



Full Length Research

Financial performance of Maharatna central public sector enterprises in India: A case study of BHEL

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The role played by the Central Public Sector Enterprises (CPSEs) towards the development of the Indian economy can never be ignored. The country's growth story, in fact, has strong roots in the form of contributions made by the CPSEs over the years. Since the early 1990s, with the opening up of Indian economy, the Public Enterprises have been exposed to competition from domestic as well as multinational companies. In this backdrop, some studies have been conducted on the analysis of financial performance of Indian Public Enterprises in the recent past. But virtually no comprehensive study has been carried out to deal with the matter relating to the financial performance of the Maharatna CPSEs in India in the recent times considering all the major parameters of financial performance. Only a very few studies on the issue have been carried out in the recent past in which any one or two aspects of financial performance have been taken into consideration. In order to bridge the gap the present study has been conducted in which all the major dimensions of financial performance of Bharat Heavy Electricals Ltd., the only "Maharatna" CPSE in the Indian power equipment manufacturing sector have been analyzed during the period 2004/2005 to 2013/2014. While making this analysis, relevant statistical measures have been used.

Keywords: Maharatna, central public sector enterprises, financial performance, liquidity, working capital management, fixed assets management, profitability, value generating capability.

INTRODUCTION

The importance of public enterprises (PEs) in the Indian economy can never be overemphasised. They have been instrumental in designing a strong and diversified industrial base in the country. In fact, the growth story of India has deep roots in the form of contributions made by the PEs over the years. The public sector undertakings (PSUs) account for over 22 per cent of the country's GDP, contributes around 6 per cent to the total employment in the organised sector and make a contribution of over 20 per cent to the national exchequer by the way of payment of direct and indirect taxes. They have emerged as the medium through which achievement of the cherished goals of balanced socio-economic growth, wealth creation for all sections of people of the country, inclusive

growth and sustainable environmental practices are being facilitated (Sur and Yadav, 2014). With the economy embarking on the process of liberalisation, privatisation and globalisation since the early 1990s, the PEs have been exposed to competition from domestic as well as multinational companies. Some of the PEs with strategic vision have been exploring new avenues to face the challenges emanated from the integration of the domestic economy with global markets while others have failed to do so.

The central government has taken a very vital step to equip the profit-making Central Public Sector Enterprises (CPSEs) for reacting proactively to market forces by granting them operational and financial autonomy. For the purpose of

granting enhanced powers to those CPSEs, the Department of Public Enterprises under the Ministry of Heavy Industries and Public Enterprises, Government of India has introduced four schemes like 'Maharatna', 'Navratna', 'Miniratna – Category I', and 'Miniratna – Category II'. The 'Maharatna' scheme has been introduced in February 2010 with the objective to delegate enhanced powers to the Boards of identified large sized Navratna CPSEs so as to facilitate expansion of their operations, both in domestic as well as global markets. A CPSE must satisfy the following six criteria in order to enjoy Maharatna status: (i) The enterprise should already have a Navratna status. (ii) It should be enlisted on Indian stock exchange, with minimum prescribed public shareholding under SEBI regulations. (iii) The average annual turnover of the enterprise for the last 3 years should exceed Rs 25000 crore. (iv) The average annual net worth of the enterprise during the last 3 years should be more than Rs 15000 crore. (v) The average annual net profit after tax of the enterprise during the last 3 years should exceed Rs 5000 crore. (vi) The enterprise should have significant global presence or international operations (Public Enterprises Survey, 2012, 2013 vol. I). The Government of India has conferred Maharatna status on May 19, 2010 to four CPSEs namely Indian Oil Corporation Ltd. (IOCL), NTPC Ltd. (NTPC), Oil & Natural Gas Corporation Ltd. (ONGC) and Steel Authority of India Ltd. (SAIL); on April 11, 2011 to Coal India Ltd. (CIL) and on 1st February, 2013 to two CPSEs, namely Bharat Heavy Electricals Ltd. (BHEL) and GAIL (India) Ltd. (GAIL).

The present study attempts to analyse the financial performance of BHEL, the only 'Maharatna' PE in the Indian power equipment manufacturing sector during the period 2004/2005 to 2013/2014.

