on Debt</td>
<td>$H_1$</td>
<td>Principle of trading on equity work different significantly under study period.</td>
</tr>
<tr>
<td>9</td>
<td>Return on Capital Employed</td>
<td>$H_1$</td>
<td>Return from capital employed of all sample units remains not same under study period.</td>
</tr>
<tr>
<td>10</td>
<td>Cash Return on Assets</td>
<td>$H_1$</td>
<td>Cash generating capacity of all the sampled units are different significantly.</td>
</tr>
</tbody>
</table>
8.2.2 Findings of Profitability Analysis

For BPCL, HPCL and IOC return on equity shows mixture trend. In the year 2009 and 2012 for these three unit ROE was lower. The higher operational cost and higher interest to debt are reason to lowering return equity for these three units.

The MRPL stand first rank with higher equity returns among all the sampled units. The reason for higher equity was higher operating profit margin ratio, effective utilization of assets, Positive financial leverage. The CPCL stand last rank because of inefficiency in operating activity and negative financial leverage. The management of CPCL needs to do some corrective steps for operational aspect. Defective capital structure along with other reason of low profitability is responsible for lower return on equity of CPCL.

Analysis of operating profit ratio found that excluding the MRPL and NRL remaining sampled companies performance was not satisfactory under study period.

It is observed from the analysis of net profit 80% sample companies performance was not satisfactory. Even the ratio was below 1% for two sampled company like BPCL and HPCL under study period.

The analysis of return on fixed assets says that the performance of BPCL and HPCL was lower compared to other units. The under utilization of capacity, old and out dated machines and higher cost coupled with the reason of lower margin.

From the analysis of return on shareholder which has been evaluated that the performance of HPCL was lower compare to all sampled units. This company was exposed to a greater degree of financial risk and they had no margin to reward their shareholder.

The simple correlation analysis indicates the working capital and interest turn over are highly positively correlated with return on investment in major sample units. The debt-equity ratio and total assets turn ratio is negative correlated with return on investment in majority of sample units.
8.2.3 Findings Solvency test (Edward Altman)

The average Z-score of BPCL during study period was 3.0856. It is indicates that the firm likely safe base on financial data. Generally solvency position of BPCL reveals mix trend but if Z-score more than 2.71 and less than 3 reveals safe to predict survival. In the year 2011-12 Z-score 2.739 show positive sign for solvency up gradation. The Z-score of IOC continuously decline for first four year under study period. So probably firm likely to bankruptcy in short future period. The immediate actions lead to survival and further boost. The IOC need to maintain ideal ratio of Working capital(2:1), need to reduce operating cost for improving EBIT and also need to improve the sales in relation to assets. In MRPL Z-score had been increase initially two year after that decline and reveals mix solvency. The management of MRPL need to innovation for reducing the operating cost. The average Z-score under study period comes under the gray area. However company knows about financial health and tries to overcome adverse effect to financial position. The overall Z-Score of Altman model for solvency test of CPCL indicates healthy liquidity. The firm has ability to survival.

Solvency test of sampled units reveals that the BPCL and CPCL good financial position and maintain proper liquidity. The HPCL and IOC suffer in gray area and continuously decline Z-score. The MRPL and NRL Z-score reveals mix trend and fluctuate between safe zone and gray zone. It shows they not maintain stable liquidity. However profit of both the firm also fluctuates.

8.2.4 Findings of Liquidity Analysis

Analysis of current ration shows 80% company performance not up to standard level (2:1). The reason for the low performance was the inefficiency of paying capacity to short term current liability. The other reason was higher level of current liability compared to availability of cash.

It is observed from the analysis of liquid ratio all the sampled units not maintain standard norms of liquid ratio. The MRPL stand first position and HPCL stand last position among the all sampled in terms of liquid ratio. Reason for last position for HPCL was higher inventories in current assets. However 80 % sampled
units are effectively used working capital to favors of raising sales. 50% of the sampled company credit policy was sound and half of the sampled company weak credit policy. Only 20% sampled company stable credit policy for debtors.

