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ANALYSIS OF LIQUIDITY IN MAJOR CENTRAL PUBLIC SECTOR COMPANIES IN THE INDIAN POWER INDUSTRY

Dr. Monojit Saha
Assistant Professor in Commerce, Kalna College, Kalna, Purba Bardhaman, West Bengal, India

Corresponding Author: Dr. Monojit Saha

Abstract

Managing liquidity is a crucial aspect of running a business as it ensures smooth daily operations by funding short-term debts. Central public sector enterprises in India's power sector are also focused on optimizing liquidity to reduce the amount of funds needed for day-to-day activities. These enterprises are currently experiencing a significant phase of transformation as the process of power generation and distribution is changing drastically to promote environmentally friendly electricity. This transition requires substantial capital investments in new machinery and technological upgrades. Given this context, it is essential to assess the liquidity of major central public sector enterprises in the Indian power sector. In this study, five central public sector enterprises were selected for a comparative analysis. Several liquidity ratios were examined using statistical tests such as the Kolmogorov-Smirnov test, Levene's test, Kruskal-Wallis test, paired t-test, and Wilcoxon signed-rank test.

Keywords: *Indian Power Sector, CPSEs, Liquidity, Financial Performance, Kruskal-Wallis test*

Introduction

Liquidity is defined as the ability of a firm to meet its short-term obligations. It is considered the lifeblood of a firm because it is used daily, unlike non-current assets. Management must invest capital efficiently to maximize shareholders' wealth. Investing more capital in fixed assets, also known as income-generating assets, is expected to yield higher profits from a limited amount of capital. However, a firm also needs to invest a significant amount in current assets to support its business transactions, as no business can operate without credit transactions. To maximize returns, it is common practice to finance short-term or current assets with short-term obligations or current liabilities. These short-term obligations must be paid within one year, and the firm expects to convert its current assets into cash within the same period. A firm's balance sheet always includes both current liabilities and current assets. Managers continuously try to make a balance between current assets and current liabilities to maintain a trade- off between liquidity and profitability (Gulia, 2014). The liquidity of a firm is mainly measured by the ratio of current assets and current liabilities, which represents the magnitude of current assets in respect of the current liabilities of a firm. The ratio is known as current ratio. A firm having more current ratio is considered as a more liquid firm which means that it can pay off its short-term obligations easily. But excessive liquidity implies accumulation of idle funds which earn no profit while inadequate liquidity results in business interruption and hurts the firm's earnings (Sur et. al., 2013). Low level of liquidity of a firm shows its inability to pay its creditors on time or honour its maturing obligations, which in turn could result in losses on account of non- availability of supplies thus leading to possible insolvency (Bagchi, 2014). As the management of a firm is provided with a limited amount of capital it has to balance between the extremes which will enable the firm to earn enough profit and smoothness in payment of short-term obligations. This is known as optimum liquidity. It differs from one industry to another. It depends on a number of factors surrounding a business firm. Management of firm's liquidity is avery important function to be executed by the managers as the sustainability of a firm depends on its debt paying capability. It has also been proved earlier that theprofitability of a business concern depends upon the manner in which its liquidity is managed (Panigrahi, 2012). The objective of liquidity management is to ensure continuity in the operations of a firm and that it has sufficient funds to satisfy both maturing short- term debt and upcoming operational expenses. It mainly involves management of inventories, accounts receivables, accounts payables and cash (Sharma & Kaur, 2016). A Well-organised and balanced liquidity management involves planning and controlling current assets and current liabilities in such a way, so as to eliminate the danger of the firm's inability to meet short-term obligations, on one hand, as well as to avoid excessive investment in these assets, on the other (Bagchi, 2015).

