International Journal of Modern Agriculture, Volume 10, No.2, 2021
ISSN: 2305-7246

WORKING CAPITAL MANAGEMENT AND ITS IMPACT ON PROFITABILITY: CASE ON INDIAN POWER SECTOR

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Abstract

In various empirical researches it was proved that working capital management have its impact on liquidity and profitability with the help of distinct methods on different sectors. This paper examines working capital management and its impact on profitability in Power sector of India. The research span taken into consideration is 2015-2019. The data of research is secondary data taken from annual reports of companies. The data has been used to calculate various key ratios such as current ratio, quick ratio, inventory turnover ratio, working capital turnover ratio, current asset turnover ratio to assess their behavior in the Power Sector in India. Mortaals test model was used to evaluate the nature of liquidity in the study period. This study helped in evaluating whether the proportion of working capital employed by the power sector companies was optimum and was giving maximum profitability. This study would help companies to determine their performance with respect to the capital invested by them in the projects.

Key words: Working Capital, Mortaal's test, Profitability, Liquidity

Introduction

Before diving on to the analysis of various ratios and models for working capital management question arises "what is working capital?"

It is the surfeit amount of current assets over current liabilities, where current asset are the asset which could be used or consumed within a year's period whereas current liabilities are the obligations that are due within a year or an operating cycle.

Financial position of a firm and its link with working capital management is studied and analyzed with respect to capital investments, capital structure, dividend policies or company value for various sectors around the world in different financial environment and this paper investigates the role for working capital management in major power sector companies of India. "A noteworthy portion of a company's capital structure is made of short-term assets and other resources that develop in under less than a year (Garcia-Teruel & Martinez-Solano, 2007)". This suggests that the short term activities which then turn into long term goals is the management criteria on which budgetary administration relies on.

For analyzing the financial condition of any power sector company there are many factors which can be used but we are focusing on working capital management. Many contractors try to match the key ratios to industry standards without even analyzing them. The key financial report analysis measures are commonly viewed as follows:

- The first and foremost is Profitability on which the all the business criteria and strategies of any firm depends.

- The second one is Asset utilization and efficiency which is required more when a company grows. Like the manufacturing companies of Japan which surely get huge benefit of quality and efficiency in their financial report and at the time of any financial analysis plays a crucial role.

- The next one is Liquidity which also directly or indirectly impacts profitability.

- The fourth one is Capital Structure
- Last but not the least Return on capital employed which is also used in the further analysis.

A portion of these elements are utilized in the examination of the effect of working capital in power division organizations.

There are few ratios which are calculated for the analysis such as current ratio, quick ratio etc. When we divide current asset by current liabilities the following mathematical result will be current ratio.

On an alternate perspective working capital is communicated as an outright cash esteem. In the balance sheet similar components are required to define and analyse both concepts.

There is a numerical peculiarity that happens when looking at working capital and current ratio. The current ratio can be improved without making any changes in the working capital.

In many of the textbooks of accounting it is mentioned that it is good to have current ratio of two to one. And when the current ratio was observed in the survey of participating companies conducted by The Construction Financial Managers Association it was observed to be ranging from 1 to 1.5.

If we take a small diversion from practicality and see that theoretically the ideal amount of working capital is zero. The current scenario of the market is trying to move towards this theory that if a firm can reduce its liquidity risk to zero by systematically structuring its finances then there is no requirement of working capital. For example we can see the liquidity risk of US treasury bonds which are considered as very low risk bonds because no one can think of US government default. But to get this much of faith for a any private firm or any firm is very difficult.

Funds or reserves invested into working capital wherever it can be they are not as profitable to a firm as working resources. The cash flow can be maximised if you can reduce your working capital. Then the more amounts of cash would be available which can be used to earn more profits by investing in same or other business. In any case, the reality is unavoidable that is working capital is expected to fulfil the current commitments.

Essential idea of working capital administration is to offer sufficient help for even and productive working of everyday business tasks by striking an exchange flanked by the several extents which are liquidity, profitability and risk (Poonam Gautam Sharma & Risham Preet Kaur, 2016). This might not be true for all the cases but that depends on many different factors such as size of the firm, business environment and study factors.

Working Capital administration is significant for all sort of firms yet particularly for the organizations in power sector huge sum of funds is infused in inventory and operations which are crucial component of working capital so appropriate management of these funds are very crucial for firms to succeed financially.

In this manner the principle goal of performing this research is to inspect the impact of the working capital management of 6 major power sector firms in India influence their profitability for the phase covering from 2015-2019. In the midst of other things, the conclusion of the study includes working capital performance of the companies, liquidity position by the application of different types of ratios and to study the association between profitability and liquidity. The remaining paper is separated into different segments. Segment 2 contains the literature review. Next segment contains the research methodology. Segment 4 is defining the results and analysis of the secondary data of the companies, while segment 5 includes conclusion and recommendations.