All the sampled companies take full advantage of credit facilities given by their supplier. However it was not same for all the sampled units. 50% sampled company are take moderate level advantages and 50% are take high level advantages of credit facilities given by their suppliers.

8.2.5 Result of hypotheses testing (Liquidity Analysis)

<table>
<thead>
<tr>
<th>No</th>
<th>Areas</th>
<th>H₀/H₁</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current Ratio</td>
<td>H₁</td>
<td>Current Assets to Current Liability of all sample units was remains not same under study period.</td>
</tr>
<tr>
<td>2</td>
<td>Quick Ratio</td>
<td>H₀</td>
<td>Liquid Assets To Liquid Liability of all sample units was remains same under study period.</td>
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<tr>
<td>3</td>
<td>Gross Working Capital Cycle</td>
<td>H₁</td>
<td>All the sampled units are not stable regard to gross working capital cycle.</td>
</tr>
<tr>
<td>4</td>
<td>Age of Debtors</td>
<td>H₀</td>
<td>Collection policy (Age of debtor) of all the sampled units is same under study period.</td>
</tr>
<tr>
<td>5</td>
<td>Age of Creditors</td>
<td>H₁</td>
<td>All the sampled units’ different significant regard to payment policy.</td>
</tr>
</tbody>
</table>

8.2.6 Findings of Mottals liquidity position rank test

From “Mottals test” Liquidity rank position analysis, It observed that for inventories management MRPL in 1st rank and NRL in last rank. In debtors management, MRPL was in first rank and BPCL in last rank. For availability of cash and bank NRL has in 1st rank and IOC in last rank. For short-terms loans and advances management BPCL has in 1st rank and NRL in last rank. Looking to the major four management like, inventory management, debtors management, cash & bank and loans & advances, the MRPL have sound liquidity position and gets 1st rank in among sample units and the HPCL have weak liquidity position and gets last rank among sample units In HPCL inefficiency about inventories, receivable and cash & bank position. The Following diagram shows overall liquidity position rank among sampled units.
8.2.7 Findings of Assets management

It is observed that 80% sampled companies are consistent in size of inventory only one MRPL was highly fluctuate company in terms of size of inventory. The C.V. of MRPL was 54.29 under study period, but average C.V. was 32.44% only. SO MRPL need do take a corrective action about inventory management.

There was positive correlation between total inventory and total assets of selected oil refineries under a study period. The r- value was 0.78 nearest to one.

Overall inventory turnover ratios of selected units were 10.06 times. Compared to overall BPCL, HPCL, and MRPL was higher inventory turnover ratio, and IOC, NRL, and CPCL lower inventory turnover. The BPCL, HPCL and MRPL have lower inventory holding period and IOC, NRL and CPCL have higher inventory holding Period.

The only IOC has higher raw-material than the industry means remaining sample units have lower raw-material compared to industry mean. It is observed from the CV the MRPL was inconsistent for maintaining raw-material under study period.
The analysis of raw-material to total inventory suggested that the raw-material contribution to inventory was approximately 36.24% for all refineries, which was higher and need to manage raw-material properly. So raw-material holding cost will be reduced.

The oil industry raw-material turnover ratio was 18.71 times in a year. The IOC and CPCL have lower raw-material turn over compared to industry. For maintain the raw-material turnover ratio 75% sampled units ate inconsistent. The raw-material holding period was also higher in case of IOC and CPCL due to lower inventory turnover.

The industry work in progress was 924.37 times crores under study period but MRPL, NRL and CPCL was quite lower than the industry. The IOC has higher work in progress under study period.

Industry ratio of work in progress to total inventory was 6.82% and only MRPL was lower than industry. The 65% samples have uniform policy for work in progress to total inventory.

The analysis of work in progress turnover reveals that the industry turnover ratio was 160.30 times in a year. The 50% sample units are lower than industry turnover ratio. The HPCL was highly fluctuate regard to work in progress turnover ratio.

The industry finished goods was Rs. 5505.10 crores under study period and IOC finished good was Rs.15, 577.80 crores means three times higher than industry. The industry CV was only 26.45% means oil industry having uniform policy for maintaining finished goods.