The liquidity of a firm is mainly measured by current ratio and quick ratio (Vyas, 2015); (Mushahid, 2018); (Parikh & Dave, 2014); (Saha, 2018); (Chavda, 2017); (Maurya, Singh, & Singh, 2015); (Jain, Gupta, & Yadav, 2014); (Schilling, 1996); (Jeyan, 2016); (Bagchi B. , 2014); (Majanga, 2015); (Bolek, 2015). Absolute liquidity ratio was also used by a number of authors (Prasad, 2013); (Shanthi & Eslavat, 2014); (Bhunia, Khan, & Mukhuti, 2011); (Rajitha & Chitti Babu, 2015). In this study the following ratios were used to analyse the liquidity of the selected companies: (i) Current Ratio (CR), (ii) Quick Ratio (QR), (iii) Absolute Liquidity Ratio (ALR), (iv) Inventory to Current Assets Ratio (ICAR), (v) Debtors to Current Assets Ratio (DCAR) and (vi) Cash & Bank to Current Assets Ratio (CBCAR).

Review of Existing Literature

Leepsa (2012) in a study analysed the post merger financial performance of six selected companies in Indian power sector. Tata Power Co. Ltd., RelianceInfrastructure Ltd., CESC Ltd., Torrent Power Ltd., Jaiprakash Power Ventures Ltd. and JSW Energy Ltd. were selected for the study. The data for the period 1990-91 to 2010-11 were used in this study. Various ratios like return on net worth, return on capital employed, current ratio, quick ratio, net working capital to sales ratio, interest coverage ratio, debt-equity ratio and assets turnover ratio were analysed in the study. The study revealed that the mergers in this sector were undertaken by the companies to survive in the highly regulated environment.
Nandal (2012) in his study made a comparative analysis of the financial health of NTPC Ltd. with that of Tata Power Co. Ltd. applying some selected financial performance measures, such as return on capital employed, earning per share, dividend per share, debt-equity ratio, return on net worth etc. The study found that the financial performance of Tata Power was better as compared to NTPC Ltd. during the period under study. Shanthi and Eslavat (2014) in their study examined the efficiency in liquidity management of Andhra radish Power Generation Corporation Ltd. considering the emerging cut-throat competition from private participants for the period 2000-01 to 2011-12. Various components of gross working capital; such as, inventory, debtors, cash and bank balances and short term loans and advance were studied separately. Different financial ratios; such as, current ratio, inventory turnover ratio, debtors turnover ratio, working capital turnover ratio and current assets to sales ratio were also analysed in this study. The study revealed that the liquidity of the company was not efficiently managed during thestudy period.

Maji and Sur (2014) in their study analysed the value generratiing capability of NTPC Ltd. in the pre-liberalisation and post-liberalisation periods. The study considered the data for the period 1983-84 to 2012-13 and collected these from the published annual reports of the company. The period from 1983-84 to 1997- 98 was taken as the pre-liberalisation period and the period from 1998-99 to 2012-13 was considered as the post-liberalisation period. The study also examined the relationship between the value generating capability and its determinants. The assessment of the joint effect of the determinants on the valuegenerating capability was also made in the study. The value added to capital employed ratio was considered as the value generating capability measure whereas fixed assets turnover ratio, inventory turnover ratio, and receivables turnover ratio were taken as its determinants. The study revealed a considerable improvement in value generating capability of the company during the post-liberalisation period. The study also indicated that the fixed assets management and inventory management of the company had a significant impact on its value generating capability. The study as carried out by Parikh and Dave (2014) evaluated the liquidity, profitability and solvency positions of Indian power sector for the period 2006-07 to 2011-12 by considering nine selected companies in the sector, such as Torrent Power, NTPC Ltd., Adani Power, Power Grid Corporation, Tata Power, NHPC Ltd., JSW Energy, Gujrat Industries Power Companies and CESC Ltd. Current ratio, fixed assets turnover ratio, inventory turnover ratio, debtors turnover ratio, interest coverage ratio, return on net worth and long term debt-equity ratio were analysed in the study. The study concluded that there was no significant difference in the inventory turnover ratios among the selected companies under the study. Patidar and Movalia (2016) in their study attempted to forecast the financial health of Indian power sector after analyzing the financial performance. NTPC Ltd. and NHPC Ltd. were selected for the study. The data for the period 2010-11 to 2014-15 used in this study were collected from the annual reports of the selected companies. Edward I Altman's Z-score was measured giving specific weights for working capital to total assets ratio, retained earnings to total assets ratio, earning before interest and taxes to total assets ratio and sales to total assets ratio. The net outcome derived from the study showed that NTPC Ltd. was in a financially healthy zone during the period under study.

