# Financial Restructuring and its Impact on Operating Performance in the Energy Sector in India

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## Abstract

**Purpose : The purpose of this paper was to analyze the impact of restructuring on operating performance of acquiring/restructured energy sector firms in India. This paper attempted to analyze whether there had been a significant difference in the operating performance of the firms in the post-restructuring period.**

**Design/Methodology/Approach : This study included a sample of 43 firms of energy sector and related sub-sectors in India who had undergone financial restructuring. This study involved a two stage methodology. In the first part, paired sample *t* - test was used to investigate the significant differences in various financial ratios in the pre and post-restructuring period. In the second part of methodology, the focus was given to check the impact of restructuring on the operating performance of the companies in the post-restructuring period using various techniques like factor analysis, correlation matrix, and multiple regression analysis.**

**Findings : The results showed that there was a significant difference in three financial parameters in the pre and post-restructuring period as per the paired *t* - test. It was also found that there was a significant impact of restructuring on operating performance of firms in all the factors except turnover.**

**Practical Implications: These results are recommended to financial institutions, banks, and executives. This study may also be used for evaluating the reasons behind restructuring and to check whether restructuring creates value or not. This study can also be used to analyze the shift in the structure after restructuring.**

**Originality/Value: The study found that restructuring leads to improvement in the operating performance of the firms after restructuring in the short-term as well as long-term.**

***Keywords:*** **restructuring, operating performance, liquidity, financial restructuring, profitability**

**JEL Classification: C12, C31, G21, G34**

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India has emerged as one of the apex international locations with respect to restructuring activities. Indian corporate companies have been actively involved in restructuring, domestically as well as internationally. Financial literature indicates that restructuring choices can be the end result of one or more motives. The motive of synergy means that acquiring firms expect synergetic gains, which is the end result of merging the resources of two firms. The gains may additionally rise up from numerous sources, along with potential reductions

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in costs of production or distribution, awareness of economies of scale, vertical integration, adoption of greater green manufacturing or organizational era, multiplied market electricity in product markets, accelerated usage of the acquirer's control team, reduction of organization charges via bringing enterprise-unique assets under common ownership, removal of inefficient management, the use of under utilized tax shields, avoidance of bankruptcy expenses, accelerated leverage, and different sorts of tax advantages.

Company restructuring entails financial restructuring, managerial restructuring, generation restructuring, manpower restructuring, organizational restructuring in addition to merger, de-merger, acquisition, take over, aggregate etc.

Financial restructuring is a slim phrase and it is far described in different shape as under :

Financial restructuring is a procedure geared to avoid the liquidation of an organization. It entails settlement by means of third events to meet creditor's claims beneath sure phrases and situations. Financial restructuring may also be achieved by means of concluding a settlement with all creditors of the enterprise underneath which creditors could be paid on particularly distinct terms than those to begin with commonly by using the employer, while credit score and loans have been prolonged. This form of economic restructuring allows the corporation to keep its operations and decrease creditor's losses and getting more time for compensation of debt.

Companies use debt restructuring to avoid default on current debt or to take advantage of a decrease interest charge. Organizations can also restructure their debt by altering the terms and provisions of the present debt. Financial restructuring is likewise termed as the act or procedure of converting the phrases on the assets and/or liabilities of a corporation. That is, a company may additionally consolidate its debts, notably trade the dimensions and scope of its operations, and take other measures to lessen the stress of continuing operation. Most agencies restructure both as a part of a bankruptcy or as an effort to avoid it (Desai & Joshi , 2015).

A lot of research work has evidenced that the acquiring firms show significant improvements in post-restructuring profitability, cash flows, and performance. They concluded that restructuring led to synergistic gains and better performance in the long-term (Healy, Palepu, & Ruback, 1992). A study attempting to determine whether post-restructuring synergy leads to improved corporate operating performance was carried out by Sharma and Ho (2002). Since literature on restructuring shows that restructuring leads to gains, the assumption is that the operating performance of the post-restructuring period is greater than that of the pre-restructuring period.

## Literature Review

Cabanda and Pajara - Pascual (2007) examined the operating performance of Philippine shipping corporations resulting from restructuring on the basis of the financial side. The examination included three durations of analysis: (a) 3 years prior to restructuring, (b) 3 years post-restructuring for the short-term analysis, and (c) 7 years post-restructuring for the long-term evaluation. They covered the duration from 1994 to 2003, and implemented the conventional accounting and financial techniques for analyzing the effects of restructuring on company's overall performance. The results of the pre-restructuring and post-restructuring period were mixed. Some measures of company performance like acid test ratio, total assets turnover, and net earnings were found to be statistically significant in the long-term, while other variables like net earnings, ROA, ROI, ROE, NPR, CAPEX/sales, CAPEX/TA etc. were found to be statistically insignificant in the short-term. The study concluded that the restructuring of Philippine shipping firms did not lead to improved operating performance in the post-restructuring period.

Saboo and Gopi (2009) compared the post-restructuring operating performance of restructuring firms in India which were involved in cross-border restructuring. They made an attempt to check the impact of restructuring on operating performance of resulting firms by taking into consideration financial ratios of pre-restructuring and

post-restructuring period. They analyzed the difference in the ratios of pre and post-restructuring period. They concluded that there had been a significant difference in the financial ratios of the firms involved in domestic restructuring as compared to the firms involved in the cross-border restructuring.

Srinivas (2010) conducted a study of merged banks in India by comparing the pre and post-merger performance and concluded that banks across the board had improved their profit while reducing their operational costs and more number of banks had improved their financial performance by using the concept of restructuring.

Singh and Mogla (2010) analyzed the profitability of restructuring firms in the post-restructuring period. They took a sample of 153 firms in the duration of 1993 to 2003 in which the sample was categorized on the basis of financial health of the target firms comprising of loss making firms and healthy firms. They concluded that 55% of the firms reported decline in the performance in the post-restructuring period ; whereas, 29% of the firms indicated improvement in the performance after restructuring.

