



Liquidity Management in Indian Public Enterprises: A Case Study of BHEL

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Abstract: Considering the stiff competition that exists in today's business environment, measuring liquidity and making analysis of its impact on profitability are immensely important to the corporate executives to instigate managerial efficiency and excellence. The liquidity management practice in the Indian public sector has shown noticeable changes. Even many well-managed Public Enterprises in India have been forced to make suitable changes in their liquidity management practices during the post-liberalization period. Against this backdrop, the present paper seeks to examine the liquidity management of Bharat Heavy Electricals Limited (BHEL), the only Maharatna Public Enterprise in Indian power plant equipment manufacturing sector during the period 2011-12 to 2022-23.

Key words: *Liquidity, Public Enterprises, Profitability*

I: Introduction:

Liquidity is a pre-requisite for the very survival of a firm. It should be neither excessive nor inadequate. Excessive liquidity implies accumulation of idle funds which earn no profit for the firm while inadequate liquidity results in business interruption and hurts the firm's earnings. Thus efficient liquidity management is an integral part of the overall corporate strategy to create shareholders value. The matter of designing appropriate strategies for enhancing efficiency of liquidity management in accomplishing the wealth maximization objective of corporates is of utmost importance. Considering the stiff competition that exists in today's business environment, measuring liquidity and making analysis of its impact on profitability are immensely important to the corporate executives to instigate managerial efficiency and excellence.

The global wave of privatization, which was initially shown in the U.K. in 1980's and subsequently spread over almost all over the world, has stimulated considerable debate in India on the rationality of denationalization its public enterprises (PEs). The increasing dependence on the international funding agencies like IMF, World Bank, Asian Development Bank etc due to the rising trend in adverse balance of payment situation in India has also provided the plea to adopt economic liberalization policy by the Government of India. In mid-1991, the Government of India set in motion a new economic industrial policy after discarding the old Nehruvian line of socialistic pattern. Since then, several policy statements pronounced by the Central Government have thrust towards deregulation, globalization and liberalization. As a result, a large number of PEs which had grown exponentially over the years in a virtually non-competitive environment have started facing increasingly severe competition. Thus, a notable change in the Indian public sector has also become inevitable to meet the new challenges (Jafar & Sur, 2006). The liquidity management practice in the Indian public sector has shown noticeable changes. Even many well-managed PEs in India have been forced to make suitable changes in their liquidity management practices during the post-liberalization period. Against this backdrop, the present paper seeks to examine the liquidity management of Bharat Heavy Electricals Limited

(BHEL), the only Maharatna PE in Indian power plant equipment manufacturing sector during the period 2011-12 to 2022-23.

The remainder of this paper is structured as follows: Section II deals with the objectives of the study. Section III narrates the methodology adopted in this study. In section IV, a brief profile of the selected company is presented. Section V is concerned with the empirical results. In section VI, concluding remarks are given.

II. Objectives of the study:

The present study has the following objectives:

1. To analysis the liquidity of the company under study using some selected ratios.
2. To assess the liquidity status of the selected company more precisely applying comprehensive scores.
3. To examine whether there is any uniformity among the selected aspects relating to the liquidity management of the company under study.
4. To measure the extent of relationship between liquidity and profitability of the selected company.
5. To identify the aspects relating to the liquidity management of the company among the selected ones which make significant contribution towards the company's profitability.

III. Methodology of the study:

The data of BHEL for the period 2011-12 to 2022-23 used in this study were collected from secondary sources, i.e. Published Annual Reports of the company. For analysing the data, the technique of ratio analysis, simple statistical tools like mean, statistical techniques like analysis of trend movement, analysis of Pearson's simple correlation, Spearman's rank correlation analysis, Kendall's correlation analysis, analysis of Kendall's coefficient of concordance etc. were used. The t-test and chi square test were applied at appropriate places.

IV. A brief profile of BHEL:

BHEL, an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing companies in India in terms of turnover, was established in 1964. It is the 7th largest power equipment manufacturer in the world. 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) as of March 31,2012. BHEL has been generating surplus continuously since 1971-72 and making payment of dividend since 1976-77. Considering its outstanding performance and tremendous contribution to the national economy, the Government of India has granted 'Maharatna' status to BHEL on February 1, 2013.