The remainder of this paper is organised as follows: Section 2 presents a review of the related literature. Section 3 contains the objectives of the study. Section 4 narrates the methodology adopted in this study. Section 5 is concerned with a brief profile of BHEL. Section 6 discusses the empirical results. Section 7 provides concluding remarks.

REVIEW OF RELATED LITERATURE

Before setting the objectives of a study it is necessary to review the existing literature on the issue connected with the study and to ascertain the research gaps. The following paragraphs in this section presents a brief description of some of the notable studies carried out in the recent past in India on the topic addressed in the present study and the last paragraph in this section deals with the identification of the research gaps.

Singh and Paliwal (2010) in their study examined the impact of disinvestment which took place during 1985/1986 to 2004/2005 on the performance of selected competitive and monopoly units in Indian public sector enterprises. The study revealed that the profitability of the selected competitive firms declined significantly during the post-disinvestment period while the selected monopoly firms proved their efficiency in

generating profit as well as controlling costs in the same period.

Gupta et al. (2011) conducted a study to assess the financial performance of thirty eight selected CPSEs in India (out of 44 disinvested enterprises till March, 2008) for the period 1986/1987 to 2009/2010 using some selected profitability, efficiency, liquidity, leverage and productivity ratios. The study observed that the partial or small amount of disinvestment did not yield desired results in majority of dimensions.

Sur and Panja (2014) in their study made a comparative analysis of the profitability of NTPC Ltd., the only Maharatna CPSE in the Indian power sector during the pre-liberalisation and post-liberalisation periods. In this study the profitability performance of the company was assessed on the basis of certain aspects, such as average, consistency, trend etc. of some selected profitability ratios using relevant statistical tools and techniques. The study revealed that NTPC Ltd. was able to prove itself as a better performer in terms of earning capability in the post-liberalisation period as compared to the pre-liberalisation era by combating efficiently all the obstacles emanated from liberalization, globalization and competitiveness.

Vijayakumar and Jayachitra (2014) in their study investigated the profitability performance of twelve CPSEs in India which were taken from Cognate groups belonging to the manufacturing sector, such as Fertilizer, Heavy Engineering, Medium & Light Engineering, Petroleum (refinery & marketing) and Transportation Equipment in both the pre and post-disinvestment periods. While making this analysis, suitable statistical techniques were applied. The study revealed that 58 per cent of the sample companies were able to enhance their profitability notably during the post-disinvestment period.

Sur and Yadav (2014) in their study attempted to make a cross-sectional analysis of the Maharatna CPSEs in respect to the efficiency of their asset management during the period 2004/2005 to 2013/2014. While measuring the efficiency of asset management in this study, fixed asset turnover ratio, inventory turnover ratio, receivable turnover ratio and cash turnover ratio were used. The study revealed that GAIL and IOCL jointly bagged the best award in respect to asset management and they were followed by ONGC, BHEL, CIL, SAIL and NTPC respectively in that order during the study period.

Vijayakumar and Jayachitra (2015) carried out a study to make a comparison between the pre and post – disinvestment financial and operating performance of twelve CPSEs in India which were selected from five cognate groups belonging to the manufacturing sector, such as Fertilizer, Heavy Engineering, Medium and Light Engineering, Petroleum (refinery and marketing) and Transportation Equipment. While tackling the issue, relevant statistical tools and techniques were used. The study observed that the companies belonging to the Heavy Engineering sector showed most significant improvement in majority of the performance indicators during the post-disinvestment period while the performance of the companies in the Transportation Equipment was very far from satisfactory

in the same period.

From the the discussion it is revealed that some studies were conducted on the analysis of financial performance of Indian PEs in the recent past. These studies were mainly concerned with the financial performance of the CPSEs during the post-disinvestment period. However, the outcomes derived from these studies were contradictory in nature and therefore, the studies failed to provide any definite conclusion. Further, no comprehensive study was carried out to deal with the matter relating to the financial performance of the Maharatna CPSEs in India in the recent times considering all the major dimensions of financial performance. Only a very few studies on the issue were conducted in the recent past in which any one or two dimensions of financial performance were taken into consideration. In order to bridge the gap the present study was made in which all the major dimensions of financial performance of BHEL, the only “Maharatna” CPSE in the Indian power equipment manufacturing sector were analysed.