Literature Review:

The connection between working capital administration and profitability is read generally for various divisions and a lot of these studies propound that profitability can be ameliorated with the help of proper working capital management. The few variation or differences occur in the researches due to different sample size, different

methodologies and distinct working condition in which companies operate. Few literatures which helped me in conducting the following research are:

Muhammad, Sabo et.al.(2015) analyzed "the effect of working capital management on profitability on the food product firms of Nigeria". The statistics collected for the study was secondary data of the firms which were registered in the Nigerian stock exchange. The data was analyzed with the help of various statistical methods such as descriptive statistics through the help of STATA 11. They analyzed that the firms are not reinvesting their money on time and that delay is causing failure in meeting further demands. They also concluded that the profitability of the firm in the sector increases with the size of the firm. It was proposed that "funds collected advised to be re-invested into short-term venture to produce earnings".

On the other hand Raheman and Nasr (2007) analyzed "impact of various factors of working capital management on liquidity and profitability". Using the data of companies listed in Karachi stock exchange casing the phase from 1999-2004 with the help of regression analysis, the authors find a "significantly negative association between working capital management variables and profitability of the firms". Further the analysis author found out that "there is significantly negative relationship between corporate debt and profitability but a significantly positive relationship between size and profitability".Outcome of these discoveries are cautious supervision of working capital, rational amount of money borrowed use and increment in selling of products are all very critical in upgrading the earnings of an advanced firm.

Similarly, Akoto, Richard Kofi et.al. (2013), . In this study the author used Panel data methodology which facilitated the inference "accounts receivable days considerably negatively effects profitability of listed manufacturing companies in Ghana". It was suggested that "rewards should be given by the managers to attract shareholders and their normal assortment period ought to be reduced to 30 days" and they also suggested that such laws should be made that the imports of goods is reduces and preference given to the local firms which would help them prosper for long period of time.

Jason Kasozi (2017) inspected "the patterns in working capital management and its effect on the financial performance of 69 listed manufacturing firms on the Johannesburg Securities Exchange (JSE) during the period 2007-2016". The normal assortment time frame and the normal instalment time frame are negative and factually critical for productivity was controlled by the creator, suggesting that by effectively overseeing debt claims and paying lenders on time a firm can perform better than the individuals who need these zones. He also determined that stocking-up and maintaining inventory levels would help the firms to suffer less from stock-outs and stay away from difficulties of making sure about financing when required this indicated the positive connection between number of days in stock and profitability.

Lazaridis and Tryfonidis (2006) analyzed "the correlation among profitability and working capital management of one hundred thirty-one firms listed on the Athens Stock Exchange". Their measurable hugeness is set up between gainfulness, the money change cycle and its different segments with the assistance of relapse surmising approach and information covering the stage from 2001-2004, for recorded firms in the ASE. They indicated that "profitability measured through gross operating profit, and the cash conversion cycle has statistical significance". Additionally, more benefit can be produced for the organizations by warily dealing with the money transformation cycle and taking consideration and keeping every novel section (accounts receivables, accounts payables, stock) to an ideal level by the supervisors of the particular firms.

Haresh, Barot (2012), gave observational proof and did the analysis of profitability and working capital with the help of financial annual reports for the period of 2006 to 2010. To analyze the data collected SPSS software package was used. Financial records receivable and financial records payable were important in explaining profitability proved with the help of regression analysis, while insignificance was found between inventory turnover and cash conversion cycle. The author finally concluded that "working capital ought to be managed in more well-organized ways to amplify firm's profitability".

The relationship between working capital management and profitability was tested by Deloof (2003) using the data of 1009 Belgian non-financial firms for 1992-1996 period. He found "the significant negative relationship between operating income and accounts receivable number of days, inventories and accounts payable by using regression and correlation test". He gave the suggestion that "by reducing the number of days accounts receivable and inventories the managers can increase the corporate profitability".

Dinesh M. (2008) elucidates "the idea of working capital, the various challenges being faced by the business firms in overseeing working capital and the methodologies to be adopted for its reasonable management". The author concluded that many firms' failures are not because they wanted profit but due to the lack of cash in hand. The snappy improvement underway and deals may make the business utilize all their budgetary assets looking for development and making resources for instance inventories, debt claims and different resources as more non-fluid.

Dr.Khatik S. K. and Jain Rashmi (2009) analyse that "the management of working capital is one of the most significant and key resources of an organization for its everyday operations". For a daily activity for any business working capital can be taken as financial support income. It is the most considerable and imperative part of financial supervision and effectiveness for any industry. The author has determined the operational funds condition of "MPSEB (Madhya Pradesh State Electricity Board) by fraction analysis technique and it was found that the situations of current ratio, quick ratio, acid-test ratio, working capital ratio, inventory turnover ratio is not up to the standard benchmark".