Rashid and Manivanan (2017) in their study analysed the liquidity and profitability of NTPC Ltd. for the period 2011-12 to 2015-16. Liquidity ratios like current ratio, quick ratio and cash position ratio, and profitability ratios like gross profit ratio, net profit ratio, net operating profit ratio, return on investment ratio and return on capital employed ratio were analysed in the study. The study found that the liquidity of the company deteriorated while the profitability of the company was satisfactory during the study period. Mishra and Shukla (2017) in their study measured the impact of liquidity, solvency and asset management efficiency on profitability of NTPC Ltd. for the period 2010-11 to 2015-16 by applying multiple regression technique. The study revealed that no significant impact of current ratio and inventory turnover ratio on the profitability of NTPC Ltd. was noticed. Angappapllai and Kandasamy (2017) in their study concentrated mainly on the cost of production and subsidized price of electricity to analyse the financial performance of power sector in Tamil Nadu, India. The data for the period 1986-87 to 2013-14 of Tamil Nadu Electricity Board were used in this study. The study period was segregated into two parts, from 1986-87 to 1997-98 and from 1998- 1999 to 2013-14, to make a comparative analysis. The researchers applied simple mathematical and statistical tools. The study found that in the first half of the study period the company was able to maintain a reasonable level of profitability while in the second half on an average the company incurred huge loss.

Narang (2018) in his study attempted to make a comparison between the financial performance of NTPC Ltd. during the pre-disinvestment period and that in the post-disinvestment period. The data for the period 1997-98 to 2010-11 were used in this study. The period from 1997-98 to2002-03 was considered as the pre-disinvestment period and the period from 2003-04 to 2010-11 was taken as the post-disinvestment period. Operating profit margin, net profit margin, return on total assets, return on capital employed and return on net worth were used as measures of profitability and total assets turnover ratio, fixed assets turnover ratio, current assets turnover ratio and inventory turnover ratio were considered as indicators of assets management efficiency. The study revealed that during the post disinvestment period the company performed better in terms of profitability.

Saha (2018) in his study made a comparative analysis of financial performance of the selected units in Indian power sector. The researcher collected data of NTPC Ltd., NHPC Ltd., Tata Power and Reliance Infra for the period 2001-02 to 2015-16 from Capitaline database of Capital Market Publishers (I) Ltd. Current ratio and acid test ratio were used to measure the liquidity; return on capital employed and return on owners' equity were used to assess the profitability, and working capital turnover ratio and fixed assets turnover ratio were used to measure the efficiency in assets management of the selected companies. Statistical techniques, such as, one-way ANOVA and statistical tests like F test, test of homogeneity of variances, Welch's and Brown-Forsythe's robust test of equality of means etc. were applied at appropriate places of the study. The study found that all the ratios selected for the study were significantly different for the companies under study and in most of the cases NTPC Ltd. proved itself as the best performer in the Indian power sector during the study period. Mushahid (2018) in her study attempted to evaluate the financial performance of NTPC Ltd. for the period 2011-12 to 2015-16. The data were collected from the published annual reports of the selected company. Liquidity ratios, such as, current ratio and quick ratio; solvency ratios, such as, debt-equity ratio, proprietary ratio and interest coverage ratio and profitability ratios, such as, gross profit ratio and net profit ratio were evaluated in the study. Statistical tools like correlation analysis and simple linear regression analysis were employed in this study.