Azhagaiah and Sathishkumar (2011) studied the impact of restructuring in the short-term, in which they considered the comparison of performance of the firms for a period of 3 years in the pre-restructuring period and a period of 3 years in the post-restructuring period. They took a sample of 52 firms in the duration of 2004 - 2010 out of which 12 firms were found to have significant impact on operating performance in the short-term in the post-restructuring period. They used paired sample *t*-test to test the hypothesis whether there was any improvement in the performance of the Indian manufacturing firms after the event of restructuring. They concluded that the firms were able to achieve significant improvement in liquidity, profitability, better operating performance, and reduced financial and operational risks after the restructuring.

Gunasekaran, Selvam, and Babu (2011) attempted to compare the performance of the acquiring and target corporations earlier than and after the period of restructuring by means of the use of ratio evaluation and two sampled paired *t*-test during the observed duration of 3 years before and 3 years after restructuring. The study considered a sample of 13 companies that underwent restructuring in the course of 2002 - 2005. The study analyzed the economic performance of pattern firms from the viewpoint of profitability, liquidity, leverage, and interest.

Kiliç (2011) examined the pre and post-restructuring financial performance of 10 Turkish banks using DEA and found that the profitability had a positive effect after restructuring. Dobre, Brad, Ciobanu, Turlea, and Caloian (2012) assessed financial performance of Romanian corporate firms and found that the restructuring showed better profitability and financial performance. Francoeur, Ben Amar, and Rakoto (2012) used the 1990 to 2003 data of Canadian firms, and found that the profitability ratios increased significantly after the restructuring.

Azhagaiah and Sathishkumar (2012) attempted to examine the operating performance of restructuring companies with the aid of use of operating performance ratios, particularly return on net-worth (RONW) and ROCE, and used paired samples *t* - test thinking about statistics for a length of 3 years before and 3 years after the restructuring to compare the pre and post-restructuring operating performance of the restructuring corporations and thereby identify if there may be a big shift (growth) inside the operating performance of the acquiring companies. The study blanketed pattern of 10 firms in every enterprise out of 118 companies indexed in one of the leading Indian stock exchanges, that is, the Bombay Stock Exchange that had undergone restructuring inside the same industry (associated merger) during the duration of 2004 to 2007. The study proved that the operating performance in terms of RONW and ROCE progressed in case of IT industry, real estate & infrastructure management industry, and pharmaceuticals & healthcare industry after the restructuring except for banking and finance industry in India.

Azhagaiah and Kumar (2011) tried to examine the effect of restructuring on the short-time period post-restructuring profitability through different industries in India with a sample of 10 companies in four most important industries which had gone through restructuring within the same enterprise (related merger) during the period from 2004 to 2007 with a goal of evaluating the post-restructuring profitability using appropriate

profitability ratios and compared the mean profitability of acquiring (resulting/restructuring) companies for 3 years before restructuring and 3 years after restructuring by means of use of *t* - test. The findings indicated that the profitability (in terms of profitability measures, particularly operating profit, gross profit, and net profit) multiplied after restructuring for the IT industry, real estate & infrastructure management industry, and pharmaceutical & healthcare industry, and subsequently, the study revealed that there was an extensive improvement on the short-run post-restructuring profitability of acquiring firms across industries in India besides the banking and finance industry.

Sufian, Muhamad, Bany-Ariffin, Yahya, and Kamarudin (2012) examined the pre and post-restructuring financial performance of Malaysian banks using data covering the period from 1996 to 2009. The study found that there was no significant difference in financial performance after the restructuring.

Verma, Maji, and Nair (2013) studied the impact of mergers and acquisitions on Indian banks' performance and corporate values by analyzing pre and post-merger performance. They studied 22 Indian banks that were merged and analyzed their performance using EVA. They concluded that value addition of Indian banks had more to do with operating efficiency.

Raghuvanshi and Raghuvanshi (2014) studied various determinants of shareholders' gains in acquisitions. They concluded that the target firms experienced statistically significant and higher returns than the acquiring firms around the announcement period and in the run up window. Jucunda and Sophia (2014) analyzed the value creation of acquirers in India on an acquisition announcement and the sensitivity of the stock markets during an acquisition announcement.

Ahmed and Ahmed (2014) took a sample of Pakistani manufacturing companies to analyze the operating performance and found that operating performance had improved due to restructuring. Das (2014) used paired *t*-test to study the financial performance of regional rural banks before and after restructuring and concluded the positive impact of restructuring on profitability and performance.

Patel and Patel (2015) examined the impact of restructuring on four Indian banks during 2005 - 2012. They found that restructuring had improved the performance, but to a limited extent.

Joash and Njangiru (2015) concluded that restructuring gave positive results post-restructuring and the ROI and EPS improved drastically. Rani, Yadav, and Jain (2015) analyzed the financial performance of 305 Indian firms using a paired *t*-test in the pre and post-restructuring period. They concluded that operating performance had improved and ROE, ROCE, and NPM improved after restructuring. Abdulazeez, Suleiman, and Yahaya (2016) examined the pre and post-restructuring performance of 24 Nigerian banks and concluded that the performance improved in the post-restructuring period.

Rashid and Naeem (2017) analyzed the performance of 25 Pakistani firms to check the impact of restructuring on performance and concluded that the restructuring had not shown any significant impact on the performance after restructuring. Vulanovic (2017) concluded that restructuring had a negative impact on the performance of industrial firms. The study found that the merger had a negative impact on the financial performance of industrial firms. Igbinosa, Sunday, and Babatunde (2017) ; Singh & Bansal (2017) ; and Shijaku (2017) identified accounting ratios as a vital tool to measure the financial performance. Prakash (2017) analyzed the shareholder value creation by examining the short-run abnormal returns accruing to the shareholders of acquiring, target, and hypothetical combined entities after mergers and acquisitions during 2000 – 2010 using the market adjusted model. The study concluded that restructuring was found to create destroying value for the shareholders of hypothetical combined entities.

