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Productivity Performance of Steel Companies in India: A Comparative Study of Tata Iron & Steel Company Ltd and Essar Steel Company Ltd

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Steel is both a basic and a core industry. Productivity is an effective measure of the efficiency with which resources are converted into goods and services. Productivity is one of the key determinants of cost and price competitiveness of all industries. There is a wide scope for the Indian steel units to improve their productivity performance. In order to compare the productivity performance of TISCO and ESCO, two major steel companies, eight productivity ratios are used. The steel industry in India will have to devise strategies for economizing the use of inputs and reducing costs so as to remain and manage competitiveness in the global trading environment.

Steel is one of the most important inputs for all industrial sectors of the economy. It is both a basic and a core industry. The economy of any nation depends increasingly on a strong base of iron and steel industry. History has shown that countries having a strong potential for iron and steel production have played a prominent role in the advancement of civilization. Steel is such a versatile commodity that for every object of day-to-day life it is used either directly or indirectly. To mention a few, it is used for such small items like nails,

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pins and needles. It is also used for agricultural implements, boilers, ships, fabrication, railway materials, automobile parts to heavy machines, structures, etc,

About Study Units- TISCO and ESCO

The Registered Office of Tata Iron & Steel Company Ltd (TISCO) is at Bombay House, 24, Homi Mody St, Fort, Mumbai - 400 001. It was incorporated in the year 1907. The main activities of TISCO are to make finished steel. Its share is listed at Ahmedabad Stock Exchange, Bombay Stock Exchange, Cochin Stock Exchange, Calcutta Stock Exchange, Delhi Stock Exchange, National Stock Exchange, Pune Stock Exchange and Uttar Pradesh Stock Exchange. TISCO has obtained independent technology for different operating areas from various technology suppliers. For 1.2 million tpa integrated steel project place at Gopalpur, TISCO has appointed Nippon Steel as technology consultant. The Japanese company will help in product mix selection, process know-how, technology selection of plant & equipment, layout etc. For the fourth phase of modernization, TISCO obtained technology from Lurgi Mettallurgie and Thyssen of Germany.

The Registered Office of Essar Steel Company Ltd (ESCO) is at Santushti Bldg, 27th KM, Surat, Hazira Road, Surat. It was incorporated in the year 1976. The main activity is to make finished steel. Its shares are listed on Ahmedabad Stock Exchange, Bangalore Stock Exchange, Bombay Stock Exchange, Calcutta Stock Exchange, Delhi Stock Exchange, Madras Stock Exchange and National Stock Exchange. ESCO Steel is an integrated steel maker manufacturing sponge iron, hot rolled coils and pellets. It has a 1.76 million tonne hot-rolled coil plant at Hazira in Gujarat and 3.30 million tonne pelletisation plant at Vizag, Andhra Pradesh. The company was promoted by the Ruia brothers, Shashi and Ravi, in 1976.

Productivity is an effective measure of the efficiency with which resources are converted into goods and services. The higher the productivity, the higher the level of economic well being and greater the national strength. Productivity is one of the key determinants of cost and price competitiveness of all industries.

Statement of the Problem

Steel has always been the backbone of any economy. Indian Government has been taking initiatives to provide infrastructure facilities to promote steel industry in India. On the other hand, the demand for steel has started showing significant improvement; it is anticipated that within the next two to three years, the installed capacities will be fully operational in India. However, some of the steel units have reported loss and in some cases even reduction of profits. One possible reason for this may be poor productivity performance. The productivity occupies a very important place in economic growth and development. Economic progress can be achieved either by increasing the amount of factors of production or by increasing

productivity. Therefore, the need for increasing productivity is widely realized particularly for promoting rapid economic development.

There is a wide scope for the Indian steel units to improve their productivity performance. Further, the steel units face threats from outside the countries. Under these circumstances, this study is relevant to the present day problem. This paper attempts to analyse the productivity performance of two major steel companies in India- Tata Iron & Steel Company Ltd and Essar Steel Company Ltd.