From the above discussion it is clear that several studies were made to analyse the financial performance of different companies in India in the last few decades. A very few of those studies considered the central public enterprises in Indian power sector. However, none of those studies considered a number of central public enterprises to make comparison among them in respect of their financial performance. Further no significant study was carried out in India in which all the three facets of financial performance were taken into consideration. So, the existing literature failed to highlight the issues associated with the financial performance of the central public enterprises operating in Indian power sector. In order to bridge the gap, the present study was conducted. This study attempted to analyse the financial performance of five selected central public enterprises in Indian power sector during the period 2003-04 to 2017-18.

Objectives of the Study: The present study has the following objectives:

1. To judge the liquidity of the selected central public enterprises in Indianpower sector.
2. To examine whether there was any significant mean difference in the key-liquidity ratios among the selected central public enterprises.
3. To test whether there was any significant mean difference in the key-liquidity ratios of the selected central public enterprises during the first half and the second half of the study period.
4. To analyse the factors influencing the liquidity of the selected central public enterprises.

Scope of the study: Five central public enterprises in Indian power sector which are listed in Indian share markets were considered in this study. Financial performance of the selected enterprises for the period 2003-04 to 2017-18 was anlysed in this study.

Research Methodology of the Study

Sample Design: In this study purposive sampling procedure was followed to select the central public enterprises. The selected five central public enterprises are (i) NTPC Ltd., (ii) Powergrid Corporation of India Ltd., (iii) NHPC Ltd., (iv) SJVN Ltd. and (v) NLC Ltd.

Collection of Data: The data of the selected five central public enterprises were collected from secondary sources i.e. Capitaline Corporate Database of Capital Market Publishers (I) Ltd., Mumbai. Other secondary sources used in this were books, magazines, journals, newspapers, published annual reports of the selected enterprises, research reports, survey reports and websites.

Analysis of data: For analyzing liquidity current ratio (CR), quick ratio (QR), absolute liquid ratio (ALR), inventory to current assets ratio (ICAR), debtors to current assets ratio (DCAR) and cash and bank to current assets ratio (CBCAR) were used in this study.

Simple mathematical tools like percentages, averages, ratios etc. and simple statistical measures like mean, maximum, minimum, standard deviation etc. were used in this study. A comprehensive rank test was used considering both the average and consistency aspects of the above mentioned ratios to measure the performance more precisely.

Komlogorov-Smirnova test was applied to test the normality of the variables. To examine the homogeneity of variances Levene's test was employed. To check the presence of outliers in individual variables Box-plots were used. In order to test the mean difference in the selected ratios among the selected companies Kruskal-Wallis test was employed. A post-hoc test was also applied to idenify the reason of significant mean difference in the selected financial ratios. Paired t-test and wilcoxon signed ranks test were employed in respective areas of application to check whether there were any significant differences in the ratios among the first half and the second half of the study period. To divide the data as the first half and the second half the first year's data were kept aside and the remaining were divided in two equal halves.

Results and Discussion

Inter-company Comparison of Liquidity Ratios of the Selected Companies

An inter-company comparison was made to examine whether there wasany significant difference in the liquidity of the selected companies. One-way ANOVA is one of the best methods to compare mean values of more than two independent variables. Being a parametric test it needs few conditions to be fulfilled. Most important of them are as follows:

1. The variables should be approximately normally distributed.
2. There needs to be homogeneity of variances in the individual dataset.
3. There should be no significant outlier in the individual dataset.

Komlogorov-Smirnova test finds that the data relating to the CR of NTPC, NLC and NHPC were normally distributed whereas the data of SJVN and POWERGRID were not distributed normally at 5% level of significance. In the same way the data relating to the QR of SJVN and POWERGRID were not distributed normally while in the rest of the companies the QR data were normally distributed. The data in connection with the ALR of all the selected companies were normally distributed. The ICAR data of POWERGRID were only normally distributed whereas the data relating to the ICAR of the other companies were not normally distributed. The data of DCAR of SJVN and NHPC were not normally distributed while those of the other companies were distributed normally. The CBCAR data of NTPC only were not normally distributed whereas in the rest of the companies the distribution of these data was normal.