V. Empirical Results:

A. In Table I, an attempt was made to analyse the liquidity of BHEL, by using some selected ratios. In this table, for identifying the nature of the trend in each of the selected ratios during the period under study linear trend equation was fitted and in order to examine whether the slopes of the trend lines were statistically significant or not t-test was used. For assessing the liquidity of the selected company, the following ratios were analyzed.

- Working Capital Ratio (WCR): It is a basic measure of liquidity. The higher the WCR, the larger is the amount of funds available for meeting short term obligations and accordingly, the greater is the margin of safety to short term creditors. Table I exhibits that the WCR of BHEL fluctuated between 1.82 in 2011-12 and 1.30 in 2019-20. On an average, it was 1.55. The linear trend fitted to the WCR series showed a declining trend which was founded to be statistically significant at 5 per cent level. It indicates that there was a significant downward trend in the company's ability to meet current obligations during the study period.

- Acid Test Ratio (ATR): This ratio is a refinement of WCR and it is concerned with the establishment of relationship between the quick assets and quick liabilities. As this ratio excludes inventory which may be slow moving, it can measure more effectively the short term debt paying capability of the company. Table I discloses that the ATR of the company ranged between 1.33 in 2011-12 and 1.02 in 2019-20. The mean ATR of the company during the study period was 1.19. The straight line trend fitted to the ATR series indicated a decreasing trend which was found to be statistically significant at 1 per cent level. It reveals that a notable declining trend in the instant capacity of the company to meet its quick liabilities during the period under study was noticed.
 - Inventory Turnover Ratio (ITR): This ratio helps in determining the liquidity of a company in as much as it indicates the rate at which the inventories are converted into sales and then into cash ultimately. It also throws light on the inventory policy pursued by the company and reasonableness of the same. A high ITR is good from the liquidity point of view while a low ratio implies excessive inventory levels than warranted by volume of operation. It is observed from Table I that the ITR of BHEL varied between 3.60 in 2012-13 and 2.20 in 2022-23. On an average, it was 2.84 during the study period which indicates that one rupee invested in inventory could be able to generate Rs. 2.84 worth sales. The linear trend equation fitted to the ITR series showed a downward trend which was found to be statistically significant at 5 per cent level. So a significant negative growth in the efficiency of inventory management of the company, which resulted in notable deterioration in the company's liquidity, was observed during the study period.
 - Debtors Turnover Ratio (DTR): It measures the efficiency of the credit and collection policies adopted by the company. It also reflects the quality of debtors. The higher the DTR, the greater is the degree of efficiency in credit management and better is the liquidity of debtors. Table I shows that BHEL registered an overall increasing trend during the first half of the study period while an overall declining trend during the second half regarding its DTR. It was the highest in 2016-17 which stood 2.03 and least in 2021-22 which was 1.58. On an average, the ratio was 1.75. However the straight line fitted to the DTR series for the entire period failed to identify any significant specific (upward or downward) trend. It reveals that any noticeable change in the efficiency of the company's credit management with the passage of time was not found during the period under study.
 - Cash Turnover Ratio (CTR): This ratio is used to see if there is adequacy of cash and whether or not cash has been effectively utilized in making sales. A higher ratio implies by and large a more efficient use of cash. Table I depicts that the CTR of BHEL ranged from 2.55 in 2018-19 to 19.06 in 2011-12 and the mean value of it was 6.16 for the period under study. The CTR series of the company followed a downward trend during the study period which was found to be statistically significant at 5 per cent level. It implies that a significant declining trend in the company's efficiency in respect of maintaining its cash balance during the period under study was observed.
- B. The liquidity of a company is largely affected by the composition of working capital in as much as any considerable shift from the relatively more efficiency in managing elements of working capital to their relatively less efficiency or vice versa, will materially affect the company's ability to pay its current debts promptly. Therefore, for assessing the liquidity of the company more precisely a comprehensive test based on the sum of scores of separate individual ranking under the five criteria viz. WCR, ATR, ITR, DTR and CTR was made in Table II. For measuring the degree of uniformity among the five sets of ranking, Kendall's coefficient of concordance (W) was used. In order to examine whether the computed value of W was statistically significant or not, Chi-square (χ^2) test was applied. In case of any criterion mentioned above a high value indicates a more favourable liquidity position and ranking was done in that order. Ultimate ranking was done on the principle that the lower the points scored, the more favourable is the liquidity position. Table II shows that the computed value of W, which was 23.859 was found to be statistically significant at 5 per cent level. It indicates that there was a close as well as significant association among the selected indicators of liquidity performance of the company under study during the study period. This table discloses that the year 2013-14 registered the most favourable liquidity position