Objectives of the Study

The main objective of the study is to analyse and compare the productivity performance of TISCO and ESCO.

Data Collection and Period of the Study

The present study mainly depends on secondary data. The secondary data were collected for a period of 10 years i.e. from 1993 to 2002.The required data were obtained from the Prowess Corporate Database of CMIE, Chennai.

Analysis of the Study

In order to analyse the productivity performance of TISCO and ESCO, the two major steel companies in India, eight parameters (ratios) have been used in this study based on Alan Lawlors Approach in his Productivity Improvement Manual and Gowar Aldershet.[1] They are: 1) Ratio of Total Earnings to Conversion Cost, 2) Ratio of Purchased Services to Total Earnings, 3) Ratio of Wages and Salaries to Sales, 4) Profit to Conversion Cost Ratio, 5) Ratio of Profit to Sales, 6) Profit per Employee Ratio, 7) Sales per Employee Ratio and 8) Ratio of Value Added per Employee.

1. Ratio of Total Earnings to Conversion Cost

Total earnings refer to sales earnings and miscellaneous income of the company. The conversion cost in the denominator includes all costs incurred for converting raw materials into steel (cost of production). Higher ratio is better for the company. The ratio of total earnings to conversion cost is calculated with the help of following formula:

$$\text{Ratio of total earning to conversion cost} = \frac{\text{Total earnings}}{\text{Conversion cost}}$$

The ratio of total earnings to conversion cost is given in Table-I. The analysis of the above Table clearly shows that ESCO had maintained higher ratio rather than TISCO during the first half of study period. On the contrary, the ratio of total earnings to conversion cost of ESCO is lesser than that of TISCO during second part of study

period. However, the average ratio of TISCO (1.546) for ten years was slightly better than that of ESCO (1.425). This indicates clearly that TISCO was better than ESCO in respect of ratio of total earnings to conversion cost. The analysis also indicates that both companies earned sufficient earnings to meet conversion cost during the study period.

2. Ratio of Purchased Services to Total Earnings

Purchased services include raw materials, stores & spares, packaging expenses, purchase of finished goods, wages and salaries, energy (power & fuel) and other manufacturing expenses. Total earnings include sales and other miscellaneous income of the company. The ratio indicates the efficiency status of the company in terms of the purchased services cost. Lower ratio is better for the company. The ratio of purchased service to total earning is calculated by using the formula given below.

$$\text{Ratio of purchased services to total earning} = \frac{\text{Purchased services}}{\text{Total earnings}}$$

Table – II presents the ratio of purchased services to total earnings for the period from 1993 to 2002. From the above Table, it is understood that 10 years average ratio of purchased service to the total earnings showed a fairly uniform set of ratios in the range of 0.318 to 0.420.This showed that the two companies under study had kept their expenditure on purchased services strictly under check by monitoring them regularly. The said Table further indicates that this ratio of TISCO ranges from 0.27 to 0.40 while in the case of ESCO, it ranges from 0.50 to 0.34, which clearly indicated that purchased service was higher in the case ESCO than that of TISCO during the study period. In respect of this ratio the performance of TISCO has been relatively better during the study period.

3. Ratio of Wages and Salaries to Sales

The ratio of wages and salaries to sales is one of the important ratios to compare the productivity performance of companies. The wages and salaries refer to wages and salaries paid to employee and others who contributed their skill for the company. Sales income includes manufacturing income, trading income, fiscal benefits, internal transfers income and other income. This is obtained by dividing the total sum of wages and salaries by sales of the company. Lower ratio indicates better efficiency of the company. It is expressed as percentage to sales and calculated with the help of formula given under.

$$\text{Ratio of wages and salaries to sales} = \frac{\text{Wages and salaries}}{\text{Sales}}$$

The ratio of wages & salaries as percentage of sales from 1993 to 2002 is illustrated in Table –III. It is clear that the ESCO was spending Rs 0.0008 to Rs 0.02 for every hundred rupees of sales. In the case of TISCO, this ratio was ranged from Rs 0.08 to Rs 0.11 during the study period. Ten years average ratio of wages & salaries as percentage of sales of TISCO (0.098) was higher than that of ESCO (0.01223). This indicates that TISCO spent relatively higher amount for every hundred rupees of sales during the study period.