Tanwar S. K. and Shah C. K. (2012) have done a deep analysis of the inventory management which directly effects on the performance of the firm. The analysis performed by them was done on the individual basis that is taking one firm at a time for projecting a comprehensible representation of profitability of the industry. With the help of the analysis the author concluded that "the profitability analysis is of paramount significance in the context of overall performance of the business concern". In the expository "the frame work developed for this purpose, the analyst should have both microscopic and macroscopic views of profitability".

Niranjan Mandal et.al. (2010) did the analysis of "working capital on profitability and liquidity" but also gave the insight on the conceptual side of the same. This paper also analyses the trade-off between all the three concepts which he analyzed and used both "simple as well as multiple regression equations". They concluded that "the performance of the company should not be judged only on the basis of surplus generating capacity or its profit generating ability but should also be measured in terms of return on sales and investment and also that working capital management is very much useful to ensure better productive capacity, good profitability and sound liquidity of an enterprise, specifically the PSE in India".

Mrs.S.Vimala and Dr.J.P.Kumar (2016) conducted and empirical research on liquidity position of selected pharmaceutical companies in India. Mortaal's test was used of the liquidity analysis. It was discovered that the current liabilities are becoming quicker than the current resources which can influence the working capital of the firm. Hence the concluded that "companies should ensure that current asset and current liabilities grow at similar rate. They also explained that negative working capital indicates lower cost but poor liquidity."

Research Methodology:

The first step of the research various literatures related to the topic was read and the review of the literature was done.

Data Collection:

In next step the data was acquired from companies listed in NSE and we took the data of 6 large scale companies which are major players in power sector as most of the projects are done by them we can conclude the results for the sector. We have taken the data from the annual reports of the firms for the interval of 2015-2019.

Variables:

In third step we followed the method used in the previous studies for analysing the working capital management and profitability; these methods were taken from (Poonam Gautam Sharma & Risham Preet Kaur, 2016). They used this method for the analysis of a single firm and drawn conclusions.

Execution Drivers	
Current Ratio	Current Asset ÷ Current liabilities
Quick Ratio	(current asset – stock) ÷ (current liability – bank overdraft)
Inventory turnover ratio	(sales – gross profit) ÷ closing stock
Inventory turnover ratio (in days)	365 ÷ Inventory turnover ratio
Working Capital turnover	Net Sales ÷ Current Asset
Working Capital turnover (in days)	365 ÷ Working Capital turnover
Current Asset Turnover Ratio	Sales ÷ Current Asset

Table 1: These are formulas of the ratios which are considered for the analysis of

Working capital performance

After calculating these ratios **the forth step** was analysing working capital performance, then in **the fifth step** examination of the liquidity position was performed by Mortaal's test. It is a test method of ranking.

For the analysis form Mortaal's test some ratios have been taken into consideration:

- Inventory / Current Asset
- Cash and Bank / Current Asset
- Loan, Advances and other assets / current asset

For the first case we have taken inventory and as we know larger inventory is not very healthy for companies liquidity so we have given the priority to the lower ratio and raking has been done in that order. For second and third case cash, bank balance and loans and other assets are favourable for firm's liquidity so higher the ratio its more preferable so priority is given to the higher ratio and ranking has been done in that order.

In the subsequent stage the connection among liquidity and gainfulness is resolved with the assistance of SPSS programming in which we have conveyed spearman trial of correlation.

Then in **the last step** of the research the limitations and conclusion was drawn from the analysis.

Results and Analysis:

Ratio Analysis:

RATIOS	COMPANIES	2015	2016	2017	2018	2019	Mean	SD	CV (%)
CR	Tata Power	0.6	0.6	0.3	0.2	0.3	0.4	0.2	45.1
	Adani Power	0.4	0.4	0.2	0.4	0.0	0.3	0.2	53.9
	Torrent Power	2.2	2.1	1.2	1.6	1.5	1.7	0.4	25.6