It is observed from the analysis industry ratio of finished goods to total inventory was 48.75% which was higher and incurred significant finished goods holding cost in oil refineries. So concluded that the not sound management policy for managing the finished goods.

The finished good turnover ratio was satisfied for all sampled units excluding the one NRL. The IOC was most consistent in finished goods turnover ratio. The
industry finished goods turnover ratio was 19.06 times in a year. In NRL the lower finished goods turnover reason for the higher finished goods holding period.

The analysis of stores and spares and its effecteness reveals that the industry score and spares was Rs.420.47 crores and excluding the IOC all the sample units have lower stores and spares than the industry. The contribution of stores and spares to inventory for oil industry was only 3.58% under study period.

Excluding MRPL and HPCL all the sample units follows in consistency policy regarding total receivable. Industry receivable and sales are highly correlated to each other their r is 0.94. The majority of receivable arise from the credit sales in oil refineries.

The year wise total debtor of sampled units indicated mixture trend throughout study period approximately 200% increased in 2011-12 compared to 2007-08. This shows oil refineries credit sales was increase.

Analysis of total debtors excluding six month to total debtors indicate that the BPCL and HPCL have lower debtor liquidity compared to all other sampled units. The NRL and CPCL were inconsistence regard to total debtors excluding six month to total debtors. Almost all the sampled units maintain consistency regard to other debtors less six month to total debtors.

It is analyzed from bad-debt to debtors and bad-debt to sales, no much bad-debt for all the sampled units. 50% sampled units no dab-debt and 50% sampled units little. Bad-debt it is not much in relation to sales.

It is observed from the size of cash and total cash and sales relationship, excluding the MRPL all the sample units maintain consistency policy for maintain cash balances. Year wise analysis reveals that the total cash was decline for first four under study period (2007-08 to 2010-11). However in the year 2011-12 total cash increased approximately 300% due to increased in sales. The moderate degree correlation between total cash and total sales for oil refineries during study period.

Cash conversion cycle of sample units reveals that the overall CCC period was 16 days. The only one sample units CPCL have higher CCC period compared to
The average value of CCC in MRPL was -6 day that suggested stringent credit policy in which credit allowed to some reliable customers only, but on other hand MRPL was not consistent because CV was 338%.

It is observed from the analysis of cash turnover ratio 50% sample units efficient transform cash in to sales. The IOC has negative cash return on assets due to negative cash flow from operating activity. The overall industry CV was 86.62% reveals that the oil refineries was not consistent on utilization of asset in relation to generating the cash. All sample units are not uniform policy regard cash flow generating capacity from the sales.

**8.2.8 Findings of comparative analysis**

It is observed from the correlation matrix of BPCL. Profit after tax to sales was high degree correlated with the return on fixed assets and net worth. It means company profitability performance depend on how company used their net worth and fixed assets. If company was used their fixed assets efficiently than profitability would be increased. In BPCL, management efficiency ratios negatively correlated with profitability. The profitability and liquidity was depended to each other. However correlation between debt-equity ratio and working capital ratios reveals that the working capital has independent from capital structure.

From the factor analysis of BPCL has 72% of total variance (25 Variances) means 18 variables are common variables and jointly act to financial position of the company. Eigen value of centroid factor-A was 4.976, concluded that the 5 variables are key variables. These key factors are Return from Net Worth, Inventory Turnover, Collection Policy, and Raw-Material Turnover and profit after tax to Sales.

Analysis of correlation matrix of HPCL reveals that the high degree correlation between all the profitability ratios. It means major incomes are generated from the operating activities. The correlation between inventory turnover, raw-material turnover and finished goods turnover says that the lower contribution of raw-material and finished goods to inventory structure. The cash conversion cycle was negatively impact on profitability and GWCC. In HPCL has high correlation between profitability and working capital.
In HPCL loading factor of factor analysis indicated that the 70% variances of variable are common variance whereas 30% variances are individual. The common variance of centroid factor-A has 5.263. It means 5 parameters are key-parameters or most prominent variables. These key factors which most affect to financial position are Operating Profit, GWCC, Cash Return on Assets and Finished Goods Turnover ratio etc.