Based on the above findings it is seen that the ALR data of all the selected companies were distributed normally but the data relating to the remaining ratios of at least one company were not normally distributed. To examine the homogeneity of variances of the data Levene's test was applied. Levene statistic for CR, QR, ALR, ICAR, DCAR, and CBCAR of the selected companies were 9.150, 9.367, 10.037, 1.251, 1.436and 2.271 respectively. In three ratios out of these six ratios, namely, CR, QR and ALR; the null hypotheses were rejected. It implies that the condition for homogeneity of variances was not satisfied in case of CR, QR and ALR.

To check the presence of outliers in the data, Box-plot was used.

Data relating to CR, QR and ALR of SJVN and POWERGRID had a number of outliers whereas the same relating to the other companies had no outlier. The ICAR data of POWERGRID had outliers while in the other companies under study this ratio did not have any outlier. In case of DCAR, only NLC did not have any outlier but in the other companies under study the data had outliers. Finally, the data relating to CBCAR only of POWERGRID had outliers whereas in theother companies under study there was no outlier. Therefore, the data of none of the ratios are free from outliers.

From the above discussion it is found that all the selected liquidity indicators were not able to fulfill at least one of the conditions for applying One- way ANOVA. Thus, Kruskal-Wallis test, a non-parametric substitute of One-way ANOVA was applied in making comparison among the means of the selectedratios for the companies under study. This test does not have sensitivity fornormality of data, homogeneity of variances and presence of outliers.

Table 1 shows the results of Kruskal-Wallis test. This table discloses that the mean ranks of CR of SJVN, POWERGRID, NTPC, NLC and NHPC were 43.2, 11.8,44.27, 55.8 and 34.93 respectively. The Chi-square value of this ratio in the selected companies was 34.0735. It implies that the mean CR of at least one company was found to be statistically significantly different. The mean ranks of QR of SJVN, POWERGRID, NTPC, NLC and NHPC were 44.47, 12.6, 42.27, 54.6 and 36.07 respectively. The Chi-square value of QR was 31.0888. It indicates that the mean QR of at least one company was found to be statistically significantly different. The mean ranks of ALR of SJVN, POWERGRID, NTPC, NLC and NHPC were 48.27, 16.73, 36.73, 51.6 and 36.67 respectively. The Chi-square value ofthis ratio was 23.5585, indicating a statistically significant difference in mean values of ALR of the selected companies. The value of mean ranks of ICAR of SJVN, POWERGRID, NTPC, NLC and NHPC were 18.07, 36.2, 61.73, 49.6 and 24.4 respectively. The Chi-square value of ICAR was 40.5274. The mean value of this ratio was also found to be statistically significantly different in the selected companies. In the DCAR the mean ranks in SJVN, POWERGRID, NTPC, NLC and NHPC were 34.29, 43.53, 29.47, 44.40 and 35.60 respectively. The Chi-square value for this ratio was 5.2475. The null hypothesis was accepted for this ratio. It indicates that there was no significant difference in the mean values of DCAR of the selected companies. The mean ranks of CBCAR of SJVN, POWERGRID, NTPC, NLC and NHPC were 52.73, 21.87, 33.53, 45.2 and 36.67 respectively and the value of Chi-square was 17.3976. It implies that the mean values of CBCAR in the selected companies were found to be statistically significantly different.

Table 2 presents the post-hoc of Kruskal Wallis test of the selectedliquidity ratios. This table shows that the mean CR of POWERGRID only was found to be statistically significantly different from that of other selected companies. Forthe remaining companies the differences in mean values of CR were not found to be statistically significant. The mean QR of POWERGRID also was found to be statistically significantly different from that of other companies and for the remaining companies the differences were not found to be statistically significant.The mean value of ALR of POWERGRID was found to be statistically significantly different from those of NTPC and NLC. For the other selected companies the differences in ALR were not found to be statistically significant. In case of ICAR, statistically significant differences were found between POWERGRID-NTPC, POWERGRID-NLC, NHPC-NTPC, NHPC-NLC and SJVN-NLC. For the remaining pairs, the differences were not found to be statistically significant. Mean CBCAR of POWERGRID was statistically significantly different from those of NTPC and NLC. For the remaining companies the differences in CBCAR were not found to be statistically significant.