	Power Grid	0.4	0.4	0.4	0.5	0.6	0.4	0.1	16.6
	NHPC	1.9	1.8	1.6	1.5	1.0	1.6	0.4	23.2
	NTPC	1.2	0.9	0.8	0.9	0.9	0.9	0.2	18.4
QR	Tata Power	0.5	0.6	0.5	0.6	0.5	0.5	0.1	11.8
	Adani Power	0.3	0.4	0.2	0.4	0.1	0.3	0.2	57.6
	Torrent Power	2.1	1.6	1.1	1.4	1.3	1.5	0.4	27.3
	Power Grid	0.3	0.4	0.4	0.4	0.6	0.4	0.1	27.1
	NHPC	1.9	1.8	1.6	1.8	2.1	1.8	0.2	9.0
	NTPC	1.0	0.7	0.6	0.7	0.7	0.7	0.2	21.5
ITR %	Tata Power	12.97	12.62	10.32	15.89	13.69	13.1	2.0	15.32%
	Adani Power	10.82	15.50	10.02	110.45	587.82	146.9	250.1	170.25%
	Torrent Power	40.59	27.79	27.00	25.20	20.71	28.3	7.4	26.26%
	Power Grid	23.93	25.26	28.35	28.65	27.82	26.8	2.1	7.80%
	NHPC	82.22	86.92	79.34	72.45	69.67	78.1	7.1	9.04%
	NTPC	9.83	10.11	12.03	13.78	11.31	11.4	1.6	13.99%
WCT (Times)	Tata Power	-3.1	-2.9	-0.8	-0.8	-0.9	-1.7	1.2	-69.1
	Adani Power	-1.4	-1.3	-0.9	-1.9	-0.8	-1.2	0.4	-34.8
	Torrent Power	4.1	5.9	19.6	8.2	9.1	9.4	6.0	64.5
	Power Grid	-1.2	-1.3	-1.9	-2.0	-2.4	-1.8	0.5	-27.3
	NHPC	1.3	1.7	2.2	2.4	-32.3	-5.0	15.3	-308.8
	NTPC	10.6	-17.2	-10.0	-14.3	-16.5	-9.5	11.6	-122.2
WCT (Days)	Tata Power	119	126	476	441	390	310	174	56
	Adani Power	261	292	395	197	487	326	115	35
	Torrent Power	90	62	19	45	40	51	27	52
	Power Grid	297	271	196	179	152	219	62	28
	NHPC	283	217	166	154	-11	162	109	68
	NTPC	34	21	36	26	22	14	28	196
CAT (Time)	Tata Power	2.3	2.4	1.9	2.9	2.5	2.4	0.3	14.6
	Adani Power	2.0	1.7	2.8	2.4	14.4	4.7	5.4	116.6
	Torrent Power	2.3	3.2	3.3	3.0	2.9	3.0	0.4	13.1
	Power Grid	2.2	2.1	2.3	2.4	1.9	2.2	0.2	9.2
	NHPC	0.6	0.8	0.9	0.8	1.5	0.9	0.3	36.6
	NTPC	2.0	2.4	2.8	2.3	2.1	2.3	0.3	13.0

Table 2: Various Ratios of working capital of six different companies of power sector

Current Ratio (CR):

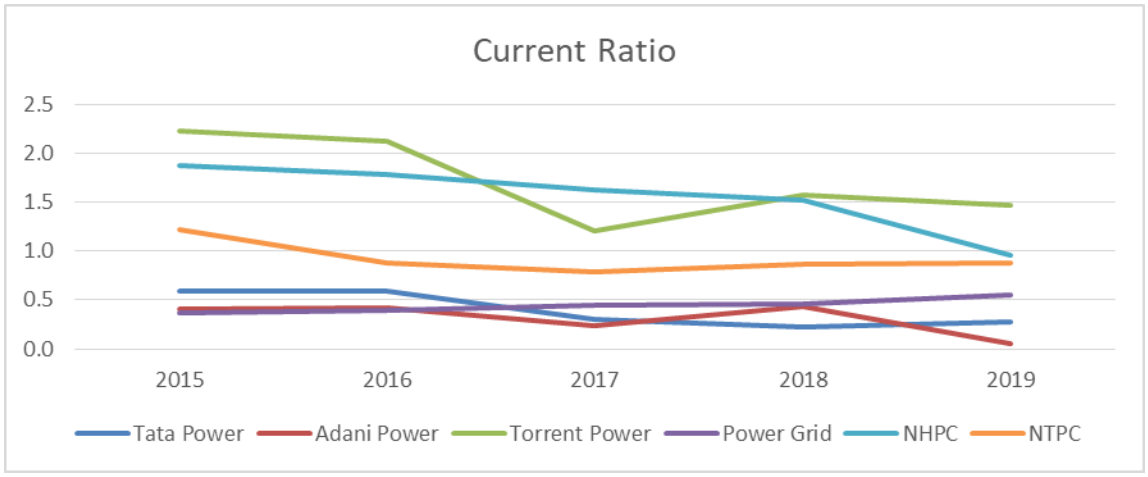

Fig 1: Year wise flow of current ratio

All the companies with exception of power Grid corporation are showing trend of reducing current ratio. Except for NHPC and Torrent Power no other company REPORTED current ratio above 1.5 in any year, which is the generally accepted ratio for liquidity, but now torrent power has reported a reduced current ratio below 1.5 in the year 2017 and 2019 while NHPC has brought down current ratio below 1.5 in 2018 and steeply below 1 in 2019. The other four companies NTPC, Power Grid, Tata power and Adani Power are working on negative working capital.