4. Profits to Conversion Cost Ratio

This is considered as an effective measure to be used to determine the relative profitability of a company. Tax provision includes corporate tax and other direct taxes. As pointed out earlier the conversion cost refers to all costs incurred for converting the raw material into steel (cost of production). Higher ratio is better for the company. The following formula is used to compute profit to conversion cost ratio.

$$\text{Profit to conversion cost ratio} = \frac{\text{Profit before tax}}{\text{Conversion cost}}$$

The ratio of profit to conversion cost in TISCO and ESCO during the period from 1993 to 2000 is disclosed in Table- IV. The TISCO (0.089) and ESCO (0.04636) had achieved profit ratios, which are approximately 8.9% and 4.636% respectively for every rupee of the total costs incurred for converting the raw materials into steel. It is significant to record here that in the case of TISCO, there was even pattern of profit over conversion cost, which was not found with ESCO. It could also be noted that ESCO was able to achieve higher ratio of profit to conversion cost while comparing with TISCO.

5. Ratio of Profits to Sales

The profit to sales ratio examines the relationship between net profit and sales of a firm. The profit margin is indicative of the "management ability" to operate the business successfully to recover the cost of merchandise or services, the expenses of operating the business (including depreciation) and the cost of the borrowed funds from gross revenue and to leave a margin of reasonable compensation to the owners for providing their capital at risk. The ratio of net profit before tax to sales essentially expresses the cost/price effectiveness of the operation. Higher ratio indicates better efficiency of the firm. The profit refers to profit before tax and sales refers to sales income of the company. It is expressed as percentage of sales.

$$\text{Profit to sales ratio} = \frac{\text{Profit}}{\text{Sales}} * 100$$

Table-V brings out the result of profit as percentage of sales of TISCO & ESCO for the period from 1993 to 2002. The profit to sales ratio was found in ESCO (where it ranged between 2.48 to negative of 8.92) and in TISCO (where it ranged between 97.5 to 118.33). Ten years average ratio of 5.599 and 7.743 was recorded in TISCO and ESCO respectively. This indicates that TISCO had earned lesser profit on sales as compared to ESCO.

6. Profit Per Employee Ratio

The profit per employee from the point of view of deployment of labour is dependent upon factors such as use of mechanization, wage rates, restrictive practices etc,. This ratio is used to determine the relative profitability of a company after all costs expect taxes, in relation to the number of persons employed. For the purpose of this ratio, profit refers to profit before tax. Higher ratio of profit per employee is better for the firm. The formula given below is used to compute profit per employee.

$$\text{Profit per employee} = \frac{\text{Profit before tax}}{\text{Number of employees}}$$

The profit per employee of TISCO and ESCO is depicted in Table-VI. It is clearly seen from the above Table that TISCO has made good earnings ranging from Rs 1.86 lakhs to Rs 9.32 lakhs while ESCO earned from Rs 0.08 lakh to negative Rs 0.010 lakhs during study period. The over all 10 years average ratio shows that TISCO had the highest profit per employee of Rs, 5.696 lakhs which is more than 21 times of ESCO (0.2673).

7. Sales Per Employee Ratio

The sale per employee ratio is dependent upon factors such as use of greater or lesser mechanization in production. The modernization would affect the sales per employee. It indicates the relative proportion of the companies' sales on persons employed in the company. Higher ratio may reflect the better efficiency of an employee. The following formula is used to calculate sales per employee.

$$\text{Sales per employee ratio} = \frac{\text{Sales}}{\text{Number of employees}}$$

The sales per employee of TISCO & ESCO from 1993 to 2002 are explained in Table - VII.The Table shows that the ten-year average of sales per employee ratio came to 0.1 in the case of TISCO and 0.17074 in the case of ESCO.The overall sales per employee in both cases were not adequate. However, the ESCO has performed relatively better than TISCO during the study period.