## Data Sources

A sample size of 43 companies in the energy sector was considered. These companies had undergone the

restructuring process after registered/declared sick/revived by BIFR or by CDR cell and the financial data of such companies were collected from CMIE Prowess/ACE Equity Database. The sample for the study also involved the companies who had not registered themselves with BIFR or CDR but they had undergone the process of financial restructuring by some other modes, that is, either by the way of buy-back of shares or the process of disinvestment or re-schedulement of loan or restructuring of loan or converting loan into equity capital or preference capital or capital restructuring, etc. The parameters mentioned above were compared for 3 - 4 years prior to the sickness as well as the year of sickness clubbed under the heading pre-sickness period and 3 - 4 years after the restructuring either by CDR Cell or by BIFR clubbed under the heading "Post-restructuring period". In case of absolute numbers, it was averaged out for the pre-structuring and post-restructuring period and a comparison was made. In case of ratios, an increasing /decreasing trend was observed.

The sample of companies included the companies involved in energy sector in various businesses. The sample include the PSUs, public limited companies, and private companies. These companies included the companies in the business of electricity generation, electricity transmission, and distribution. The sample also involved the companies which were providing ancillary services to the energy sector such as switch gear manufacturers, transformers, coking coal companies, etc.

These companies were selected on the basis of their data availability for at least 2 years before and after restructuring. A sample of 43 companies were selected out of the initial sample which was identified for about 72 companies. Out of these 43 companies, 18 companies were public limited companies and 25 were private companies. Out of 43 companies, 12 companies were large scale companies and 31 were medium scale companies. Of the total 43 companies, 33 companies were BIFR registered/declared sick/revived/abated/wound up and 6 companies were restructured through the CDR scheme.

The period covered for analysis is mainly from 1995 - 96 to 2011 - 12, that is, those firms whose cases of restructuring were disposed-off from 1995 - 96 to 2011 -12 by BIFR/CDR Cell. In other words, those firms that came out successfully from sickness from 1995 - 96 to 2011 -12 have been covered.

For comparison of performance, the year in which the firm was registered/declared sick/abated/wound up is classified as base year and taken as year 0 and the years prior to the base year together with the base year are clubbed as pre-restructuring period (4 years + year 0) and the years after restructuring (4 years) are clubbed as the post-restructuring period. For the purpose of this study, the period covered for analysis is mainly from 1992 - 93 to 2015 -16.

## Methodology and Hypotheses

The study is divided in two major parts. The first part deals with preliminary analysis using accounting/financial measures such as profitability, liquidity, leverage, growth, efficiency, etc. to analyze the financial performance of the firms in the pre and post-restructuring period. In order to evaluate the financial performance of the firms, paired *t* - test is used extensively.

The first part of the methodology focuses on comparing different financial ratios of the sample companies for the years before restructuring, the year of restructuring, and the years after restructuring. These ratios include 17 different parameters which are discussed with the statements of hypothesis.

The empirical study provides different methods to link the financial/operational performance of the companies with financial restructuring. The analysis is based on various indicators which measure the performance of the companies based on empirical studies. Various financial indicators are collected and compared for linking the corporate performance of companies with financial restructuring.

The data for about 9 years consisting of 4 years prior to sickness, year of sickness, and 4 years after sickness are

taken into account. The data are statistically significant at the 0.01 level ($p < 0.01$), 0.05 level ($p < 0.05$), and 0.10 level ($p < 0.10$).

**(1) Hypotheses for Preliminary Analysis :** There are 17 hypotheses developed to check the significant difference in financial parameters before and after financial restructuring. The hypothesis statements were developed for each financial parameter. The hypothesis statements are explained as below :

- **$H_0^1$:** There is no significant difference in the gross sales of a company after financial restructuring.
- **$H_0^2$:** There is no significant difference in the profitability (net profit) of a company after financial restructuring.
- **$H_0^3$:** There is no significant difference in the gross fixed assets of a company after financial restructuring.
- **$H_0^4$:** There is no significant difference in the current ratio of a company after financial restructuring.
- **$H_0^5$:** There is no significant difference in net profit to total assets ratio after financial restructuring.
- **$H_0^6$:** There is no significant difference in acid test ratio after financial restructuring.
- **$H_0^7$:** There is no significant difference in payment of taxes to the exchequer of the Government after financial restructuring.
- **$H_0^8$:** There is no significant difference in net profit to fixed assets ratio after financial restructuring.
- **$H_0^9$:** There is no significant difference in current assets to net working capital ratio after financial restructuring.
- **$H_0^{10}$:** There is no significant difference in debtors' turnover ratio after financial restructuring.
- **$H_0^{11}$:** There is no significant difference in fixed assets turnover ratio after financial restructuring.
- **$H_0^{12}$:** There is no significant difference in total assets turnover ratio after financial restructuring.
- **$H_0^{13}$:** There is no significant difference in interest coverage ratio after financial restructuring.
- **$H_0^{14}$:** There is no significant difference in net sales to net working capital ratio after financial restructuring.
- **$H_0^{15}$:** There is no significant difference in inventory turnover ratio after financial restructuring.
- **$H_0^{16}$:** There is no significant difference in total operating expenses to net sales ratio after financial restructuring.
- **$H_0^{17}$:** There is no significant difference in operating profit to compensation to employees after financial restructuring.

**(2) Hypotheses Development for Core Analysis :** The second part of the analysis includes the core analysis of operating performance of the firms in the pre and post-restructuring period. In order to evaluate the operating performance, tools like factor analysis, correlation matrix, and multiple regression analysis were adopted.

The implications of restructuring activities on operating performance are analyzed by considering the parameters like profitability, liquidity, and leverage. Previous studies concluded that if an industrially sick firm is restructured with a good management and makes serious attempts to improve its operating performance, there are major chances that the firm will turnaround successfully. This part of the analysis includes the impact of various factors like earnings, liquidity, financial risk, cost utilization, turnover, growth, and operating leverage with ROE. The study has further attempted to investigate and test if there is any significant change in the results achieved by the acquiring manufacturing firms due to restructuring. Based on the objectives, the following hypotheses are developed:

- $H_0^{18}$: There is no significant impact of gross earnings on operating performance after restructuring.
- $H_0^{19}$: There is no significant impact of liquidity on operating performance after restructuring.
- $H_0^{20}$: There is no significant impact of financial leverage (financial risk) on operating performance after restructuring.
- $H_0^{21}$: There is no significant impact of cost utilization on operating performance after restructuring.
- $H_0^{22}$: There is no significant impact of turnover on operating performance after restructuring.
- $H_0^{23}$: There is no significant impact of growth on operating performance after restructuring.
- $H_0^{24}$: There is no significant impact of operating leverage on operating performance after restructuring.