Intra-company Comparison of Liquidity Ratios of the Selected Companies

An intra-company comparison of the selected liquidity ratios was also made for each of the companies under study to examine whether there was any difference between the average of a ratio for the first half of the study period andthe average of the same ratio for the second half of the period under study. While making comparison between the data for the first half and the data for the second half of the period under study, the data relating to the year 2003-04 were excluded. The data relating to the period 2004-05 to 2010-11 were catagorised as the data for the first half whereas the data relating to the period 2011-12 to 2017-18 were catagorised as the data for the second half of the study period.

The best way to compare the means of the data relating to a ratio for the two halves is to run a Paired-t test. An essential condition for applying Paired-t test is that the data should be normally distributed individually.

For the purpose of testing the normality of the data Komlogorov-Smirnova test was run. It shows that the data relating to the following variables were not normally distributed as the levels of significance were less than 0.05.

(i) ICAR and DCAR of SJVN in the first half,
(ii) CR and QR of POWERGRID in the second half,

(iii) CBCAR of NTPC in the first half,
(iv) QR of NLC in the second half and
(v) DCAR of NHPC in the first half.

For these ratios a non-parametric substitute of Paired-t test, i.e., Wilcoxon- signed ranks test was used while for the other ratios Paired-t test was applied.

Table 3 discloses the results of Paired-t test and Wilcoxon signed ranks test. This table shows that the mean values of CR, QR, ALR and CBCAR of SJVN in the second half increased significantly by 4.34, 4.37, 3.44 and 0.30 respectively whereas the mean values of the other two ratios, such as ICAR and DCAR decreased in the second half by 0.06 and 0.08 respectively. The change in DCAR was not found to be statistically significant. The average values of CR and QR in the second half were less as compared to those in the first half and the differences were 0.03 and 0.04 respectively. Both of these two changes were not found to be statistically significant. The average values of ALR, ICAR, DCAR and CBCAR of POWERGRID stepped up in the second half by 0.04, 0.02, 0.06 and 0.04 respectively. Out of these four ratios the change in DCAR was only found to be statistically significant. The mean values of CR, QR, ALR and CBCAR of NTPC in the second half came down by 0.24, 0.28, 0.25 and 0.09 respectively, but none of these differences was found to be statistically significant. Other two ratios, namely, ICAR and DCAR of NTPC went up in the second half and the mean differences were 0.05 and 0.08 respectively. The difference in DCAR was only found to be statistically significant.

Conclusion

In NLC, the mean values of CR, QR, ICAR and DCAR increased in the second half by 0.49, 0.43, 0.02, and 0.27 respectively. Only the mean difference of DCAR was found to be statistically significant. The mean values of ALR and CBCAR in NLC decreased in the second half by 0.37and 0.24, butthe mean difference of CBCAR was only found to be statistically significant. The average values of CR, QR, ALR, DCAR and CBCAR of NHPC stepped up in the second half by 1.32, 1.38, 0.83, 0.01 and 0.16 respectively. All the differences except the differences in DCAR and CBCAR of NHPC were found to be statistically significant. The mean difference in ICAR of NHPC was 0.08, which decreased inthe second half and was also found to be statistically significant.