In IOC correlation matrix reveals that the return from the fixed assets, net worth and total debt are highly positive correlated with profitability. It means IOC used fixed assets efficiently in relation to profit. The collection policy and payment policy positively impact on working capital while only collection policy negatively impact on profitability. The CCC and GWCC are high degree correlated with each other. The IOC has lower degree positive correlation between profitability and liquidity.

Centroid factors method of factor analysis for IOC reveals that the 92% of total variance are common variance and only 8% means 2 variables are individually perform to financial position of the company. The common variables were 23 out of the 25 variables among that 9 variable are key variables. These key variables which are mostly affected are cash to sales, cash to assets, investment turnover, inventory turnover, raw-material turnover, etc.

Matrix correlation between 25 ratios of MRPL says that the working capital and profitability are jointly worked with moderate degree correlation. Generally the working capital mostly depends on collection policy and payment policy but in MRPL working capital policy have negative relationship with payment and collection policy. It is reveals that these two policies was not sound for improving the working capital. The cash conversion cycle positively correlated with profitability and liquidity. It is reveals that the sound cash management towards liquidity and profitability.

Communality of factors analysis for MRPL indicated that the 19 variables out of 25 variables are jointly performed to financial position. The 6 variables are independently worked toward financial performance. The 19 variables, 64% variables are most prominent variables. These key variable which mostly impact to financial
status are return on fixed assets, return on capital employed, PAT to sales and total assets turnover etc…

It is analyzed from the matrix correlation of NRL, the operating expenses to sales was negatively correlated with profitability. It means reducing operating expenses should be increased the profit. The working capital policy has insignificant from the capital and profit after tax to sales have negative correlation reveals that the unsound working capital management in NRL. Same like as assets management also not satisfactory that is analyses from the correlation between assets turnover ratios and profitability ratios.

That can be concluded from the factors analysis of NRL, 72% of total variance means 18 variables are dependent to financial status of company, while 28% means 7 variables are independent to financial position. The 8 variable out of 18 variables are most effective variables. The variable which is most effective has determined by Eigen value of the centroid factor - A which are collection and payment policy, return from capital employed, working capital, return from fixed assets etc…

Analysis of co-relation matrix of CPCL reveals that the positive correlation between profits after taxes to sales and return from the assets. It means fixed assets utilizes efficiently. The liquidity and profitability are jointly worked together in CPCL. The management efficiently ratios were negatively correlated with profitability ratios. The solvency or liquidity positively correlated with profitability in CPCL.

It can be seen from the centroid factors method of factors analysis 79% of total variance means 20 variables are common variables and jointly effect to financial position, whereas 5 variables are individually effect to company financial status. The factor loading of centroid factors-A reveals that the approximately 8 variables are most prominent variables. The most prominent variables are, PBIT to sales, PBDIT to sales, PAT to net worth, return from fixed assets etc….
<table>
<thead>
<tr>
<th>Rank Company</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPCL</td>
<td>Profit After Tax to Net Worth</td>
<td>Inventory Turnover</td>
<td>Age of Debtors</td>
<td>Raw-Material Turnover</td>
<td>Profit After Tax to Sales</td>
</tr>
<tr>
<td>HPCL</td>
<td>Profit Before Depreciation, Interest and Tax to Sales</td>
<td>Profit Before Interest and Tax to Sales</td>
<td>Gross Working Capital Cycle</td>
<td>Cash to Sales</td>
<td>Finished Goods Turnover</td>
</tr>
<tr>
<td>IOC</td>
<td>Cash to Sales</td>
<td>Cash to Assets</td>
<td>Investment Turnover</td>
<td>Raw-Material Turnover</td>
<td>Inventory Turnover</td>
</tr>
<tr>
<td>MRPL</td>
<td>Profit After Tax to Fixed Assets</td>
<td>EBIT to Capital Employed</td>
<td>Profit After Tax to Sales</td>
<td>Profit Before Depreciation, Interest and Tax to Sales</td>
<td>Cash to Sales</td>
</tr>
<tr>
<td>NRL</td>
<td>Age of Creditors</td>
<td>Age of Debtors</td>
<td>EBIT to Capital Employed</td>
<td>Working Capital Ratio</td>
<td>Profit After Tax to Fixed Assets</td>
</tr>
<tr>
<td>CPCL</td>
<td>Profit Before Interest and Tax to Sales</td>
<td>Profit Before Depreciation, Interest and Tax to Sales</td>
<td>Profit After Tax to Net Worth</td>
<td>Profit After Tax to Fixed Assets</td>
<td>Interest Coverage</td>
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</tbody>
</table>
8.2.9 Findings of overhead cost structure analysis

