Chapter – 4

Research Methodology

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Chapter 4
Research Methodology

4.1 Problem Identification:

Steel production in India has expanded rapidly in recent decades and, as a result, India has become the world’s fourth-largest producer of crude steel. Relative to the size of its economy, India’s steel consumption, however, remains low; with large additions to steelmaking capacity planned to meet expected growth in steel demand, the nation’s steel industry is expected to expand as India develops further.\(^1\) India occupies a prominent place in World steel industry. The country’s steel industry is catching up the pace and luring the steel majors from all over the world. The industry has gained strength from the strong Indian economy, and strong sectors like infrastructure, construction and automobile. Although India consumes less steel as compared to other Asian countries, India’s position in world’s steel production remained unchanged at the fourth slot in 2013 with an output of 81.2 million tonnes (mt). This is despite India logging the second highest growth of 5.1% among the top five producers. There was no change in the order of top three steel producing nations with China, Japan and the US retaining their slots in the respective order in 2013, the World Steel Association (WSA) data. Thus, the country offers vast scope for the steel industry in future\(^2\).

The global crude steel production grew by almost 4\% during the first 11 months of CY13, and around 50\% of this production was contributed by China. This reflects an improvement over the 1\% production growth rate achieved in CY12. However, with Chinese Government’s focus being expected to shift from infrastructure spending to stimulating domestic consumption, Chinese demand for steel in unlikely to grow at the historical high rates going forward. Consequently, the World Steel Association\(^3\) predicted a slower growth rate of around 3\% in CY 14 as against double digit rates earlier. Additionally, although the economic outlook for the USA and EU has started improving of late, steel demand growth from these economies is expected to improve only modestly in the near term. Steel prices in the USA and EU have reacted positively to the prospects
of better economic conditions, while Chinese steel prices have remained weak, given the substantial excess steel capacity in the country, and a waning growth in demand.

Steel is a highly capital intensive industry and cyclical in nature. Its growth is intertwined with the growth of the economy at large, and in particular the steel consuming industries such as manufacturing, housing and infrastructure. Steel, given its backward and forward linkages, has a large multiplier effect. Indian steel industry has been in the limelight. This sudden catapult of interest is due mainly to the few large merger and acquisition deals.

Indian Iron and steel Industry is vital to the Indian economy for economic growth and economic wellbeing. No practical substitutes exist on a large scale for iron and steel because of the relatively high cost of alternative materials. Worldwide, there are broadly two major categories of steel players—Integrated steel producers (ISPs) and mini-mills/secondary producers, although variations and combinations of the two exist. The key difference between the two is the type of iron bearing feedstock they consume. In an integrated mill, this is predominantly iron ore, with a smaller quantity of steel scrap. A mini-mill produces steel uses mainly steel scrap, or increasingly, other sources of metallic iron such as directly reduced iron (DRI)/hot briquette iron (HBI).

Persistent weakness in demand from key end-user industries kept the domestic steel consumption growth at a meager 0.5% during the period April-December 2013. After registering a year-on-year (YoY) growth of 0.8% in the first half of 2013-14 (H1FY14), steel consumption growth in India registered a decline of 0.15% in Q3FY14. As a result, ICRA expects the domestic steel demand to grow at a slower pace in FY14 than the 3.3% growth rate achieved in FY13, notwithstanding a typical pick-up in demand in the last quarter. On the other hand, double digit production growth rates clocked by the main steel producers in April-December 2013 resulted in a domestic steel production growth of 5.2% during the same period. The mismatch in domestic supply and demand necessitated higher steel exports, which also benefitted from favorable exchange rate conditions. This led to an export growth of 9.5%, while steel imports crashed by 29.2% during the period.
Weak price trends, coupled with slower demand growth ruled out any improvement in the operating profitability of Indian steel Industry in 2014. While the large players announced price hikes in 2013, the same was not sustainable because of an adverse demand-supply position in the country. Based on a study of the financial performance of seven large steel players which account for over 40% of the domestic installed capacity, the stand-alone operating profitability of the industry declined from 20.37% in Q1FY14 to 19.87% in Q2FY14. Additionally, depreciation and finance charges on account of the debt funded capital expenditure by most players continued to impact their net margins. The smaller players, typically having weaker credit profiles, are likely to have experienced higher stress as is evident from the fact that the iron and steel industry accounted for 21.3% (highest) of the total restructured debt in, 2013 under the Corporate Debt Restructuring (CDR) cell. The near term outlook on the profitability of Indian steel players however has improved, given the soft price trends of key raw materials. A further price hike announced by the industry in January 2014 should also help, provided a weak steel market can absorb such a price hike. The steel industry being highly raw material intensive, ICRA expects the near term benefits from lower raw material costs to more than neutralize the adverse impact of a low volume growth, even if a part of the benefits of lower costs are passed on to customers to protect sales volumes. Over a longer term, volume growth however would be critical, given that substantial fresh capacities are likely to be commissioned in the next two years. Unless demand conditions improve significantly, overall capacity utilization levels and profitability of steel players would remain impacted.