## Analysis and Results

**(1) Results of Paired *t* - test :** The analysis results in Table 1 show that the *p* - value of the paired *t* - test is 0.097 for significant difference in gross sales. The inference can be drawn that the $H_0^1$ is not rejected at the 5% level of significance. There is no significant difference in the gross sales within 4 years after financial restructuring of the selected companies. The null hypothesis is not rejected at significant level of 0.05. At 0.10 significance level, the null hypothesis will be rejected. Here, the inference can be drawn that there is a significant difference in gross sales within 4 years after financial restructuring of selected companies as the *p* - value is $0.097 < 0.10$.

The analysis shows that the *p* - value of the paired *t* - test is 0.048 for significant difference in gross fixed assets.

**Table 1. Paired *t* - test Results of Financial Restructuring and its Impact on Corporate Performance**

| Sr. No. | Variable | Mean | Std. Dev. | Std. Error | *t*-statistic | *d.f.* | *p* - value |
|---|---|---|---|---|---|---|---|
| 1 | Gross Sales | -1511.71 | 5839.875 | 890.573 | -1.697 | 42 | **0.097*** |
| 2 | Net Profit | -84.328 | 601.498 | 91.728 | -.919 | 42 | 0.363 |
| 3 | Gross Fixed Assets | -1847.1 | 5953.864 | 907.956 | -2.034 | 42 | **0.048**** |
| 4 | Current Ratio | 0.41093 | 7.33464 | 1.11852 | .367 | 42 | 0.715 |
| 5 | Net Profit/Total Assets | -0.024 | 0.60051 | 0.09158 | -0.260 | 42 | 0.796 |
| 6 | Quick Ratio | 0.25070 | 7.03793 | 1.07327 | 0.234 | 42 | 0.816 |
| 7 | Payment of Taxes to Government | -126.786 | 562.014 | 85.706 | -1.479 | 42 | 0.147 |
| 8 | Net Profit/ Gross Fixed Assets | 3.49817 | 21.33836 | 3.25407 | 1.075 | 42 | 0.289 |
| 9 | Current Assets/Net Working Capital | 1.99727 | 5.99296 | .91392 | 2.185 | 42 | 0.034 |
| 10 | Debtors Turnover Ratio | 67.86395 | 453.76152 | 69.19798 | 0.981 | 42 | 0.332 |
| 11 | Fixed Assets Turnover Ratio | 3.36767 | 20.95477 | 3.19557 | 1.054 | 42 | 0.298 |
| 12 | Total Assets Turnover Ratio | -0.04930 | 0.45530 | 0.06943 | -0.710 | 42 | 0.482 |
| 13 | Interest Coverage Ratio | 64.07605 | 291.80950 | 44.50053 | 1.440 | 42 | 0.157 |
| 14 | Net Sales to Net Working Capital | 2.65419 | 12.49503 | 1.90547 | 1.393 | 42 | 0.171 |
| 15 | Inventory Turnover Ratio | -8.66395 | 26.72377 | 4.07534 | -2.126 | 42 | **0.039**** |
| 16 | Total Operating Expenses/Net Sales | 20.23097 | 93.68327 | 14.28657 | 1.416 | 42 | 0.164 |
| 17 | Operating Profit/Compensation to Employees | -12.494 | 59.46401 | 9.06818 | -1.378 | 42 | 0.176 |

***Note.*** ** Significant at 5% level, * Significant at 10% level

The inference can be drawn that the null hypothesis ($H_0^3$) is rejected. There is a significant difference in the gross fixed assets within 4 years after financial restructuring of the selected companies. The null hypothesis is rejected at significance levels of 0.05 and 0.10.

The analysis shows that the *p* - value of the paired *t* - test is 0.039 for significant difference in the inventory turnover ratio. The inference can be drawn that the null hypothesis ($H_0^{15}$) is rejected. There is a significant difference in the inventory turnover ratio within 4 years after financial restructuring of the selected companies. The null hypothesis is rejected at the significance levels of 0.05 and 0.10.

Except these three variables, all other variables have no significant difference before and after financial restructuring. In case of the remaining 14 parameters (i.e. $H_0^2$, $H_0^4$, $H_0^5$, $H_0^6$, $H_0^7$, $H_0^8$, $H_0^9$, $H_0^{10}$, $H_0^{11}$, $H_0^{12}$, $H_0^{13}$, $H_0^{14}$, $H_0^{16}$, and $H_0^{17}$), the null hypotheses cannot be rejected at 1%, 5% and 10% significant levels.

**(2) Factor Analysis :** The variables which are selected for factor analysis are extracted through PCA (principal component analysis) and rotated using Kaiser normalization method through varimax. Out of this analysis, there are seven factors which are identified and found to be interlinked are shown in the Table 2.

The first factor is Earnings, showing gross earnings, has an Eigen value of 6.132 and the variables are [CP