- of the company and was followed by 2011-12, 2012-13, 2014-15 and 2016-17, 2017-18, 2011-2012, 2015-16, 2020-21, 2018-19, 2021-22 and 2019-20 respectively in that order. It reveals that the overall liquidity of BHEL in the first half of the study period was better as compared to that in the second half.
- C. In Table III an analysis of overall profitability of BHEL was made by using mean value and linear trend equation of the company's return on capital employed (ROCE) and t test. It was also attempted to measure the extent of relationship between liquidity and profitability of the company by using Spearman's rank correlation coefficient (R_{LP}). To test whether the computed value of R_{LP} was significant or not t-test was used. In this regard the composite ranks of liquidity (as ascertained in Table II) and the ranks of profitability (based on ROCE) were applied. It is observed from Table III that the company, on an average, maintained at 34.91 per cent during the study period, the range being 54.94 per cent (2021-22) to 6.46 per cent (2011-12). The straight line trend fitted to the ROCE series during the study period exhibited an upward trend and the change in ROCE for each unit change in time period was found to be statistically significant at 1 per cent level. This table also shows that the computed value of R_{LP} was -0.81 which was found to be statistically significant at 1 per cent level. It reflects that there was a very significant degree of negative association between liquidity and profitability of the company during the study period. Thus the company was able to manage its business in such a way as to ensure lower liquidity-higher profitability blend.
- D. In Table IV for identifying the factors making significant contribution towards the profitability of the company an effort was made to ascertain the closeness of association between the liquidity and the overall profitability of BHEL through correlation coefficients between the selected liquidity and profitability measures taking into consideration their magnitudes (i.e. by Pearson's simple correlation coefficient), rankings of their magnitudes (i.e. by Spearman's rank correlation coefficient) and the nature of their associated changes (i.e. by Kendall's correlation coefficient). These correlation coefficients were tested using t-test. This table shows that the notable association was found only in between WCR and ROCE and in between ATR and ROCE. All the correlation coefficients in these two cases were negative and found to be statistically significant at 1 per cent level. It again confirms a significant negative association between liquidity and profitability of the company under study during the study period. This outcome conforms to the theoretical argument that the higher the liquidity, the lower is the profitability. However, the correlation coefficients between ITR and ROCE and between CTR and ROCE were negative while the correlation coefficients between DTR and ROCE were positive and almost all these coefficients (except in Pearson's correlation coefficient between CTR and ROCE) were not found to be statistically significant at 5 per cent level. It indicates that while the influence of the inventory management and cash management on the company's overall profitability was negative, the effect of debtors management was positive but these influences were not at all noticeable during the study period.

VI: Concluding Remarks:

A significant declining trend in the short-term debt paying capability as well as the immediate debt paying capability of BHEL was noticed during the study period. Moreover, the efficiency in inventory management and cash management of the company stepped down notably with the passage of time during the period under study. All these negative attributes had definitely an adverse impact on the overall liquidity status of the company. This is also reflected in the outcome derived from the comprehensive rank test which indicates that there was a clear deterioration in the overall liquidity of the company during the second half of the study period. Another notable outcome of the study is that the association among the major liquidity indicators of the company during the study period was very significant. The study also reveals that there was a remarkable improvement in the overall profitability of BHEL throughout the period under study, although the company was not able to enhance the efficiency of its inventory management, debtors management and cash management during the same period.

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Table I

Bharat Heavy Electricals Limited**Selected Ratios relating to liquidity management**