Table 1: Inter-company Comparison of the Selected Liquidity Measures(Kruskal-Wallis Test)

COMPANY		N	Mean Rank	Chi-Square	df	Asymp. Sig.
CURRENTRATIO	SJVN	15	43.20	34.0735	4	0
	POWERGRID	15	11.80			
	NTPC	15	44.27			
	NLC	15	55.80			
	NHPC	15	34.93			
	Total	75				
QUICKRATIO	SJVN	15	44.47	31.0888	4	0
	POWERGRID	15	12.60			
	NTPC	15	42.27			
	NLC	15	54.60			
	NHPC	15	36.07			
	Total	75				
	SJVN	15	48.27			
	POWERGRID	15	16.73			

ABSOLUTE LIQUIDITYRATIO	NTPC	15	36.73	23.5585	4	0.0001
	NLC	15	51.60			
	NHPC	15	36.67			
	Total	75				
INVENTORYTO CURRENT ASSETS RATIO	SJVN	15	18.07	40.5274	4	0
	POWERGRID	15	36.20			
	NTPC	15	61.73			
	NLC	15	49.60			
	NHPC	15	24.40			
	Total	75				
DEBTORSTO CURRENTASSETS RATIO	SJVN	15	34.29	5.2475	4	0.2628
	POWERGRID	15	43.53			
	NTPC	15	29.47			
	NLC	15	44.40			
	NHPC	15	35.60			
	Total	75				
CASH ANDBANK TO CURRENT ASSETS RATIO	SJVN	15	52.73	17.3976	4	0.0016
	POWERGRID	15	21.87			
	NTPC	15	33.53			
	NLC	15	45.20			
	NHPC	15	36.67			
	Total	75				

Source: Compiled and computed from Capitaline CorporateDatabase, Capital Market Publishers (India) Ltd., Mumbai

Table 2: Tukey's Post-hoc Test

	CR		QR		ALR		ICAR		CBCAR	
	Test Statistic	Sig.	Test Statistic	Sig.	Test Statistic	Sig.	Test Statistic	Sig.	Test Statistic	Sig.
POWERGRID-NHPC	-23.133	0.037	-23.467	0.032	-19.933	0.123	-6.333	1.000	-11.667	1.000
POWERGRID-SJVN	31.400	0.001	-29.667	0.002	-20.000	0.120	-18.333	0.227	-14.800	0.629
POWERGRID-NTPC	-32.467	0.000	31.867	0.001	31.533	0.001	-31.533	0.001	-23.333	0.034
POWERGRID-NLC	-44.000	0.000	-42.000	0.000	-34.867	0.000	-43.667	0.000	30.667	0.001
NHPC-SJVN	8.267	1.000	6.200	1.000	0.067	1.000	11.800	1.000	3.133	1.000
NHPC-NTPC	9.333	1.000	8.400	1.000	11.600	1.000	25.200	0.015	-11.667	1.000
NHPC-NLC	20.667	0.087	18.533	0.199	14.933	0.606	37.333	0.000	19.200	0.158
SJVN-NTPC	-1.067	1.000	2.200	1.000	11.533	1.000	-13.400	0.922	8.533	1.000
SJVN-NLC	-12.600	1.000	12.333	1.000	-14.867	0.617	-25.333	0.013	16.067	0.435
NTPC-NLC	-11.533	1.000	10.133	1.000	-3.333	1.000	12.133	1.000	7.533	1.000

Source: Compiled and computed from Capitaline Corporate Database, Capital Market Publishers (India) Ltd., Mumbai

Table 3: Intra-company comparison of Selected Liquidity Ratios (Paired t-test andWilcoxon Signed Ranks test)