**Table 2. Factor Analysis**

| Factor | Eigen Value | Variables | Components | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **Earnings** | 6.132 | CP | **0.892** | 0.06 | 0.03 | 0.05 | 0.12 | -0.14 | -0.03 |
| | | EBIT/Sales | **0.864** | 0.054 | 0.045 | 0.18 | -0.05 | 0.228 | 0.03 |
| | | OP | **0.851** | -0.04 | -0.18 | 0.21 | 0.02 | 0.27 | 0.06 |
| | | GP | **0.915** | -0.01 | 0.01 | 0.14 | 0.01 | 0.15 | 0.012 |
| | | NP | **0.912** | 0.10 | 0.21 | -0.07 | 0.11 | 0.003 | 0.021 |
| | | Return/Long Term Funds | **0.714** | -0.12 | 0.2 | -0.23 | 0.05 | 0.27 | -0.03 |
| **Liquidity** | 3.142 | CR | 0.05 | **0.754** | 0.39 | 0.03 | 0.04 | -0.03 | 0.12 |
| | | QR | 0.02 | **0.832** | 0.01 | -0.09 | 0.14 | 0.017 | -0.09 |
| | | WC/TA | -0.07 | **0.816** | 0.06 | -0.19 | -0.32 | 0.15 | 0.194 |
| | | WC/Sales | 0.048 | **0.963** | -0.19 | 0.1 | -0.08 | -0.001 | -0.09 |
| **Financial Risk** | 3.205 | Total Debt/Total Assets | 0.01 | 0.07 | **-0.882** | 0.027 | -0.16 | 0.014 | 0.374 |
| | | Proprietary Ratio | 0.262 | 0.102 | **0.840** | 0.04 | 0.091 | 0.09 | 0.01 |
| **Cost Utilization** | 2.012 | Power& Fuel/Sales | 0.01 | -0.27 | -0.31 | **0.712** | 0.137 | -0.15 | 0.091 |
| | | Employee Compensation/Sales | -0.36 | -0.03 | 0.113 | **0.613** | -0.3 | 0.19 | -0.2 |
| | | Selling & Administrative Exps./Sales | 0.09 | 0.16 | 0.23 | **0.86** | 0.10 | 0.07 | -0.06 |
| | | RM/Sales | -0.1 | 0.12 | 0.05 | **-0.65** | -0.02 | 0.07 | 0.22 |
| **Turnover** | 1.425 | Sales Turnover | 0.02 | -0.03 | 0.15 | 0.05 | **0.93** | 0.21 | -0.01 |
| | | Inventory Turnover | 0.08 | -0.08 | 0.03 | 0.10 | **0.87** | 0.03 | -0.09 |
| **Growth** | 1.32 | Growth on Operating Profit | 0.27 | 0.12 | -0.01 | -0.14 | 0.07 | **0.81** | -0.08 |
| | | Growth on Fixed Assets | -0.07 | -0.18 | 0.23 | 0.31 | 0.07 | **0.64** | 0.18 |
| | | Growth on EBIT | 0.28 | 0.14 | 0.02 | -0.005 | 0.03 | **0.861** | 0.08 |
| **Operating** | 1.182 | TL/NW | 0.18 | 0.08 | -0.37 | -0.05 | -0.06 | 0.09 | **0.82** |
| **Leverage** | | NA/NW | -0.09 | 0.01 | 0.01 | -0.1 | -0.08 | -0.02 | **0.80** |

(0.892), EBIT/sales (0.864), OP (0.851), GP (0.915), NP (0.912), and return/long term funds (0.714)] (refer to the Appendix for the abbreviations). The GP and NP are the two variables that are found to be highly significant. The second factor is Liquidity, which is having four variables. Liquidity has an Eigen value of 3.142. The most significant variables for Liquidity factor are WC/sales (0.963) and QR (0.832) and the other two variables are WC/TA (0.816) and CR (0.754).

The third factor is Financial Risk with an Eigen value of 3.205 and has two highly significant variables : total debt/total assets (0.882) and proprietary ratio (0.840). Cost Utilization is the fourth factor with an Eigen value of 2.012. This factor has four variables having two highly significant variables namely selling and administrative exps/sales (0.86) and power & fuel expenses/sales (0.712). Turnover is the fifth factor having two variables and both are found to be highly significant. The variables are sales turnover ratio (0.93) and inventory turnover ratio (0.87) and the factor has an Eigen value of 1.425.

The last two factors are Growth and Operating Leverage with Eigen values of 1.32 and 1.182, respectively. Growth factor has three variables out of which growth on EBIT (0.861) is found to be highly significant. For operating leverage, the most significant variable is total liabilities/net worth (0.82). The Eigen values of all factors are found to be more than 1.

So, the study considers these seven factors in the pre and post-restructuring periods and analyzes which factors are found to be significant in the post-restructuring period with the help of multiple regression analysis.

The findings of the study are consistent with the results of Cabanda and Pajara - Pascual (2007) that the operating performance is measured through ROE, and the selected explanatory variables to measure the ROE are Earnings, Liquidity, Financial Risk, Cost Utilization, Turnover, Growth, and Operating Leverage.

**(3) Correlation Analysis - Pre - Restructuring and Post - Restructuring Operating Performance :** Correlation analysis is adopted to analyze the correlation of each variable with all other variables on a one-to-one basis. The

**Table 3. Correlation Matrix: Pre - Restructuring**

| | ROE | Earnings | Liquidity | Financial Risk | Cost Utilization | Turnover | Growth | Operating Leverage |
|---|---|---|---|---|---|---|---|---|
| ROE | 1 | | | | | | | |
| Earnings | **0.613**** | 1 | | | | | | |
| | (0.000) | | | | | | | |
| Liquidity | **-0.273**** | -0.09 | 1 | | | | | |
| | (0.007) | (0.28) | | | | | | |
| Financial Risk | **0.185*** | 0.03 | 0.082 | 1 | | | | |
| | (0.01) | (0.39) | (0.21) | | | | | |
| Cost Utilization | **-0.274**** | **-0.214*** | 0.0422 | -0.2 | 1 | | | |
| | (0.005) | (0.027) | (0.77) | (0.18) | | | | |
| Turnover | 0.0349 | -0.008 | 0.032 | **-0.15*** | -0.04 | 1 | | |
| | (0.881) | (0.749) | (0.61) | (0.028) | (0.44) | | | |
| Growth | **0.193*** | **-0.168*** | -0.06 | -0.01 | 0.01 | -0.18 | 1 | |
| | (0.02) | (0.039) | (0.13) | (0.79) | (0.66) | (0.060) | | |
| Operating Leverage | -0.127 | -0.003 | 0.075 | 0.021 | -0.03 | 0.093 | -0.04 | 1 |
| | (0.063) | (0.54) | (0.23) | (0.79) | (0.52) | (0.290) | (0.31) | |