Objectives of the study

The present study makes an analysis of financial performance of BHEL for the period 2004/2005 to 2013/2014. More specifically, the objectives are:

- i) To measure the financial performance of the company considering some selected dimensions of its financial performance.
- ii) To investigate whether there was any uniformity among the measures indicating the selected dimensions of financial performance of the company.
- iii) To identify the factors which made significant contribution towards enhancing the value generating capability of the company.

METHODOLOGY OF THE STUDY

The data of BHEL for the period 2004/2005 to 2013/2014 used in the study were collected from secondary sources, i.e. published financial statements of the company. While analyzing financial performance of the company, four dimensions of financial performance, such as liquidity, profitability, efficiency of asset management and value generating capability were taken into consideration. The current ratio (CR) was used in this study in measuring liquidity of the company, working capital turnover ratio (WCTR) and fixed assets turnover ratio (FATR) were used in assessing the efficiency of the company in terms of its working capital management and fixed asset management respectively. In this study five profitability measures, namely gross profit ratio (GPR), net profit ratio (NPR), return on total assets (ROTA), return on net worth (RONW) and earnings per share (EPS) were used. When the profitability of a business firm is analysed using any one of these conventional yardsticks, the implied premise is that the firm exists, operates and grows only for its

owners. But this concept mismatches with the philosophy of the PEs. The achievement of social objective, which is one of the major goals of the PEs, is not at all reflected in the said accounting profit based measures (Mallik and Sur, 2004; Sinha, 1983). Thus in the present study ‘value added to capital employed ratio (VACE) was also analysed in evaluating the financial performance of BHEL and taken as the dependent variable at the time of ascertaining the influence of the determinants on the company’s value generating capability. Generally, a firm utilizes its funds in two ways: (a) by making investment in fixed assets and (b) by making investment in working capital. So, the value generating capability of the firm largely depends on the efficiency with which fixed assets as well as working capital are managed (Sur and Panja, 2014; Sur and Yadav, 2014). Thus, in this study FATR and WCTR were considered as the determinants of value generating capability. For analyzing the data used in the course of the study, simple statistical tool like arithmetic mean (AM); statistical techniques, such as partial correlation analysis, multiple correlation analysis, multiple regression analysis, analysis of Kendall’s coefficient of concordance and Ordinary Least Square (OLS) methodology and statistical tests like t test, F test and Chi-square (χ^2) test were applied at appropriate places.

A brief profile of BHEL

BHEL, which was incorporated in 1964, is one of the few companies in the world having capability to manufacture the entire range of equipments used in thermal, gas, hydro and nuclear power plants and has proven turnkey abilities for executing power projects from concept-to-commissioning. The company has a share of 59 per cent in India’s total installed generating capacity contributing nearly 69 per cent to the total power generated from utility sets (excluding non-conventional capacity). The company has been continuously earning surplus from its business operations since 1971/1972 and distributing a part of it among its legal owners as dividend. BHEL has a widespread footprint across the globe in 76 countries and has contracted power plant equipment of around 17000 MW outside India. Considering its outstanding performance and notable contribution to the national economy BHEL has been conferred with the Maharatna status on February 1, 2013 by the Department of Public Enterprises, Government of India.

EMPIRICAL RESULTS AND DISCUSSION

In Table 1, an attempt was made to analyse the financial performance of BHEL using CR, WCTR, FATR, GPR, NPR, ROTA, RONW, EPS and VACE. In this table, for measuring the average values of these ratios, AM was used. For identifying the nature of the trend in the selected ratios of the company under study linear trend equations were fitted and in order to test whether the slopes of the trend lines were statistically significant or not, t test was used. The results obtained from the analysis of the selected ratios are discussed:

Table 1. Analysis of financial performance of BHEL using selected financial performance indicators.