8. Ratio of Value Added per Employee

The value added shows the return to all persons involved in the affairs of the company. The return may be in the form of wages of various kinds to those who have contributed their skills, dividend and interest to those who have provided capital or loans and taxes of various kinds to the Government. Further the retained earnings are ploughed back into the company to facilitate the expansion. The value added refers to the net value added of the company. Higher ratio indicates better performance of the company. The formula given below is used to calculate this ratio.

$$\text{Ratio of value added per employee} = \frac{\text{Value added}}{\text{Number of employees}}$$

Table-VIII displays the ratio of value added per employee of TISCO and ESCO during the period from 1993 to 2002.TISCO earned during 10 years an average ratio of 0.03 while ESCO earned only 0.000407 which is about 73 times lesser. So, the overall average ratio clearly indicates that TISCO has performed much better than ESCO with regard to generating value addition per employee.

9. Overall Productivity Performance

In order to compare the productivity performance of TISCO and ESCO, 10 years average productivity ratios calculated above are furnished in Table -IX. Total earnings to conversion cost ratio of both steel companies taken for this study registered more or less uniform set of ratios (1.546 and 1.425). This indicated that the total earnings and conversion costs of both companies were kept under control more or less at the same rate. Both companies put their efforts at the same level.

The ratio of purchased services to total earnings of TISCO and ESCO also recorded fairly uniform set of ratios, which indicates the operating efficiency of both companies in terms of purchased services cost at the same level. Further this revealed that both of them had kept their expenditure on purchased services in the same proportion to their earning under check by monitoring expenses regularly.

In respect of wages and salaries to sales, TISCO (Rs.0.098) was spending more whereas ESCO spent only Rs.0.01223 on wages for achieving hundred rupees of sales. This depicts clearly that both companies spent less than Rs.1 on wages and salaries for every hundred rupee of sales during the study period.

The profit to conversion cost ratio is used to determine the relative profitability of the company. The performance of ESCO is about three times better than TISCO during study period. This clearly evidenced that ESCO had achieved a good ratio

of 0.24636 compared to TISCO (0.089). However, TISCO had achieved a better percentage of profit to sales (5.599 per cent) than ESCO (7.743 per cent).

The analysis of data lays open that the ESCO (0.2673) had earned less profit per employee as compared to TISCO (5.696), which was about twenty one times better. With regard to sales per employee though both companies performed well at same level, ESCO performance (Rs. 0.1074 lakhs) per employee was slightly better than TISCO (Rs.0.1 lakhs). It is significant to note that ESCO employees were performing relatively better than that of TISCO employees during the study period.

The overall average of value added per employee indicates that TISCO (0.03) had performed much better than ESCO (0.000407) with regard to generating value added per employee.

Conclusion

For Indian steel industry, many challenges lie ahead. Increasing of steel productivity is imperative in order to raise the standards of living and also to make Indian exports globally competitive. From the above study it can be inferred that steel industry in India will have to devise strategies for economizing the use of inputs and reducing cost so as to survive and manage competitiveness in the global trading environment. A more sober analysis unfolds that TISCO would do little well to improve its productivity while retaining its market hold. ESCO could look into areas where it is very weak and should rise up to meet the challenges ahead.