It is observed from the total cost analysis. IOC average cost under study period was much more than industry due to virtue of size. From the CV concluded, the BPCL and NRL was more fluctuate than industry because their CV was higher than industry CV. In the total cost of oil refineries 94.96% contribution made by the direct cost and only 5.04% contribution made by the indirect cost.

It is observed from the production overhead analysis of BPCL repairs and maintenance of machinery was increased understudy period. In the total production overhead 39.65% contribution made by machinery repairs expenses. Old and out dated machinery may be reason for higher machinery repair expenses under study period.

From the administrative overhead of BPCL reveals that the up to 36.33% contribution made by interest in total administrative overhead, means company depend on more borrowed fund and paid fixed interest high. The depreciation & amortization and salaries & wages were up to 27.13% and 26.65% in total administrative overhead respectively.

Selling & administrative, R & D and other overhead of BPCL reveals that in the year 2008-09 and 2011-12 these overhead rise approximately 300% and 50% respectively. This overhead was rise due to foreign exchange fluctuation. The BPCL incurred Rs.1173 crores loss on sale of current investment under study period. So has company need to manage current investment policy properly.

From the analysis of production overhead of BPCL reveals that, the machine repairs and maintenance expenses and power & fuel expenses was suddenly rise for last three year of study period. If company replaces the new machinery place of old machinery than these overhead may reduce and lead to more profit.

In total administrative overhead depreciation and amortization was up 29.23%, interest 28.17% and salaries & wages 23.82% for HPCL. The HPCL was paid higher fixed interest under study period, so concluded that the HPCL was highly leverage units.
It is observed from the selling & distribution, R & D and other overhead cost structure of HPCL, the HPCL was paid FEF up to 41.815 of total selling & distribution overhead. It was much higher and need to manage foreign exchange policy. The travelling and conveyance expenses was 14.51% of total selling & distribution and loss on sale of current investment was 15.12% of total selling & distribution overhead. To conclude company required to manage proper planning about travelling and conveyance and current investment policy.

It is observed from the administrative overhead cost structure of IOC, approximately 78.63% administrative cost arises from the depreciation and amortization, salaries and wages and fixed interest. So IOC required to manage these three components to reduce total administrative overhead in IOC.

The production of IOC reveals that, the power and fuel expenses rise throughout the study period, due to that production overhead of IOC was also raised because contribution of power and fuel in total production overhead was up to 43.26%. The repairs and maintenance of machinery was increased under study period. To concluded approximately 75% production overhead incurred from consumption of power and fuel and machinery repairs expenses.

From the analysis of selling and distribution, research and development and other overhead of IOC, these overhead increased 200% in the year 2008-09 from the previous year and 150% in the year 2011-12 from the previous year due to FEF. The year wise these overhead shows mixture trend under study period. The FEF expenses contribution was up to 31.12% of total selling and distribution overhead in IOC under study period.

From the production overhead of MRPL, it is reveals that the same like as other sample units in MRPL also incurred higher machinery repairs expenses. The contribution of machinery repairs was 34.44% of total production overhead. The production overhead of MRPL was decline in the year 2008-09 and 2010-11 compared to their previous year because of decline in excise duty on inventory deferential.