Financial efficiency of a business is highly depends upon the liquidity, productivity and profitability of the business enterprise. The liquidity can be achieved by managing the different parts of working capital such as receivable management, cash management and proper debt collection policy. An output is obtained by the combined input of a number of factors like labor, material, capital, land and organization. The ratio between output and one of these factors of input is generally known as the productivity of the factors considered, the ratio between output and all these factors is known as total productivity. It is considered as a measure performance of the economy as a whole. In the broadest
concept, productivity may be taken to constitute the ratio of all available goods and services to the potential resources of the group of the country.

The problem of increasing efficiency relying on proper and efficient utilization of the available resources of men – machines- money – power – land- capital etc. Efficiency cannot have a mask attack on wastage of every type and in every sphere. It constantly urges to find better, cheaper, quicker, easier and safer ways of doing job, manufacturing a product and providing a service. It aims at the maximum utilization of resources for yielding as many goods and services as possible, of the kinds most wanted by consumers, at the lowest possible cost. The profitability can be achieved after control over the cost of production. In recent years, cost of almost all elements of production like cost of raw material consumed, wages cost, excise duty, power and fuel cost, interest burden, administrative expenses, selling and distribution expenses etc. have increased heavily. On the other hand, selling price of metal, iron, steel, steel products, cement, textiles, automobiles, woolen, engineering, tea, paper, and chemical products has decreased. In these circumstances, to keep the progress of business enterprise is very essential for management in present environment, to achieve the profit it tends to introduce various control techniques over expenditure and get maximum output. A study of financial efficiency classified on the basis of persons interested in the analysis. Generally external and internal parties are interested in such analysis of study. Objectives of both these analysis are different. An external analyst has to depend upon the published information of financial statement, which is not enlightening them. While internal analysis knows everything regarding the information provided in the financial statements. Different analysts always make analysis or study of financial efficiency knowingly, generally, external analyst’s analysis of the information as per their requirements. All stakeholders are interested in the financial and liquidity position of a company. A shareholder is interested in the profitability. Management is interested in the productivity and operational efficiency. Thus various stakeholders of business enterprise like management, investors, bankers, financial institutions, creditors, employees, government; economists, prospective investors etc. look at liquidity, profitability and productivity and overall performance of the business concern. In one word we can say overall financial efficiency is the main concern for the stakeholders for gaining fruitful returns from investment. As
Steel Industry is backbone of the development of every economy researcher is highly interested to know the financial efficiency of Indian Steel Industry.

4.2 Survey of Existing Literature:

In order to have proper insight into the various aspects of the problem under study, it will be useful and imperative to review the studies conducted in the past. Till now, many studies have been conducted on the different aspects to measuring the financial efficiency and financial performance of public and private sectors in India but it has been rarely tried to work on the problems of these undertakings and suggested for taking out the one or two or some other aspects of finance or focus on other industry. There is wide range of literature available on financial efficiency, financial performance, analysis of different companies in conforming to its dynamic value and significance of intuitive nature. A good dealing in analytical part of literature exists at broad levels like size and technology, problem associated with productivity, financial efficiency, and capacity utilization. Relevant existing literature and studies have been mentioned separately in the previous chapter, where researcher has mentioned available literature and have tried to find out the research gap.

4.3 Research Methodology

The study being descriptive in nature, mainly rely upon secondary data. To support the secondary information, primary data has also been collected.

For the purpose of “A Study of Financial Efficiency of Indian Steel Industry”, the secondary data have been used. As definition point of view, “The term secondary data refers to the statistical material which is not originated by the investigator himself but which he obtains from someone else’s records.”