Year	Financial Performance Indicators										Ranks of Financial Performance Indicators								Sum of ranks	Ultimate Financial Performance Ranks
	CR	WCTR	FATR	GPR	NPR	ROTA	RONW	EPS	VACE	A _R	B _R	C _R	D _R	E _R	F _R	G _R	H _R	I _R		
	(Times)	(Times)	(Times)	(%)	(%)	(%)	(%)	(Rs)	(%)											
A	B	C	D	E	F	G	H	I												
2004-05	1.58	2.12	2.8	16.1	9.2	13.9	15.8	3.9	71.5	4	8	10	9	9	9	9	10	8	76	10
2005-06	1.60	2.42	3.8	18.1	11.6	17.3	23.0	6.86	81.2	3	7	8	7	7	5	7	9	7	60	8
2006-07	1.50	2.83	4.5	20.2	12.9	19.6	27.5	9.86	94.0	5	4	7	4	5	1	3	8	4	41	3
2007-08	1.40	2.73	4.8	20.9	13.4	17.6	26.5	11.68	93.8	7	6	5	2	3	4	5	7	5	44	5
2008-09	1.30	3.29	5.4	17.4	11.2	14.4	24.3	12.82	98.0	10	2	1.5	8	8	8	6	6	3	52.5	6
2009-10	1.32	3.28	5.2	19.4	12.6	15.8	27.1	17.61	101.6	1.5	3	3	5	6	6	4	4	2	41.5	4
2010-11	1.32	3.45	5.4	20.9	13.9	17.8	29.8	24.58	112.7	1.5	1	1.5	2	2	2	1	3	1	22	1
2011-12	1.43	2.77	5.1	20.9	14.2	17.7	27.7	28.76	84.3	6	5	4	2	1	3	2	1	6	30	2
2012-13	1.64	2.07	4.7	19.1	13.2	15.4	21.7	27.03	66.7	2	9	6	6	4	7	8	2	9	53	7
2013-14	1.76	1.44	3.3	12.8	8.6	8.6	10.5	14.14	45.4	1	10	9	10	10	10	10	5	10	75	9
Minimum	1.30	1.44	2.8	20.9	8.6	8.6	10.5	3.9	45.4											
Maximum	1.76	3.45	5.4	18.58	14.2	19.6	29.8	28.76	112.7											
Average	1.48	2.64	4.50	2.60	12.08	15.81	22.79	15.72	84.92											
α	0.16	0.64	0.91	0.14	1.92	3.07	5.61	8.56	19.64	Kendall's coefficient of concordance among the selected financial performance indicators (W) is 0.41875 and Chi-square (χ^2) value is 33.9189**										
CC	0.11	0.24	0.20	-0.104	0.16	0.19	0.25	0.54	0.23											
Slope of trend line	0.008	-0.041	0.093	-0.104	0.092	-0.415	-0.37	2.251	-1.967											
t value	0.446	-0.056	0.926	-0.346	0.415	-1.267	-0.577	3.717**	-0.900											

**Significant at 1 per cent level. Source: Compiled and computed from the published Financial Statements of BHEL.

(i) **CR:** It is a basic measure of judging the ability of a company to pay off its short term obligations. The higher the CR, the greater is the margin of safety to short-term creditors. Table 1 show that the CR of BHEL ranged between 1.30 in 2008-2009 and 1.76 in 2013-2014. On an average, it was 1.48. The trend line fitted to the CR series depicts that an upward trend in CR which was not found to be statistically significant was noticed.

(ii) **WCTR:** It measures the efficiency of the company in managing its investment in working capital. The higher the WCTR, the higher is the efficiency of working capital management of the company. Table 1 discloses that the WCTR of BHEL

varied between 1.44 in 2013-2014 and 3.45 in 2010-2011. The mean WCTR of the company for the period under study was 2.54. The linear trend equation fitted to the WCTR series reveals that a declining trend was observed, but the trend in WCTR was not found to be statistically significant during the period under study.

(iii) **FATR:** It indicates the efficiency of the fixed asset management of the company. The higher the FATR, the higher is the efficiency of the company in terms of its fixed asset management. Table 1 shows that the FATR of BHEL fluctuated between 2.80 in 2004-2005 and 5.40 in 2010-2011. On an average, it was 4.50. The trend line fitted to the FATR series was positive but not found to be statistically significant

during the study period.