Companies	Ratios	Mean Differences(1st Half - 2nd Half)	Paired t-test		Wilcoxon SignedRanks Test	
			t value	Sig. (2-tailed)	Z	Asymp. Sig. (2-tailed)
SJVN	CR	-4.34	-3.24	0.0176		
	QR	-4.37	-3.32	0.0159		
	ALR	-3.44	-3.68	0.0103		
	ICAR	0.06			-2.3660	0.0180
	DCAR	0.08			-1.0140	0.3100
	CBCAR	-0.30	-4.64	0.0035		
POWERGRID	CR	0.03			-0.3380	0.7350
	QR	0.04			-0.5240	0.6000
	ALR	-0.04	-0.67	0.5279		
	ICAR	-0.02	-2.26	0.0642		
	DCAR	-0.06	-2.85	0.0294		
	CBCAR	-0.04			-1.0140	0.3100
NTPC	CR	0.24	0.52	0.6195		
	QR	0.28	0.61	0.5631		
	ALR	0.25	0.67	0.5299		
	ICAR	-0.05	-1.76	0.1289		
	DCAR	-0.08	-5.02	0.0024		
	CBCAR	0.09	0.89	0.4064		
NLC	CR	-0.49	-1.25	0.2595		
	QR	-0.43			-0.8450	0.3980
	ALR	0.37	1.04	0.3400		
	ICAR	-0.02	-0.69	0.5137		
	DCAR	-0.27	-6.66	0.0006		
	CBCAR	0.24	2.58	0.0419		
NHPC	CR	-1.32	-5.05	0.0023		
	QR	-1.38	-5.12	0.0022		
	ALR	-0.83	-3.65	0.0107		
	ICAR	0.08	2.93	0.0262		
	DCAR	-0.01			-0.5070	0.6120
	CBCAR	-0.16	-1.70	0.1404		

Source: Compiled and computed from Capitaline Corporate Database, Capital MarketPublishers (India) Ltd., Mumbai

References:

1. Dilli, S., Gurumurthy, N., & Reddy, K. J. (2016). Working Capital Management in Transmission Corporation Ltd. of Andhra Pradesh. *BIMSInternational Journal of Social Science Research*, 44-49.
2. Jain, P., Gupta, S., & Yadav, S. S. (2014). *Public Sector Enterprises in India: The Impact of Disinvestment and Self Obligation on Financial Performance.*New Delhi: Springer.
3. Majanga, B. B. (2015). Cash Conversion Cycle and Firm Profitability In Malawi Manufacturing Sector. *Journal of Commerce & Accounting Research*, 29-35.
4. Mishra, P., & Shukla, K. (2017). "An Empirical Analysis of Financial Performance of Leading Power Sector Organisation - NTPC. *International Journal of Research in Economics and Social Sciences (IJRESS), Vol. 7, Issue11*, 706-719.
5. Mushahid, S. (2018). Evaluation Of Financial Performance Of National Thermal Power Corporation Limited. *International Journalof Accounting Research*, 43-53.
6. Nandi, K. (2011). Impact of Working Capital Management on Profitability. *The Management Accountant, January 2011*, 22-27.
7. Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An analysis of Mauritian Small Manufacturing Firms. *International Review of Business Research Papers*, 45-58.
8. Panigrahi, A. (2012). Impact of working capital management on profitability -A case study of ACC Ltd. *Asian Journal of Management 3(4)*, 210-218.
9. Parikh, P., & Dave, A. (2014). An Empirical Analysis Of The Financial Performance Of The Selected Power Sector Companies Of India. *International Journal of Management, IT and Engineering*, 34-46.
10. Prasad, B. (2013). Working Capital Management of APGENCO Ltd. *BusinessSciences International Research Journal, Volume 1, Issue 2, 2013*, 460-466.
11. Rajitha, P., & Chitti Babu, P. (2015). A Study on Liquidity and Profitability A Study on Liquidity and Profitability. *The International Journal Of Business &Management*, 98-104.
12. Saha, M. (2018). Financial Performance of Selected Units in Indian PowerSector: A Comparative Analysis. *Asian Journal of Research in Banking andFinance, Vol. 8, No. 1*, 36-46.
13. Schilling, G. (1996). Working Capital's role in Maintaining CorporateLiquidity. *TMA Journal*, 1-6.
14. Shanthi, V., & Eslavat, S. (2014). Liquidity Management of Andhra Pradesh Power Generation Corporation Limited (APGENCO): A Study. *International Journal of Information & Computation Technology, Volume 4, Number 11 (2014)*, 1087-1096.