As conclusion point of view inter firm comparison has been made for analysis of financial performance of selected companies with the help of various techniques of financial strength, i.e., Ratio Analysis and ANOVA.
Secondary information mostly collected from existing sources like publications of various ministries, namely, Ministry of Steel, Ministry of Commerce, Ministry of Finance, Ministry of Heavy Industries and Public Sector Undertakings, Government of India, Confederation of Indian Industries, Chamber of Commerce, world-steel Association, Indian Institute of Metal Delhi, Joint plan Committee on Steel, and Industries, and Bureau of Public Enterprises. Some important national libraries namely Indian Institute of Management- Vikram-Sarabhai Library (IIM-A), Indian School of Business Hyderabad (Learning Management Center), Indian Institute of Metal Calcutta, Library of Saurashtra University- Rajkot, Department of Commerce, Saurashtra University, and Official website of respective companies like World Steel Association, JPC Steel India, SAIL, Tata Steel, Bhushan Steel, and etc. There are some other online resources are also used for the present study like capitalline, Crisil Research India, prowess, National Stock Exchange of India (NSE) and Bombay Stock Exchange of India (BSE) and other available online resources for the required information for the present study of Indian Steel Industry.

4.4 Title of the Problem:

The title of the study is “A Study of Financial Efficiency of Indian Steel Industry”. Financial efficiency of a business organization is largely depending upon the relationship among five major parts’ performance analysis. Those are given as below:

1. Profit and profitability are considerable things to measure Company’s financial efficiency. Due to high degree of competition from national and international level, the profit margin is decreasing. Ability of the company to perform activity to utilize resources which are available towards the company within nation and at international level.

2. Relationship between Input cost and cost of production and the selling price are affecting company’s profitability and impact on financial efficiency of company and industry. In the age of globalization, this is a very vital question to any industry to survive in this competitive environment.
3. There are certain uncontrollable and controllable factors affecting profits of the companies. It is hypothesized and by controlling the controllable factors, the companies can improve their profit and profitability.

4. There are rapid changes in Liquidity position (working capital) determining factors i.e. manufacturing process and business fluctuation.

5. The companies faced multifarious problems during the study period and still it is facing many problems which are if tackled properly; the performance of the company will improve.

This study is based on the secondary data which will be drowning from published annual reports of selected companies of Indian Steel Industries under study.

Taking into consideration any ringlet company or sector only research work seems to have been under taken on the financial efficiency of companies of different sectors of India to present attempt will be an original, which contribution in this field as the problem of the study is unique in every aspect.

4.5 Objectives of the Study: -

The broad objectives of the study are to analysis the trends of financial efficiency of Indian Steel Industry the objectives are as under: -

1. To analyze the components of financial efficiency.

2. To examine the position of Indian Steel Industry in Global Steel Industry.

3. To review the overall performance through Ratio Analysis in selected companies of Steel Industry.

4. To suggest ways and means to improve performance and efficiency of Indian Steel Industry without adding financial resources.
4.6 Scope of the Study:

The review of literature presented in the preceding part of discussion testifies that many studies have been conducted in the past on financial aspects, profitability and liquidity on both public and private sectors but overall study on financial efficiency of steel industry and future growth for the steel industry required strategy is not focused till date. A study on financial performance or profitability and liquidity of the organizational study is also conducted but no study seems to be conducted on financial efficiency of steel industry after the downturn. In the present scenario where business world has become highly competitive, and there is a slow recession in the world economy each and every sectors and sector growth is highly depends on the performance of steel industry. The performance of steel industry is highly impacted on the performance of other industry like Automobile, Construction, Heavy tools and equipment, Aviation, Power, and etc.. Time has come when the revival of these undertakings has become imperative and for making them competitive, Government need to take some effective steps accepting the fact that the present time is the time of change towards betterment.. The pace, scope and depth of changes taking place in the public sector are said to require a fundamental retaining of the conceptual models or paradigms upon which public base accuracy have been built in the past. More pragmatically, there is an insistence need to examine the relevance, worth and effectiveness of all activities undertaken by the government.

In view of this, the present study intends to examine the financial efficiency of selected units of Indian Steel Industry.

4.7 Universe of Study:

The universe of the study consists of all the limited steel companies working in India and listed in stock exchanges of India. There are 735 such steel companies which are working in India as on 31st March- 2012. Out of these 352 companies were listed in stock exchanges of India.
4.7.1 Population of the Study:

Out of 352 companies listed at stock exchange 13 companies are having more than 1000 crores market capital, this constitute the population of the study.

4.7.2 Sampling Technique for the Study:

Out of 13 companies whose market capitalization is more than 1000 crores, top 10 companies according to their market capitalization were selected as sample for the study. 

The sample has been selected by considering following factors:
1. The data which are available for the period of study i.e. from 2002-03 to 2012-13.
2. The companies, which are associated with steel production and process.
3. The company should be listed in Stock Exchanges of India.
4. The company should be having more than 1000 crores market capitalization.
5. Company must be registered before 2000 in stock exchange.

The study covers a time period of 10 years beginning from 2003-04 and ending 2012-13, the last year for which data are available. Present study is for selected Steel Companies of India.