It is observed from the administrative overhead analysis of MRPL, the MRPL was charges higher depreciation and amortization against their fixed assets. The
contribution of depreciation and amortization to total administrative overhead was 57.78%. The salaries and wages was decline in initial three year of study period due to that total administrative overhead was also decline in that period.

It was analyzed from percentage wise classification, 73.14% selling and distribution overhead arises in the form of FEF. The year wise total value reveals mixture trend for selling and distribution, research and development and other overhead in MRPL.

It is observed from the production overhead of NRL, the power and fuel expense was normal up to year 2010-11 but after that in the year 2011-12, it was increased up to Rs. 130 crores from Rs. 2.11 crores. The machinery repairs expenses was 34.23% of total production overhead. The production overhead of NRL was rise continuously under study period.

The administrative overhead cost structure of NRL reveals that the up to 53.51% administrative overhead arises in the form of depreciation and amortization, 24.74% in the form of salaries and wages and 7.84% in the form of interest. To conclude, the management of NRL required to plan about these three components for curtaining total administrative overhead and they lead to boost further more profit.

The selling and distribution, research and development and other overhead cost structure of NRL show that up to 23.74% of total overhead arises from the travelling and conveyance expenses. The company management needs to focus on reducing the travelling and conveyance expenses for boost profit.

In the CPCL production overhead cost structure suggested that the machinery repairs expenses was Rs. 52.88% of total production overhead, 24.68% of total production overhead by the power and fuel expenses. The higher production overhead was in the year 2009-10 under study period.

It is observed from administrative overhead analysis of CPCL, total administrative overhead was increased for first three years and then decreased for last two years. The depreciation expense was raise under study period and fixed interest expenses contribution to total overhead was 26.35%. The higher interest means more leverage situation and need to restructure their capital structure for reducing the cost.
The selling and distribution, research and development and other overhead of CPCL reveal that the foreign exchange fluctuation expenses was incurred in the year 2008-09 and 2011-12. In total overhead this head 25.86% contribution made by the FEF it is more and CPCL earned loss for certain year under study period.

**Most leading cost indicators of production overhead for sampled units.**

<table>
<thead>
<tr>
<th>Cost indicators</th>
<th>BPCL</th>
<th>HPCL</th>
<th>IOC</th>
<th>MRPL</th>
<th>NRL</th>
<th>CPCL</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery repairs expenses</td>
<td>39.65</td>
<td>24.47</td>
<td>32.33</td>
<td>34.44</td>
<td>34.23</td>
<td>52.88</td>
<td>36.33</td>
</tr>
<tr>
<td>Power and fuel expenses</td>
<td>33.17</td>
<td>18.69</td>
<td>43.26</td>
<td>5.43</td>
<td>31.76</td>
<td>24.68</td>
<td>26.17</td>
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</table>

**Most leading cost indicators of administrative overhead for sampled units.**

<table>
<thead>
<tr>
<th>Cost indicators</th>
<th>BPCL</th>
<th>HPCL</th>
<th>IOC</th>
<th>MRPL</th>
<th>NRL</th>
<th>CPCL</th>
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<tr>
<td>Depreciation &amp; amortization</td>
<td>27.13</td>
<td>39.23</td>
<td>28.95</td>
<td>57.58</td>
<td>53.51</td>
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<td>40.43</td>
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<td>Interest cost</td>
<td>26.33</td>
<td>28.27</td>
<td>24.27</td>
<td>20.9</td>
<td>7.84</td>
<td>26.35</td>
<td>22.33</td>
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</tbody>
</table>

**Most leading cost indicators of selling & distribution and R & D overhead for sampled units.**

<table>
<thead>
<tr>
<th>Cost indicators</th>
<th>BPCL</th>
<th>HPCL</th>
<th>IOC</th>
<th>MRPL</th>
<th>NRL</th>
<th>CPCL</th>
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<td>Foreign Exchange Fluctuate</td>
<td>31.2</td>
<td>41.89</td>
<td>31.12</td>
<td>53.51</td>
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<td>25.86</td>
<td>30.655</td>
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<td>Traveling &amp; convenience</td>
<td>5.28</td>
<td>14.51</td>
<td>6.36</td>
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<td>23.74</td>
<td>2.07</td>
<td>9.01</td>
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</tbody>
</table>
8.3 Suggestions