Year	WCR	ATR	ITR	DTR	CTR
2011-12	1.82	1.33	3.01	1.52	19.06
2012-13	1.71	1.28	3.60	1.59	15.29
2013-14	1.75	1.32	3.05	1.84	5.66
2014-15	1.64	1.31	2.74	1.87	3.26
2015-16	1.59	1.23	2.70	1.73	3.25
2016-17	1.58	1.22	2.77	2.03	3.51
2017-18	1.46	1.16	3.21	1.93	3.23
2018-19	1.40	1.11	2.54	1.79	2.55
2019-20	1.30	1.02	2.59	1.75	2.72
2020-21	1.33	1.05	3.01	1.65	3.49
2021-22	1.32	1.04	2.68	1.58	4.50
2022-23	1.70	1.22	2.20	1.68	7.42
Average	1.55	1.19	2.84	1.75	6.16
Maximum	1.82	1.33	3.60	2.03	19.06
Minimum	1.30	1.02	2.20	1.52	2.55
Slope of the Trend line	-0.036	-0.025	-0.064	0.000	-0.860
t-value	-3.111*	-4.141**	-2.610*	-0.047	-2.228*
*Significant at 5% level, ** Significant at 1% level					
Source: Compiled and computed from Published Annual Reports of BHEL for the years 2011-12 to 2022-23.					

Table II

Bharat Heavy Electricals Limited**Statement of ranking in order of liquidity and analysis of Kendall's Coefficient of Concordance among selected liquidity indicators**

Year	WCR (A)	ATR (B)	ITR (C)	DTR (D)	CTR (E)	Liquidity Ranks					Sum Of Ranks (A _R + B _R + ...+E _R)	Ultimate Rank
						A _R	B _R	C _R	D _R	E _R		
2011 -12	1.82	1.33	3.01	1.52	19.06	1	1	4	12	1	19	2
2012 -13	1.71	1.28	3.60	1.59	15.29	3	4	1	10	2	20	3
2013 -14	1.75	1.32	3.05	1.84	5.66	2	2	3	4	4	15	1
2014 -15	1.64	1.31	2.74	1.87	3.26	5	3	7	3	8	26	4.5
2015 -16	1.59	1.23	2.70	1.73	3.25	6	5	8	7	9	35	8
2016 -17	1.58	1.22	2.77	2.03	3.51	7	6	6	1	6	26	4.5
2017 -18	1.46	1.16	3.21	1.93	3.23	8	8	2	2	10	30	6
2018 -19	1.40	1.11	2.54	1.79	2.55	9	9	11	5	12	46	10
2019 -20	1.30	1.02	2.59	1.75	2.72	12	12	10	6	11	51	12
2020 -21	1.33	1.05	3.01	1.65	3.49	10	10	5	9	7	41	9
2021 -22	1.32	1.04	2.68	1.58	4.50	11	11	9	11	5	47	11
2022 -23	1.70	1.22	2.20	1.68	7.42	4	7	12	8	3	34	7
Kendall's coefficient of concordance among five sets of liquidity performance ranks (W) is 0.4338 and Chi- square (χ^2) value of W is 23.859 being significant at 5% level.												
Source: Compiled and computed from Published Annual Reports of BHEL for the years 2011-12 to 2022-23.												

Table III

Bharat Heavy Electricals Limited**Analysis of Spearman's Rank Correlation between Liquidity and Profitability**

Year	Liquidity Rank (as shown in Table II)	ROCE (%)	Profitability Rank (on the basis of ROCE)	Spearman's rank correlation coefficient between liquidity and profitability (R _{LP}) is -0.81 and t value of R _{LP} is -4.36 being significant at 1% level
2011-12	2	6.46	12	
2012-13	3	14.69	11	
2013-14	1	16.86	10	
2014-15	4.5	19.59	9	
2015-16	8	26.63	8	
2016-17	4.5	36.68	7	
2017-18	6	48.90	4	
2018-19	10	49.93	3	
2019-20	12	48.05	5	
2020-21	9	50.75	2	
2021-22	11	54.94	1	
2022-23	7	45.48	6	
Average		34.91		
Maximum		54.94		
Minimum		6.46		
Slope of the Trend line		4.382		
t value		7.701		

Source: Compiled and computed from Published Annual Reports of BHEL for the years 2011-12 to 2022-23.

Table IV

Bharat Heavy Electricals Limited**Analysis of correlation between ROCE and selected Liquidity Indicators**

Correlation measures	Correlation between ROCE and selected liquidity indicators				
	WCR	ATR	ITR	DTR	CTR
Pearson	-0.858**	-0.894**	-0.461	0.152	-0.674*
Spearman	-0.877**	-0.900**	-0.434	0.049	-0.552
Kendall	-0.739**	-0.791**	-0.321	0.300	-0.424
*Significant at 5% level, ** Significant at 1% level					
Source: Compiled and computed from Published Annual Reports of BHEL for the years 2011-12 to 2022-23.					