Table No. 4.1
Sample Companies from Indian Steel Industry (31st March, 2013)

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Year of Incpr.</th>
<th>Equity</th>
<th>NP</th>
<th>Mkt. Cap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Steel Limited</td>
<td>1907</td>
<td>971.21</td>
<td>6,505.77</td>
<td>52,799.83</td>
</tr>
<tr>
<td>Steel Authority of India Limited</td>
<td>1973</td>
<td>4,130.53</td>
<td>1,838.22</td>
<td>40,685.72</td>
</tr>
<tr>
<td>JSW Steel Limited</td>
<td>1994</td>
<td>241.72</td>
<td>2,489.50</td>
<td>31,148.04</td>
</tr>
<tr>
<td>Bhushan Steel Limited</td>
<td>1983</td>
<td>45.30</td>
<td>61.96</td>
<td>9,098.51</td>
</tr>
<tr>
<td>Ratnamani Metals &amp; Tubes Limited</td>
<td>1983</td>
<td>9.34</td>
<td>142.81</td>
<td>1,859.83</td>
</tr>
<tr>
<td>Mahindra Ugine Steel Co. Limited</td>
<td>1962</td>
<td>32.67</td>
<td>19.74</td>
<td>1,275.34</td>
</tr>
<tr>
<td>Uttam Galva Steels Limited</td>
<td>1985</td>
<td>142.26</td>
<td>33.13</td>
<td>1,241.93</td>
</tr>
<tr>
<td>Uttam Value Steels Limited</td>
<td>1970</td>
<td>1,321.62</td>
<td>-98.73</td>
<td>1,225.14</td>
</tr>
<tr>
<td>Usha Martin Limited</td>
<td>1986</td>
<td>30.47</td>
<td>-25.68</td>
<td>1,223.37</td>
</tr>
<tr>
<td>Sarda Energy &amp; Minerals Limited</td>
<td>1973</td>
<td>35.85</td>
<td>90.49</td>
<td>1,027.28</td>
</tr>
</tbody>
</table>

Source: www.capitalline.com
4.8 **Period of the Study**

The study of financial efficiency of Indian Steel Industry is made for the period of Ten (10) years from accounting year 2003-04 to 2012-13. Researcher has selected the base year 2002-03. This year is normal for the purpose of analysis and evaluation.

4.9 **Data collection and Analysis:**

For the purpose of analysis of financial efficiency of Indian Steel industry, the secondary data has been used. As definition point of view “the term secondary data refers to the tactical material which is not originated by investigator himself but which he obtains from some one’s records.” Secondary data, which were not gathered specially to meet the need of the problem at hand for specific study, for the present study, data have been collected for the period of Ten years from 2003-04 to 2012-13.

Various publications of steel companies from Indian Steel Industry has been collected from their Corporate Offices and their Official websites and other publications have also been used such as stock exchange official directory, Economics Times, Financial Express, R.B.I. Bulletin, Other periodicals Journals. Some of the data also collected from various websites like indiabull.com, capital-line, NSE and BSE India, world-steel association, Crisil research India Ltd., and other online resource.

The figure contained in the annual reports and accounts have been rounded off to crores up to two decimal places. All the collected data have been presented and formulating in the form of condensed balance sheet and income statement. All the ratios and mentioned statement have been analyzed and interpreted.

As conclusion point of view inter firm comparison has been made for analysis of efficiency of selected companies. For the purpose of analysis of financial efficiency Ratio analysis, Graphs, Means, and statistical tools have been used. Percentage and simple average Methods have used for the presentation and interpretation of the data and at the end on basis of the conclusion, some suggestion have been made for improvement of efficiency.
4.10 Hypotheses of the Study

“A hypothesis is a special proposition formulated to be tested in a certain given situation as a part of research which states what the researcher as looking for”. In the research study, two hypotheses have been tested. There are as under:

4.10.1 Null Hypothesis

Ho: The variance arose in the several ratios over the years and among the various companies did not differ significantly

4.10.2 Alternative Hypothesis

H1: The variance arose in the several ratios over the years and among the various companies differs significantly.

If the, Null Hypothesis is accepted, the Alternative Hypothesis will be rejected or vice versa.

4.11 Tools of Analysis of Financial Performance:

For the present study following tools have been used for Financial Efficiency of Indian Steel Industry.