***Note.*** Figures in parentheses denote *p* - value. ** Significant at 1% level, * Significant at 5% level.

**Table 4. Correlation Matrix : Post – Restructuring**

| | ROE | Earnings | Liquidity | Financial Risk | Cost Utilization | Turnover | Growth | Operating Leverage |
|---|---|---|---|---|---|---|---|---|
| ROE | 1 | | | | | | | |
| Earnings | **0.589**** | 1 | | | | | | |
| | (0.000) | | | | | | | |
| Liquidity | -0.091 | -0.08 | 1 | | | | | |
| | (0.387) | (0.29) | | | | | | |
| Financial Risk | **0.287*** | -0.07 | -0.06 | 1 | | | | |
| | (0.01) | (0.38) | (0.39) | | | | | |
| Cost Utilization | -0.06 | **-0.214*** | 0.021 | 0.23 | 1 | | | |
| | (0.632) | (0.027) | (0.7) | (0.19) | | | | |
| Turnover | -0.07 | -0.014 | -0.03 | -0.09 | -0.05 | 1 | | |
| | (0.791) | (0.41) | (0.13) | (0.357) | (0.37) | | | |
| Growth | **0.241*** | 0.11 | -0.03 | -0.03 | 0.01 | -0.07 | 1 | |
| | (0.02) | (0.139) | (0.64) | (0.78) | (0.68) | (0.46) | | |
| Operating Leverage | **-0.27*** | 0.005 | -0.07 | -0.021 | 0.03 | -0.084 | 0.09 | 1 |
| | (0.01) | (0.59) | (0.3) | (0.79) | (0.52) | (0.376) | (0.81) | |

***Note.*** Figures in parentheses denote *p* - value. ** Significant at 1% level, * Significant at 5% level.

results are shown in the correlation matrix with the correlation coefficients and *p* - value between selected explanatory factors (i.e. Earnings, Liquidity, Financial Risk, Turnover, Cost Utilization, Growth, and Operating Leverage).

The correlation matrix of factors of operating performance for the pre-restructuring period are discussed in the Table 3, which shows that the explanatory factors such as Earnings ($H_0^{18}$), Financial Risk ($H_0^{20}$), and Growth ($H_0^{23}$) have a positive relationship with ROE (0.613, 0.185, and 0.193) at the 1% and 5% levels, respectively, while the factors like Cost Utilization ($H_0^{21}$) and Liquidity($H_0^{19}$) have a significant negative relationship with ROE (-0.274; and -0.273) at the 1% level. It is found that Turnover ($H_0^{22}$) and Operating Leverage ($H_0^{24}$) do not have a significant relationship with operating performance (ROE).

The correlation matrix of factors of operating performance for the post-restructuring period (Table 4) shows results similar to the pre-restructuring period. The results show that the explanatory factors such as Earnings ($H_0^{18}$), Financial Risk ($H_0^{20}$) and Growth ($H_0^{23}$) have a positive relationship with ROE (0.589, 0.287, and 0.241) at the 1% and 5% levels, respectively, while only one factor (Operating Leverage) ($H_0^{24}$) has a significant negative relationship with ROE (-0.27) at the 1% level. It is found that Liquidity ($H_0^{19}$), Turnover ($H_0^{22}$), and Cost Utilization ($H_0^{21}$) do not have a significant relationship with operating performance (ROE).

**(4) Regression Analysis - Pre - Restructuring and Post - Restructuring Operating Performance :** We adopted the OLS regression method to check the impact of restructuring on operating performance of manufacturing companies in India.

In this study, the regression equation is used to estimate the determinants of operating performance based on explanatory or independent variables. Return on equity is taken as the dependent variable which is expressed in percentage terms. The return on equity is a measure of firm's profitability by measuring how much profit is generated by the firm with the funds invested by the equity shareholders. Higher ROE percentage shows the efficiency of the management to utilize the shareholders' funds and generates better returns to the shareholders.

**Table 5. Regression Analysis: Pre-Restructuring and Post-Restructuring**

| Sr. No. | Variables | Pre-restructuring | | | Post-restructuring | | |
|---|---|---|---|---|---|---|---|
| | | β | *t*-statistic | *p*-value | β | *t*-statistic | *p*-value |
| 1 | Return on Equity (Constant) | 18.315 (∞) | 14.01 | **0.0000**** | 18.001 (∞) | 16.031 | **0.0000**** |
| 2 | Earnings | 8.673 | 5.778 | **0.0000**** | 7.998 | 9.817 | **0.0000**** |
| 3 | Liquidity | -4.012 | -5.912 | **0.01**** | -1.369 | -3.012 | **0.005**** |
| 4 | Financial Risk | 2.591 | 3.522 | **0.014*** | 3.854 | 5.007 | **0.0000**** |
| 5 | Cost Utilization | -2.001 | -1.873 | 0.064 | -2.739 | -4.891 | **0.0000**** |
| 6 | Turnover | 2.537 | 2.151 | 0.134 | -0.982 | -2.65 | 0.148 |
| 7 | Growth | 6.912 | 2.068 | **0.0000**** | 3.186 | 5.491 | **0.0000**** |
| 8 | Operating Leverage | -5.134 | -6.875 | **0.047*** | -6.179 | -7.207 | **0.0000**** |
| $R^2$ | | | | **0.492** | | | **0.673** |
| Adjusted $R^2$ | | | | **0.426** | | | **0.581** |

***Note.*** ** Significant at 1% level, * Significant at 5% level.

The selected independent variables in this model include Earnings, Liquidity, Financial Risk, Cost Utilization, Turnover, Growth, and Operating Leverage. The regression equation can be expressed as below :

$$ROE = \alpha + \beta_1 Earnings + \beta_2 Liquidity + \beta_3 Financial\ Risk + \beta_4 Cost + \beta_5 Turnover + \beta_6 Growth + \beta_7 Operating\ Leverage + \varepsilon$$

The output of regression analysis (Table 5) shows that in the pre-restructuring operating performance, the explanatory factors like Earnings ($H_0^{18}$), Financial Risk ($H_0^{20}$), and Growth ($H_0^{23}$) have a highly positive β coefficient with ROE significant at 1% and 5% levels, respectively. The β coefficient for Earnings is 8.673 (0.0000) ; for Financial Risk, it is 2.591 (0.014) ; and for Growth, it is 6.912 (0.0000). On the other side, Liquidity factor ($H_0^{19}$) is found to have a negative β coefficient of -4.012 (0.01) and Operating Leverage ($H_0^{24}$) also has a negative β coefficient of -5.134 (0.047). The remaining two factors, that is, Cost Utilization ($H_0^{21}$) and Turnover ($H_0^{21}$) do not have any significant impact on operating performance. For the pre-restructuring period, the $R^2$ is 0.492 and adjusted $R^2$ is 0.426. These results reveal that these factors have an impact on the operating performance of restructuring firms in the pre-restructuring period.