Quick Ratio (QR):

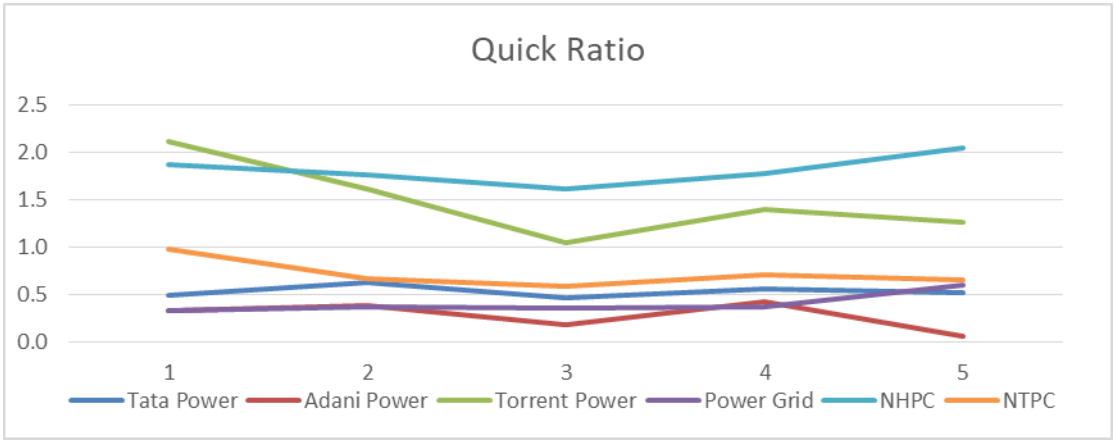

Fig 2: Year wise flow of Quick Ratio

The short-term solvency position of 4 of the companies is bad as QR is below the generally accepted value of 1. Only NHPC and torrent power have ratios above 1. NHPC is the only company which has maintained much higher quick ratio while Torrent is showing high variation. The industry as a whole is facing liquidity crunch and NHPC and torrent power are no different, as the high quick ratio is not clear indicator.**Inventory Turnover Ratio (ITR):**

All the companies are showing high inventory turnover ratio while Adani power has reported unusually high inventory turnover ratios in 2018 and 19. This reflects extremely efficient inventory management in the power industry with only Adani power at a high risk of stock out and the associated costs.

Working Capital Turnover Ratio (WCT):

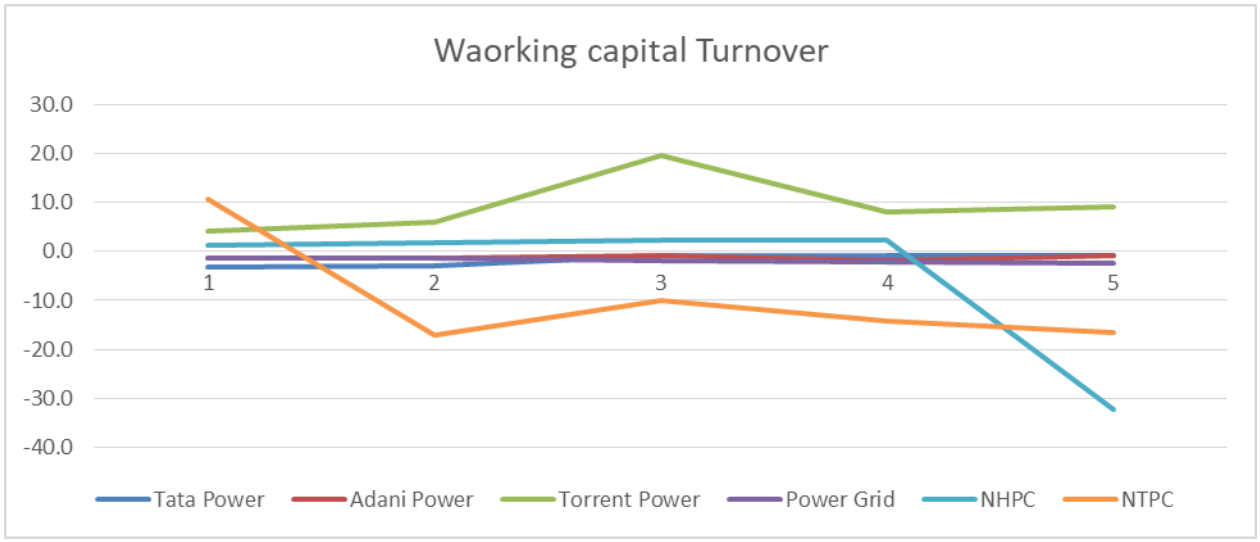

Fig 3: Year wise flow of Working Capital Turnover

Except torrent power all the other companies are working on negative working capital as of 2019 making the concept of Working capital turnover ratio practically meaningless for these companies. As for torrent power, it has maintained a healthy working capital ratio of average 9.4 but with a mean deviation of 6 which makes it co efficient of variation 64.5 5 % making the performance statistically insignificant. Also, so it has maintained acceptable working capital recovery period of 51 days on an average. NTPC has been the best performer in terms of recovery with an average of 14 days while others are taking months.