4.11.1 Ratio Analysis:

Ratio is well known and most widely tool of financial analysis can be defined as “the indicated quotient of two mathematical expressions.” As operation definition or ratio is the relationship between one items with another in a simple mathematical form.” a ratio is simply one number expressed interims of another. It is found by dividing one number the base into the other”

“Generally there are two methods of expressing relationship in ratios” (i) The percentage method like 100 percent etc. “Analysis use ratio to connecting different parts of the financial statements in a to find clues about the status of particular aspects of the business” (ii) The Phrase method such as one and half to one and two for one. Ratio is useful analysis for financial statement. It is conveniently and clearly capsulize the data in a form that is easily understood interpreted as “ratio are simply a means of highlighting in
arithmetical terms, the relationship between figures drawn from financial statements. The technique of ratio analysis is the process of determining and interpreting numerical relationship based on the financial statements. According to Batty, "accounting ratio describe the significant relationship which exist between figures shown in a Balance sheet, in a profit and loss account, in a budgetary control system or another part of accounting organization." Beaver was the first to use the ratio analysis technique in a modern way of predicting business failure. It concludes whether the financial condition of a business enterprise is good or bad it is universally used for appraising the performance of a business firm.

4.11.2 Statistical Tool:

Statistical tool analysis of variance is utilized for data analysis and performance measurement of the firm. A brief outline of the ANOVA technique being used for present study is described here under:

4.11.3 Analysis of Variance:

Prof. R. A. Fisher was the first man to use the term, ‘Variance’ and in fact, it was he who developed a very elaborate theory concerning ANOVA, explaining its usefulness in practical field. ANOVA is essentially a procedure for testing the difference among different groups of data for homogeneity. There may be variation between samples and also within sample items. ANOVA consists in splitting the variance for analytical purpose. Hence, it is a method of analyzing the variance to which response is subject into its various components corresponding to various sources of variation.

Analysis of Variance, or ANOVA, is the standard technique for quantifying and partitioning sample variance in experimental data. Origin's ANOVA tools, both One-Way and Two-way, are both powerful and user-friendly.

Two-way analysis of variance experiments have two independent treatment factors each of which has two or more levels. Two-way ANOVA tests for significant differences between the factor level means within a factor and for interactions between the factors.
4.12 Outline of Chapter Plan:

Chapter 1: Conceptual Framework of Financial Efficiency:

This chapter is introductory in nature shows the concepts of financial efficiency and tools for measuring the financial strength and efficiency of the company and industry. Ratio and types of different ratio has been mentioned in this chapter.

Chapter-2 An Overview of Indian Steel Industry:

In this chapter we will present brief overview of Indian Steel Industry; which includes history of Steel and Indian Steel Industry growth Story, Contribution and role of Indian Steel Industry in global market and indicating the selected companies along with method of sampling and tool for selection for the companies which will represents Indian Steel Industries.

Chapter-3 Review of Literature:

In this chapter researcher mentioned separate chapter on available literature in the field of research in finance, research in steel industry of India and global steel industry. Also mentioned other research in the field of financial efficiency and measuring the financial strength of the organization with special reference to steel industry.

Chapter-4 Research methodology:

In this chapter describes problems of the study, objective and scope of the present study, hypothesis and research methodology. Tools and techniques of financial efficiency measurement provide information such as application of financial tools, statistical tools. The survey of existing literature describes the position in the case of literature in next chapter separately mentioned by researcher. Limitations of study besides outline of chapter plan has been drown.

Chapter-5 Sample Profiles of Indian Steel Industry:

In this chapter researcher describe the history of selected steel companies in India; which includes financial overview of selected companies of Indian steel Industry and their growth story, contribution and role of Indian Steel Industry and indicating the selected
companies along with method of sampling and tool for selection for the companies which will represents Indian Steel Industries.

**Chapter-6 Data Analysis & Interpretation**

In this chapter the concept of Ratio Analysis and calculated ratios of selected sample companies has been presented. With the calculated data analysis and interpretation of the analysis has been mentioned at the end of chapter concluding remarks are given.

**Chapter-7 Summery, Findings and Suggestions:**

At last chapter wise general summery, findings and suggestions of the study have been presented for improvement and future development plans of different companies and Indian Steel Industries.

**4.13 Limitations of the Study:**

1. There are many approaches to the measurement of financial efficiency and financial strength. There is no uniformity among experts.

2. Indian Steel Industry is backbone of the Indian economy, however attempts have been made to eliminate on the basis of objective analysis at the secondary data.

3. Physical constrains at an individual research has obviously remarks some limitations in the assembling of data due to vast panorama of companies of Indian Steel Industry.

4. The measurement of financial efficiency of Indian Steel Industry gives diagnostic indicators. Research being outside external analyst obviously has not assessed to internal data. Therefore, inside view of the organization can’t characterized in the study

5. These study is based on secondary data derived from Annual Published Reports, its quality is depends on quality of such data.
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