The post-restructuring regression analysis for operating performance (Table 5) indicates that all the factors except Turnover are found to be significant at the 1% level. The first factor Earnings ($H_0^{18}$) has a highly significant positive β coefficient with ROE of 9.817 (0.0000). Therefore, the hypothesis ($H_0^{18}$) is rejected, and it can be inferred that the restructuring (resulting/acquiring) companies are capable of earning higher profits by maximizing the usage of their resources in the post-restructuring period. The next factor, Liquidity ($H_0^{19}$) has a negative β coefficient with -1.369 (0.005) ROE, which is highly significant. Here, $H_0^{19}$ is rejected, which leads to the inference that the restructuring firms are capable to pay their debts as they are due in the post-restructuring period. The third factor, that is, Financial Risk ($H_0^{20}$) also has a significant positive β coefficient with ROE 5.007 (0.000). Here, the third hypothesis ($H_0^{20}$) for this section is rejected, and it can be inferred that the restructuring companies are able to repay their external liabilities in the post-restructuring period. The fourth factor - Cost Utilization ($H_0^{21}$) is highly significant with negative β coefficient with ROE of -2.739 (0.0000). Here, the null hypothesis ($H_0^{21}$) is rejected and it can be inferred that the restructuring firms improve in their cost utilization and

are able to reduce their costs in the post-restructuring period. For the next two factors, that is, Growth ($H_0^{23}$) and Operating Leverage ($H_0^{24}$), the β coefficient is highly significant, but has different signs. On the one side, Growth has a positive coefficient with ROE ; whereas, Operating Leverage has a negative coefficient with ROE.

**Pre-Restructuring Model :**

$$ROE = 18.315^{**} + 8.673^{**}\ Earnings - 4.012^{**}\ Liquidity + 2.591^{*}\ Financial\ Risk - 2.001\ Cost + 2.537\ Turnover + 6.912^{**}\ Growth - 5.134^{*}\ Operating\ Leverage\ + \varepsilon$$

**Table 6. Summary of Hypotheses Developed on Operating Performance**

| Hypothesis Statements | Overall Result For Null Hypothesis |
|---|---|
| $H_0^1$: There is no significant difference in the gross sales of a company after financial restructuring. | Rejected* |
| $H_0^2$: There is no significant difference in the profitability (net profit) of a company after financial restructuring. | Not Rejected |
| $H_0^3$: There is no significant difference in the gross fixed assets of a company after financial restructuring. | Rejected** |
| $H_0^4$: There is no significant difference in the current ratio of a company after financial restructuring. | Not Rejected |
| $H_0^5$: There is no significant difference in net profit to total assets ratio after financial restructuring. | Not Rejected |
| $H_0^6$: There is no significant difference in acid test ratio after financial restructuring. | Not Rejected |
| $H_0^7$: There is no significant difference in payment of taxes to the exchequer of the Government after financial restructuring. | Not Rejected |
| $H_0^8$: There is no significant difference in net profit to fixed assets ratio after financial restructuring. | Not Rejected |
| $H_0^9$: There is no significant difference in current assets to net working capital ratio after financial restructuring. | Not Rejected |
| $H_0^{10}$: There is no significant difference in debtors' turnover ratio after financial restructuring. | Not Rejected |
| $H_0^{11}$: There is no significant difference in fixed assets turnover ratio after financial restructuring. | Not Rejected |
| $H_0^{12}$: There is no significant difference in total assets turnover ratio after financial restructuring. | Not Rejected |
| $H_0^{13}$: There is no significant difference in interest coverage ratio after financial restructuring. | Not Rejected |
| $H_0^{14}$: There is no significant difference in net sales to net working capital ratio after financial restructuring. | Not Rejected |
| $H_0^{15}$: There is no significant difference in inventory turnover ratio after financial restructuring. | Rejected** |
| $H_0^{16}$: There is no significant difference in total operating expenses to net sales ratio after financial restructuring. | Not Rejected |
| $H_0^{17}$: There is no significant difference in operating profit to compensation to employees after financial restructuring. | Not Rejected |
| $H_0^{18}$: There is no significant impact of gross earnings on operating performance after restructuring. | Rejected*** |
| $H_0^{19}$: There is no significant impact of liquidity on operating performance after restructuring. | Rejected*** |
| $H_0^{20}$: There is no significant impact of financial leverage (Financial Risk) on operating performance after restructuring. | Rejected*** |
| $H_0^{21}$: There is no significant impact of cost utilization on operating performance after restructuring. | Rejected*** |
| $H_0^{22}$: There is no significant impact of turnover on operating performance after restructuring. | Not Rejected |
| $H_0^{23}$: There is no significant impact of growth on operating performance after restructuring. | Rejected*** |
| $H_0^{24}$: There is no significant impact of operating leverage on operating performance after restructuring. | Rejected*** |

***Note.*** *** Significant at 1% level, **Significant at 5% level, *Significant at 10% level

**Post-Restructuring Model :**

$$ROE = 18.001^{**} + 7.998^{**}\ Earnings - 1.369^{**}\ Liquidity + 3.854^{**}\ Financial\ Risk - 2.739^{**}\ Cost - 0.982\ Turnover + 3.186^{**}\ Growth - 6.179^{**}\ Operating\ Leverage + \varepsilon$$

[$^{**}$Significant at 1% level, $^{*}$Significant at 5% level]

Therefore, the two null hypotheses are rejected and it can be concluded that the restructuring firms are able to grow highly after restructuring and they are able to increase their profits. The hypothesis for Operating Leverage is also rejected which shows that the restructuring firms are able to reduce their operating leverage in the post-restructuring period and their total liabilities to net worth ratio also reduces. There is only one factor, that is, Turnover is not having significant β coefficient with ROE. Hence, the null hypothesis for Turnover is not rejected, and it can be inferred that the restructuring firms are not having an impact on their turnover in the post-restructuring period.