Current Asset Turnover Ratio (CAT):

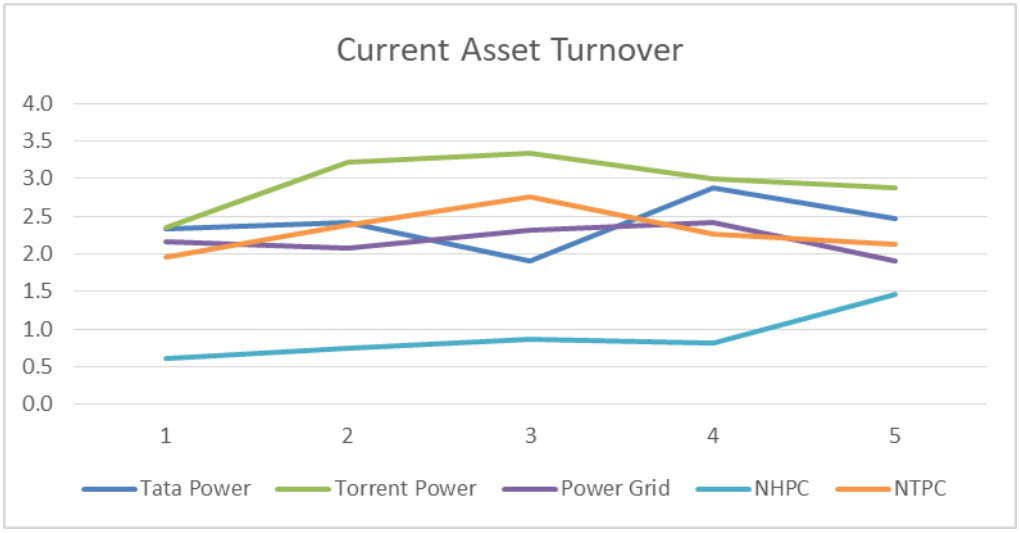

Fig 4: Year wise flow of Current Asset Turnover Ratio

All the companies accept NHPC have maintained CATR above 2. Adani power has excelled in 2019 with cat of 14.4. torrent power has been the best performance with an average of 3 and low standard deviation of 4.

Overall Liquidity Performance

By using Motaals test, we have ranked the companies' year wise performance and also compare them with each other with the help of mean of the ratios.

With respect to inventory to current asset ratio we have assigned better rank to lower value as it is indicating better liquidity position. For cash and cash equivalents to current asset ratios, loan and advances and other assets to current asset ratio and Working Capital to CA, we have assigned higher values with better rank keeping in mind their indication of better liquidity position.

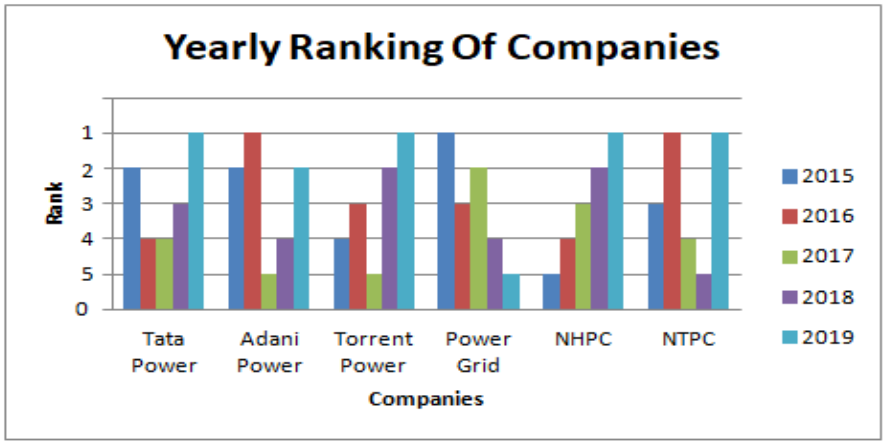

Fig 4: Ranking of companies with Mortaals test

Yearly Ranking:

Companies	Inventories/CA	Cash and cash equivalents/CA	Loans and Advances and other assets/CA	Working Capital/CA	liquidity Rank				Total Rank	Ultimate Rank
	1	2	3	4	1	2	3	4		
Tata Power	18.35	3.66	35.40	-1.96	5	6	4	5	20	6
Adani Power	12.43	20.90	37.19	-5.32	4	3	3	6	16	5
Torrent Power	11.09	16.18	31.57	0.39	3	4	5	1	13	3
Power Grid	8.16	24.53	38.95	-1.30	2	2	2	4	10	1
NHPC	1.18	30.09	28.59	0.32	1	1	6	2	10	1
NTPC	20.49	15.10	39.98	-0.10	6	5	1	3	15	4

Table 3: Liquidity Ranking Analysis by Mortaals test

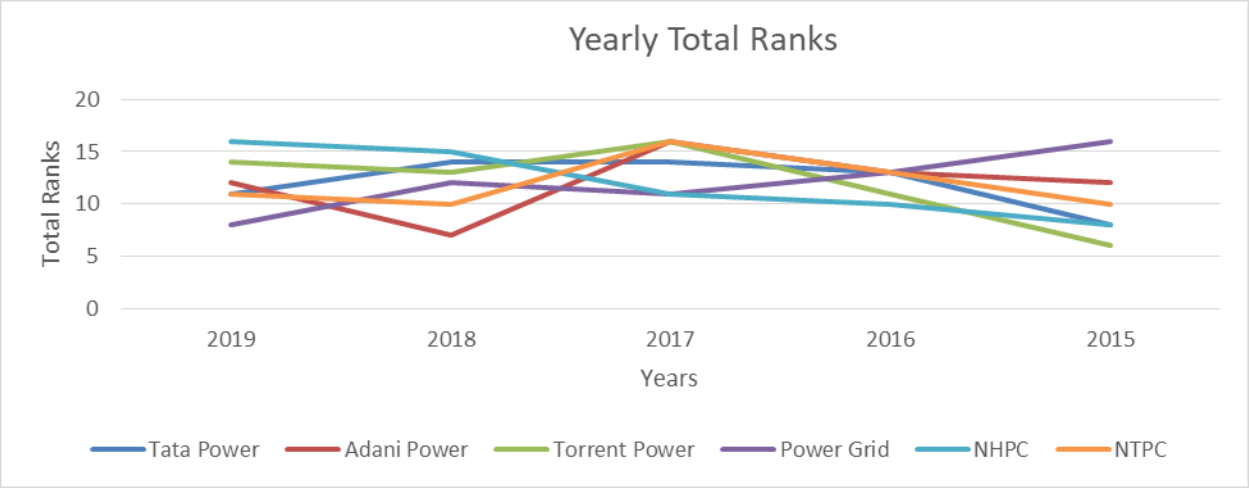

Fig 5: Representation of total rank on yearly basis

Total ranks of the companies indicate that none of the companies have shown consistent performance in terms of liquidity as per the Mortaal's comprehensive test for liquidity.

Profitability Analysis:

MARGIN	COMPANIES	2015	2016	2017	2018	2019	Mean	SD	CV(%)
Operating profit margin (%)	Tata Power	25%	32%	30%	33%	31%	30%	3.09%	10%
	Adani Power	3%	29%	17%	16%	44%	22%	15.58%	72%
	Torrent Power	12%	10%	6%	12%	10%	10%	2.40%	24%
	Power Grid	37%	37%	37%	35%	34%	36%	1.56%	4%
	NHPC	34%	36%	39%	41%	36%	37%	2.60%	7%
	NTPC	25%	27%	29%	28%	27%	27%	1.37%	5%
Net profit margin (%)	Tata Power	12%	9%	4%	-43%	22%	1%	25%	3396%
	Adani Power	0%	0%	-52%	0%	-9%	-12%	22%	-182%
	Torrent Power	3%	7%	4%	8%	7%	6%	2%	33%
	Power Grid	29%	29%	29%	28%	29%	29%	1%	2%
	NHPC	32%	33%	39%	40%	32%	35%	4%	11%
	NTPC	14%	15%	12%	12%	13%	13%	1%	10%
ROCE (%)	Tata Power	9%	13%	10%	13%	10%	11.04%	1.80%	16%
	Adani Power	8.11%	10.58%	3.45%	4.03%	3.96%	6.03%	3.16%	52%
	Torrent Power	6.57%	5.93%	6.17%	5.93%	6.64%	6.25%	0.34%	5%
	Power Grid	6.57%	5.93%	6.17%	5.93%	6.64%	6.25%	0.34%	5%
	NHPC	8.09%	8.40%	9.65%	8.61%	8.48%	8.65%	0.59%	7%
	NTPC	13.68%	14.56%	13.39%	11.52%	12.51%	13.13%	1.16%	9%

Table 4: Profitability Analysis of Power sector companies

Operating Profit Margin:

With the exception of torrent power all other companies have maintained profitability throughout the observed period with very low standard deviations 1 to 3 percent. NPHC has been the best performance with an operating profit 37% followed by power Grid with a mean of 36%

Net Profit Margin:

Adani power has struggled post net profits vitamin loss of minus 12% torrent power II has also seen miniscule games an average of 6% net profit. Tata power has highly fluctuating net profits with a standard deviation of 25%. Its mean has been brought down to 1% due to dismal performance in the year 2018.