(iv) **GPR:** It measures the gross earning capability of the company. This ratio can be used as a measure of the efficiency of the production operation. A higher GPR is a sign of higher efficiency of the production operation of the company. Table 1 displays that the GPR of BHEL varied between 12.80 per cent in 2013-2014 and 20.90 per cent in 2010-2011 and 2011-2012. The mean GPR of the company for the period under study was 18.58 per cent. The linear trend equation fitted to the GPR series indicates that a downward trend in the GPR of the company was noticed, but the trend was not found to be statistically significant during the study period.

Table 2. Analysis of relationship between efficiency of asset management and value generating capability of BHEL.

Partial correlation analysis			
Partial correlation coefficient between WCTR and VACE ($r_{WV,F}$) = 0.956**			
Partial correlation coefficient between FATR and VACE ($r_{FV,W}$) = -0.398			
Multiple regression analysis:			
Regression equation: $VACE = \alpha + \beta_1 \cdot WCTR + \beta_2 \cdot FATR + e$			
Partial regression coefficient		t	
α	9.673	1.326	$R_{V,W,F} = 0.981$
β_1	33.871	8.632**	$R^2_{V,W,F} = 0.962$
β_2	-3.150	-1.147	$F = 88.842$ **

**Significant at 1 per cent level. Source: Compiled and computed from the published Financial Statements of BHEL.

(v) **NPR:** It shows the net earning capability of the company. A high NPR is desirable as it usually ensures a higher return to the equity and preference shareholders. Table 1 discloses that the NPR of the company ranged between 8.60 per cent in 2013-2014 and 14.20 per cent in 2011-2012. On an average, it was 12.08 per cent. The trend line fitted to the NPR series reveals an increasing trend which was not found to be statistically significant.

(vi) **ROTA:** It measures the overall profitability of the company. The higher the ROTA, the larger is the overall earning capability of the company. Table 1 depicts that the ROTA of BHEL fluctuated between 8.60 per cent in 2013-2014 and 19.60 per cent in 2006-2007. The mean ROTA for the study period was 15.81 per cent. The linear trend equation fitted to the ROTA series indicates that a declining trend in the ROTA of the company was noticed, but the trend was not found to be statistically significant.

(vii) **RONW:** It indicates the earning capability of the company from the viewpoint of its owners. A high RONW is a sign of efficient utilization of owners' fund. A low RONW, on the other hand, definitely is an adverse signal for the owners of the company. Table 1 show that the RONW of the company ranged between 10.50 per cent in 2013-2014 and 29.80 per cent in 2010-2011. On an average, it was 22.79 per cent. The trend line fitted to the RONW series reveals a downward trend which was not found to be statistically significant during the study period.

(viii) **EPS:** It shows the earnings available to equity shareholders on a per share basis. Generally, a high EPS is desirable as it usually ensures a higher return to the equity shareholders. Table 1 demonstrates that the EPS of BHEL fluctuated between Rs 3.90 in 2004-2005 and Rs 28.76 in 2011-2012 while its mean value for the study period was Rs 15.72. The linear trend equation fitted to the EPS series reveals

an upward trend which was found to be statistically significant at 1 per cent level.

(ix) **VACE:** It measures the wealth generating capability of the company. The higher the VACE, the greater is the company's capability to generate its wealth. Table 1 discloses that the VACE of BHEL varied between 45.40 per cent in 2013-2014 and 112.70 per cent in 2010-2011. On an average, it was 84.92 per cent. The trend line fitted to the VACE series indicates a declining trend which was not found to be statistically significant.

In Table 1, for the purpose of ascertaining the financial performance of BHEL more precisely in the different years under study, a comprehensive rank test was also carried out. In this test, a process of ranking was used in order to arrive at a more comprehensive measure of financial performance in which the values of all the selected financial performance indicators were combined in a composite score. The ultimate financial performance ranking, based on the sum of scores of each year's separate individual rankings under the selected financial performance ratios, was made on the principle that the lower the composite score, the higher the financial performance and vice versa (Sur, 2012). This table shows that the company captured the top-most position in respect of financial performance in 2010-2011 and it was followed by the years 2011-2012, 2006-2007, 2009-2010, 2007-2008, 2008-2009, 2012-2013, 2005-2006, 2013-2014 and 2004-2005 respectively in that order.