For the post-restructuring period, the $R^2$ is 0.673 and adjusted $R^2$ is 0.581. These results reveal that all these factors except one have a significant impact on the operating performance of restructuring firms in the post-restructuring period.

Our findings (Table 6) are similar to the results obtained by Singh and Mogla (2010). The variables are statistically significant except Turnover. Further, the coefficients of determination being 49.2% and 67.3% reflect that the model has adequately explained variation in the dependent variables (profitability). The results also support the findings of previous studies like Vanitha and Selvam (2007), Azhagaiah and Sathishkumar (2011), and Azhagaiah and Sathishkumar (2012) that the restructuring process has a significant effect on operating performance of the restructuring firms in the energy sector in India after restructuring.

## Conclusion

The study has analyzed the financial performance of restructuring firms by testing significant differences in various accounting and financial ratios using paired *t* - test and it is found that out of 17 parameters used in the study, three parameters, that is, gross fixed assets, current assets/net working capital, and interest coverage ratio are found to be statistically significant at the 5% level, and it can be concluded that there is a significant difference in these three variables in the post-restructuring period.

Another part of the study focuses on operating performance of restructuring firms in the energy sector in India using different explanatory variables and adopting correlation coefficient and regression analysis. We can conclude that the restructuring firms were able to improve their operating performance post-restructuring in terms of the factors like earnings, liquidity, financial risk, cost utilization, growth, and operating leverage. Turnover is the only factor which is not found to have any significance on the firms in the post-restructuring period. It can also be concluded that the firms have performed well in the post-restructuring period as compared to the pre-restructuring period.

In some cases, the restructuring firms did not show any significant results in the post-restructuring period. Though there are minor better results, but the results are not significant. This indicates that the firms are required to consider some other actions in order to improve their operating performance in the post-restructuring period.

Another important insight from the analysis is that the hypothesis related to liquidity gets rejected, indicating that the firms are able to repay their dues post-restructuring as they are due, but it will have a negative impact on the profits of the firms. This can be concentrated upon by the firms by reducing their borrowed funds. The

restructuring firms should be focusing on using their resources efficiently in order to increase their sales as indicated by Turnover as a factor. These firms should also use their resources well in order to maximize their profits as indicated by the Growth factor. This factor leads to the inference that restructuring firms are able to increase their growth rate in the post-restructuring period, but they are not able to maximize their profits.

## Research Implications

This study contributes in the following ways. First, the exact mechanism through which firms can improve their performance, especially during the time of recession is found. In the presence of an opportunity to restructure with another firm, firms may explore this and survive in the future. Further, this study contributes in regards to evaluating its objectives on economic growth through restructuring and also drive positive business and logical decisions on restructuring activities.

The Liquidity factor has a significant negative beta coefficient with ROE, which implies that the restructuring firms have the ability to pay their debts as and when they are due after restructuring, but the negative position of liquidity will reduce the profitability as well as have a negative impact on operating performance ; hence, the restructuring firms should concentrate significantly more on to reduce their debt to increase the operating efficiency of the equity holders.

The turnover factor did not show any significant impact on ROE. It is a well-established fact that sales have a direct relationship with the performance of the firms, that is, higher sales mean more production, which is undoubtedly the result of the best possible utilization of assets, which include fixed assets like machinery, plant & equipment, inventory, and active participation of personnel. Therefore, the acquiring manufacturing firms should use their physical sources to the maximum extent as well. This study may help policymakers of the organizations and boards to improve the operating performance of restructuring firms in the post-restructuring period.

## Limitations of the Study

The study is mainly based on secondary data and is restricted to the restructuring firms in energy sector and sub-sectors in India that are categorized into power generation, power transmission, power distribution, power equipment manufacturers, power machines manufacturers, transformer manufacturers, coke and coal manufacturers, oil manufacturers who provide materials for power generation, manufacturers of switchgears, and manufacturers of electricals which are contributing in the energy sector.

The study also ignores the impact of possible differences in the accounting methods adopted by different companies in the sample. The present study also did not use any control groups such as industry factors or peer companies' variables as done in some previous studies. A sample spanning a longer period was considered adequate to arrive at unbiased results. The differences in methodology could have affected the results shown in the study.

The study consists of impact of restructuring on operating performance of energy sector firms in India, leaving scope for further studies with similar objectives with reference to other sectors like banking and financial and non-financial firms too. The present study has used ROE only as a measure to study the operating performance. Hence, further studies may be conducted using the responding variable, return on assets or profit margin to measure the operating performance of the firms in the post-restructuring period.

## Scope for Further Research

This paper has shown the impact of restructuring on overall financial performance of the restructuring firms in the

post-restructuring period. The paired *t* - test for the entire sample has shown only three variables to be statistically significant. The same test can be used on an individual firm for each parameter and better results can be achieved. This can also be used to infer which parameters are statistically significant for each of the restructuring firms in the post-restructuring period.

This study consists of restructuring firms from the energy sector in India only. Similar kinds of studies can be done using the data from other manufacturing industries. Similar kinds of studies can also be done using service sector firms where the parameters having an impact on operating performance will be different. Further scope of the study includes the involvement of stock price movements in the pre-restructuring and post-restructuring period in order to check the impact of restructuring on the shareholders' wealth. Further studies may also be conducted using data of other countries, or to be more representative, cross-border restructuring.

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## Appendix. List of Abbreviations

CP: Cash Profit Ratio
GP: Gross Profit Ratio
NP: Net Profit Ratio
OP: Operating Profit Ratio
CR: Current Ratio
QR: Quick Ratio
WC/TA: Working Capital/Total Assets
ROE: Return on Equity
TL/NW: Total Liabilities/Net Worth Ratio
NA/NW: Net Assets/Net Worth Ratio
ROE: Return on Equity
ROI: Return on Investment
ROCE: Return on Capital Employed
NPM: Net Profit Margin


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