References

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2. *WWW.cmie.com*

TABLE –I
Ratio of Total Earnings to Conversion Cost

Years	TISCO	ESCO
1993	1.38	1.47
1994	1.49	1.64
1995	1.58	1.59
1996	1.63	1.76
1997	1.56	1.36
1998	1.49	1.35
1999	1.45	1.48
2000	1.61	1.06
2001	1.69	1.27
2002	1.58	1.27
Total	15.46	14.25
10 years Average	1.546	1.425

TABLE –II
Ratio of Purchased Services to Total Earnings

Years	TISCO	ESCO
1993	0.4	0.4
1994	0.34	0.4
1995	0.31	0.42
1996	0.3	0.42
1997	0.33	0.5
1998	0.33	0.41
1999	0.33	0.4
2000	0.28	0.5
2001	0.27	0.34
2002	0.29	0.41
Total	3.18	4.2
10 years Average	0.318	0.42

TABLE –III
Ratio of Wages and Salaries to Sales

Years	TISCO	ESCO
1993	0.11	0.02
1994	0.1	0.0008
1995	0.09	0.0007
1996	0.09	0.0008
1997	0.1	0.01
1998	0.11	0.02
1999	0.11	0.01
2000	0.09	0.02
2001	0.08	0.02
2002	0.1	0.02
Total	0.98	0.1223
10 years Average	0.098	0.01223

TABLE – IV
Ratio of Profit to Conversion Cost

Years	TISCO	ESCO
1993	0.05	1.18
1994	0.07	0.36
1995	0.08	0.39
1996	0.15	0.99
1997	0.12	0.22
1998	0.08	0.0006
1999	0.07	0.02
2000	0.1	-0.227
2001	0.12	-0.3
2002	0.05	-0.17
Total	0.89	2.4636
10 years Average	0.089	0.24636

TABLE – V

Ratio of Profits to Sales		
Years	TISCO	ESCO
1993	3.24	12.47
1994	4.4	25.13
1995	5.3	25.11
1996	8.92	56.56
1997	7.85	16.41
1998	5.19	0.49
1999	4.59	1.07
2000	6.36	-21.93
2001	7.1	-24.24
2002	3.04	-13.64
Total	55.99	77.43
10 years Average	5.599	7.743

TABLE – VI

Profits per Employee Ratio		
Years	TISCO	ESCO
1993	1.86	0.2
1994	2.79	0.3
1995	4.09	0.5
1996	8.75	0.1
1997	8.39	0.3
1998	5.62	0.3
1999	4.88	0.8
2000	7.37	0.2
2001	9.32	-0.017
2002	3.89	-0.01
Total	56.96	2.673
10 years Average	5.696	0.2673

TABLE – VII

Sales per Employee Ratio		
Years	TISCO	ESCO
1993	0.06	0.017
1994	0.07	0.012
1995	0.08	0.022
1996	0.09	0.021
1997	0.11	0.023
1998	0.11	0.681
1999	0.1	0.077
2000	0.12	0.069
2001	0.13	0.075
2002	0.13	0.077
Total	1	1.074
10 years Average	0.1	0.1074

TABLE – VIII

Ratio of Value Added per Employee		
Years	TISCO	ESCO
1993	0.01	0.0005
1994	0.06	0.0004
1995	0.02	0.0008
1996	0.03	0.0007
1997	0.03	0.0006
1998	0.03	0.017
1999	0.02	0.019
2000	0.03	0.0002
2001	0.04	0.0006
2002	0.03	0.0009
Total	0.3	0.0407
10 years Average	0.03	0.000407

TABLE-IX

Productivity Performance Ratios of Selected Steel Companies (TISCO & ESCO): Ten years Average from 1993-2002.

Name of the Company	Total Earnings to conversion Cost	Purchased Services to Total earnings	Wages and Salaries to Sales	Profits to Conversion Cost	Profits to Sales	Profits per Employee	Sales per Employee	Value Added per Employee
Tata Iron &Steel Company Ltd.	1.546	0.318	0.098	0.089	5.599	5.696	0.1	0.03
Essar Steel Company Ltd.	1.425	0.42	0.01223	0.24636	7.743	0.2673	0.1074	0.000407

Source: Computed from Tables I,II,III,IV,V,VI,VII, and VIII.