In Table 1, it was also attempted to investigate whether there was any uniformity among the selected financial performance indicators of BHEL during the study period using Kendall's coefficient of concordance (W). For testing the computed value of W, Chi-square (χ^2) test was applied. Table 1 discloses that the computed value of W was 0.41875 which was found to be

statistically significant at 1 per cent level. It indicates that well-existence of uniformity among the selected dimensions of financial performance of the company during the period under study was noticed.

In Table 2 partial correlation analysis, multiple correlation analysis and multiple regression analysis were made for identifying the factors making significant contribution towards the value generating capability of BHEL during the study period. In this study it was assumed that $VACE=f(WCTR, FATR)$. The regression equation which was fitted in this study is: $VACE=\alpha+\beta_1.WCTR+\beta_2.FATR+e$ where α is the intercept term, β_1 and β_2 are the partial regression coefficients and e denotes the error term.

The partial correlation coefficients and partial regression coefficients were tested by t test while F test was applied in order to examine whether the multiple correlation coefficient was significant or not. Enough care was also taken in choosing the independent variables (WCTR and FATR) to estimate the dependent variable (VACE) so as to ensure that multicollinearity was reduced to the minimum. Table 2 shows that the partial correlation coefficient between WCTR and VACE (0.956) was positive and found to be statistically significant at 1 per cent level.

It is a theoretical argument that the higher the efficiency of working capital management, the larger is the company's capability of generating its value. The analysis of correlation between VACE and WCTR of BHEL after eliminating the influence of its FATR conforms to the theoretical argument. The partial correlation coefficient between FATR and VACE (-0.398) was negative but not found to be statistically significant. Generally speaking, the higher the efficiency of fixed asset management, the greater is the company's ability to generate its wealth. The net outcome derived from the analysis of correlation between VACE and FATR of the company after eliminating the influence of its WCTR does not corroborate the generally accepted rule.

Table 2 discloses that for one unit increase in WCTR, the VACE of BHEL stepped up by 33.871 units which was found to be statistically significant at 1 per cent level. It again conforms to the theoretical argument that the higher the efficiency of working capital management, the higher is the company's wealth generating capability. When FATR increased by one unit, the VACE of BHEL decreased by 3.15 units which was not found to be statistically significant even at 5 per cent level. It confirms that the fixed asset management of the company did not influence its value generating capability during the study period.

The multiple correlation coefficient of VACE on WCTR and FATR ($R_{V,W,F}$) was 0.981 which was found to be statistically significant at 1 per cent level. It implies that the joint influence of efficiency in the management of working capital and fixed assets of the company on its value generating capability was noticeable during the study period. The coefficient of multiple determination ($R^2_{V,W,F}$) as shown in Table 2 reveals that 96.20 per cent of the variation in VACE of BHEL was contributed by its WCTR and FATR.

CONCLUSION

i) Out of the nine financial performance indicators used in this study, only EPS showed an upward trend which was found to be statistically significant. It implies that a strong evidence of increasing trend only in the earning capability of BHEL from the viewpoint of its owners during the study period was noticed. However, out of the remaining eight financial performance measures, three parameters, namely CR, FATR and NPR indicated positive trend while five measures, such as WCTR, GPR, ROTA, RONW and VACE disclosed negative trend during the study period. But the slopes of all these eight trend lines were not found to be statistically significant. So, no specific trend in most of the selected dimensions of financial performance of the company during the period under study was established.

ii) The analysis of composite scores based on the selected financial performance parameters reveals that BHEL reached the top in respect of financial performance in the year 2010-2011 while the company was placed in the worst position in the year 2004-2005 during the period under study.

iii) A considerable degree of uniformity among the liquidity, profitability, efficiency of working capital management, efficiency of fixed asset management and value generating capability of the company during the study period was observed.

iv) The net outcome derived from both the partial correlation analysis and multiple regression analysis as carried out in this study reflects that the working capital management of BHEL made a noticeable contribution towards enhancing its value generating capability during the study period while the company's fixed asset management failed to establish itself as a significant contributor of its wealth generation in the same period.

Conflicts of interest

Authors have none to declare.

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