Return On Capital Employed:

NTPC has been the best performer in terms of ROCE with mean of 13.13 % followed by Tata power 11.04 percent. Adani power has been the worst performer admin off 6.03 with very high coefficient of variance at 52%.

Rank Correlation Of Liquidity and Profitability:

Spearman's Correlations

	Tata Power	Adani Power	Torrent Power	Power Grid	NHPC	NTPC
Correlation Coefficient	-0.462	0.600	-0.154	0.205	-0.600	0.300
Sig. (2-tailed)	0.434	0.285	0.805	0.741	0.285	0.624
N	5	5	5	5	5	5

Table 4: Spearman's Correlations computed through SPSS

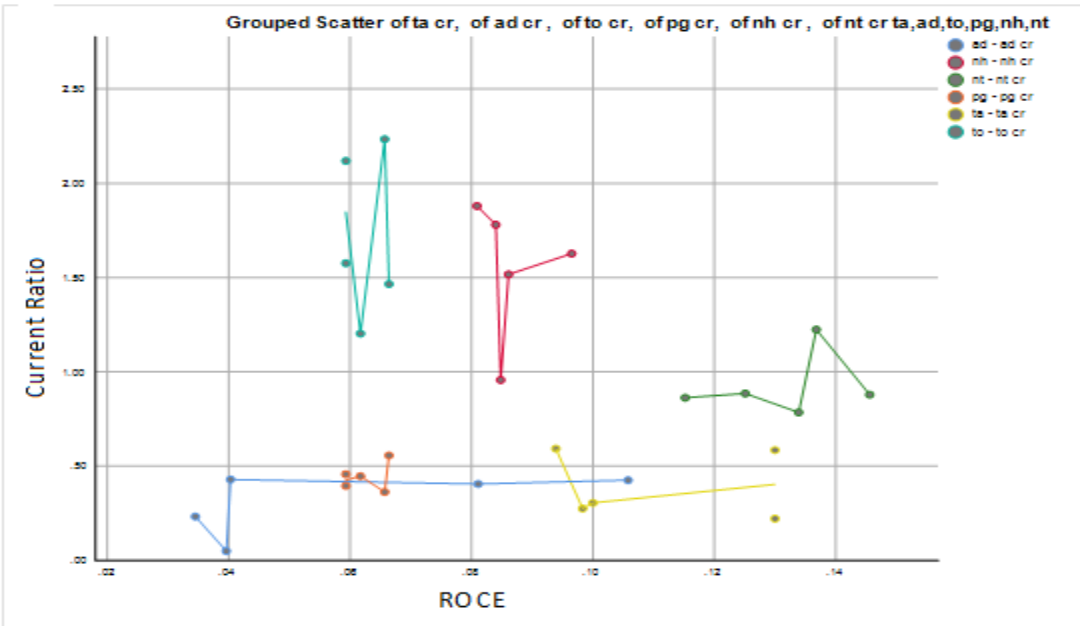

Fig 6: Grouped Scatter plot

Managing liquidity and maintaining profitability can be simply drawn down two current ratio and return on capital employed. These two have been considered as an overall indicator of liquidity and profitability. Spearman's rho shows varying degrees of correlation, both positive and negative but with insufficient statistical significance**.**

Validations:

Concluding the analysis of the whole paper and validating it with the results of the previous researches Nor Edi Azhar Binti Mohamad (2010) also concluded that "there is significant negative association between working capital management and firm's performance". Similarly Akoto, Richard Kofi et.al. (2013) also proved in his research that "there is a significant negative relationship between profitability and account receivable days".

Limitations:

The study has a few limitations:

- The study has been led for restricted time span.
- Factors such as takeover of assets from other companies, setting up of new plants etc. could not be considered.
- As the data used in research is secondary data, so we have tried to reduce the error as much as possible but there might be some small errors.

Conclusions

- Overall, it can be seen that the power industry is moving towards lowering liquidity position by trying various working capital management strategies.

- The data is showing very high coefficient of variance for most of the key ratios across the sectors. Yet companies have largely maintained profitability.

- NHPC, power Grid and torrent power have been the best performers in terms of liquidity and also maintaining low but consistent ROCE.

- Data did not reveal any significant correlation between liquidity represented by current ratio and return on capital employed.

Acknowledgement

The authors wish to acknowledge SCMHRD for providing the access to Scopus.

Conflict of Interest: There is no conflict of interest among the authors

Funding: Self-funded

Ethical approval: Not applicable

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