The analytical study of financial and non-financial performance of Indian refineries derived some suggestions which are following:

The BPCL, HPCL and IOC should revise their capital structure. So interest burden would be reduced and financial leverage act positively and return on equity boost further. The MRPL required increase the debt finance. So equity shareholders get the benefit of positive trading on equity. The NRL has necessity to take corrective actions about tax burden for reducing tax burden. The increasing trend of tax burden was lead to lower return on equity. However in NRL assets turnover was increased. The CPCL should find out that why total costs are increased with downstream sales.

The profitability of BPCL, HPCL and CPCL was lower than industry profitability. So required to analyze the reason and try to improve its efficiency to increase profitability.

The Edward Altman model of solvency test reveals, the IOC need to immediate action because their Z- Score value was decline continuously. To survival and further boost maintain ideal ratio of working capital and improve EBIT through reducing operating cost and also require improving sales in relation to assets.

In relation to sales, NRL and CPCL required to improve working capital cycle because their working capital cycle takes more time than industry. The MRPL, NRL, and CPCL should reduce collection period from debtors. The MRPL enjoyed long credit from their supplier but in long it is harmful. So need to revised their credit policy. The comparatively liquidity position of IOC and HPCL was not sound. So required to adjust current assets with current liability.

The IOC, NRL and CPL need to revise their inventory structure because inventory holding period was higher than industry. The higher raw material holding and work in progress holding are reason of higher inventory holding. The excluding the CPCL all the sampled companies are required to improve cash conversion cycle for better liquidity management.
In BPCL, profit generating capacity from sales and net worth, inventory management and collection policy were most prominent factors to financial health. For stability BPCL required to follow same strategy regard to most prominent factors. Other hand cash conversion cycle, cash turnover and assets turnover in relation to sales were least prominent factors. It required to necessary initiative regard to least factors.

In HPCL profit from sales before and after depreciation and sales, working capita cycle and cash from sales and finished goods turnover were most prominent to financial position of HPCL but required to improved cash conversion period, inventory turnover and work nearest to ideal working capital ratio.

Cash management and raw-material management are the strength of IOC. So follow stability for better liquidity. The IOC should need to improve cash margin from sales, reduce payment period to supplies and required to reduce inventory level in the form of finished goods.

Profitability ratios of MRPL were highly affected to overall financial health of company. So must be maintaining stable profit for good financial position. The working capital was not major issue in financial position of MRPL. However working capital position was sound. The MRPL required to increase interest coverage ratio and increased the debt finance to positive trading on equity.

In NRL, liquidity, management of fixed assets and return from capital employed are mostly effected to company financial health. So required to followed uniform policy with most prominent factors. The NRL should need to improved investment turnover and inventory turnover (Raw material and finished goods turnover) ultimate total assets turnover will be improve to lead financial position.

The profitability was key factors for financial health of CPCL. Unfortunately CPCL earned loss in the 2009-10 due to higher production cost. The CPCL should know causes of higher production cost. To conclude 80% sampled company required to improve operating earnings for better financial health.
In all the sampled units have higher machinery repairs expenses. In total production overhead approximately 36.33% contribution made by machinery repairs expenses. Sampled units should reduce machinery repairs expenses. The excluding the MRPL, remaining sampled units are necessity to save power and fuel expenses.

Average contribution of depreciation was 38.81% (average of all sampled units contribution) in total administrative overhead and average contribution of interest was 22.33%. The sampled units required to reduced depreciation expenses and interest for using cheapest sources of finance.

For all the sampled company average Foreign Exchange Fluctuation was 30.65% of total selling & distribution and R&D cost. The excluding NRL all the sampled units should need to adjust with Foreign Exchange Fluctuation cost. The BPCL, HPCL, IOC and NRL will necessity to cut travelling and conveyance expenses.