

Working Capital Management of Selected Power Sector Companies in Bangladesh: Evidence from Dhaka Stock Exchange Ltd.

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ABSTRACT

The present study is an attempt to explore the existing working capital management practices of the 3 (three) selected power sector companies listed in Dhaka Exchange Ltd. of Bangladesh. The study covered a period of 6 (six) years from 2010 to 2015. The basic sources of the collected secondary financial data are the DSE archive, published annual reports, and official websites of the selected companies. The study adopted quick ratio, cash to current liability, inventory turnover, receivable turnover, and cash conversion cycle as working capital management indicators of the sample companies. Through descriptive statistics, the study found that the working capital management practices over the study period of the selected companies are satisfactory though there is a scope to invest from the excess working capital in profitable investment opportunities. Student's t-test and ANOVA technique showed that the differences among the working capital management practices of the sample companies over the study period are significant concerning all the selected working capital ratios except inventory turnover.

Key words: Working Capital Ratios, Power Sector Companies, Growth Rate, t-test, ANOVA

INTRODUCTION

Working capital management refers to the administration of all components of working capital such as cash, marketable securities, receivables, inventories, and payables. A financial manager must diagnose the optimum levels and composition of current assets. He must see that right sources are used to finance current assets, and that current liabilities are paid in time (Pandey, 2010). The significance of efficient working capital management is indisputable given that a firm's viability depends on the financial manager's capability to effectively manage the receivables, inventory, and payables (Gitman & Zutter, 2012). Electricity is one of the primary sources of power for most of the industrial and economic activities of Bangladesh. Some major limitations in Bangladesh's electric power sector include high system losses, delays in completion of new plants, low plant efficiency, erratic power supply, electricity theft, blackouts, and shortages of funds for power plant maintenance. The country's power generation plants have been unable to meet system demand over the past decade (Wikipedia, 2018). There are 19

(nineteen) listed fuel and power companies in Dhaka Stock Exchange Ltd. of Bangladesh (Dhaka Stock Exchange Ltd., 2018). Out of them, we have selected 3 (three) power generating companies as the sample namely, Baraka Power Limited, GBB Power Limited, and Khulna Power Company Ltd. to explore the working capital management practices in the power sector companies of Bangladesh. Working capital management has become particularly difficult in the declining economic environment following the recent financial crisis. Some companies have been stuck with unused inventory, while others are reluctant to purchase additional inventory until they see clear evidence that consumer spending has rebounded (Brigham & Houston, 2013). The efficient management of working capital will be helpful to maintain uninterrupted production by the power sector companies of Bangladesh. Bangladesh cannot afford the total domestic demand for power till now. So the power sector companies should manage their working capital in such a way that will ensure and enhance their smooth generation of power and boost their financial capability to expand the scope of their contributed area.



REVIEW OF RELATED STUDIES

Saravanan et al. (2017) performed a study on the working capital management of Ambuja cements limited of India through ratio analysis. The study covered a period of 6 (six) years from 2010 to 2015. Data were collected from the published annual reports on the official websites of the sample firm. Tools used in the study were current ratio, liquid ratio, working capital turnover ratio, current liabilities to net worth ratio, debtors turnover ratio, average collection period, inventory management ratio, inventory to current asset ratio, inventory turnover ratio, and cash turnover ratio. The study revealed that the debtor's collection period is in the satisfactory level of the sample company. Singh & Singh (2013) conducted a study on the working capital management of National Plastic Industries Limited (NPIL) of India. The study period was 5 (five) years from 2006-07 to 2010-11. The basic sources of data were the annual reports of the sample company. The collected data were analyzed through different financial ratios such as current ratio, quick ratio, working capital turnover ratio, return on capital employed, and current assets to total assets ratio. The study found that the sample company made over-investment in current assets, the liquidity (current ratio and quick ratio) is excessive high which is the indication of lack of sound management practices, the working capital turnover ratio gradually decreased in the beginning years but in later period it starts to increase, and the profitability (ROCE) of NPIL has increased more than two times over the study period. Vijayalakshmi & Srividya (2015) conducted a study on the working capital management of the pharmaceutical industry in India. They took 10 (ten) pharmaceutical companies listed with Bombay Stock Exchange and National Stock Exchange of India as the sample by convenience sampling method. The study period was 5 (five) years from 2009-2010 to 2013-2014. Data were collected from the 'PROWESS' database of Centre for Monitoring Indian Economy (CMIE) for the study. Ratio analysis and statistical techniques such as descriptive statistics, multiple regression analysis, and ANOVA were used to analyze and interpret the collected data. The study found that the working capital position of the selected companies was satisfactory, and working capital turnover ratio, working capital to net worth and net working capital to current liabilities have a significant impact on the net profit ratio of the sample companies over the study period. Donkor (2015) performed a study on working capital management of SMEs in Ghana. The study used both primary and secondary data. The primary data was collected through a structured questionnaire. The secondary data sources were publications in journals, relevant literature on the topic, books, and internet materials. The study used a sample of 50 (fifty) SMEs in Ghana. Microsoft Excel was used for the analysis of the collected and compiled data. The study recommended that cash management, inventory management, and trade receivable management should be redesigned to manage

working capital effectively and efficiently of the selected SMEs. Viswanathan et al. (2016) performed a comparative study on the working capital management of selected pharmaceutical companies in India. The study covered 10 (ten) years from 2003-2004 to 2012-2013. The tools used for the study were financial ratio analysis, descriptive statistics, and indices. The data were collected from the 'PROWESS' database of the Centre for Monitoring Indian Economy (CMIE). By the amount invested in total assets, 5 (five) pharmaceutical companies were selected as the sample. The research found that the working capital position of the selected pharmaceutical companies was satisfactory. The study also revealed that high investment in inventories and receivables lead to lower profitability, and current assets to total assets lead to higher profitability in the sample companies over the study period.

From the above reviews, we can see that most of the past studies have used selected working capital ratios to analyze the working capital management practices. In our present study, we have computed the quick ratio, cash to current liability, inventory turnover, receivable turnover, and cash conversion cycle from the collected financial data, and analyzed through several statistical techniques to attain the set objectives. None of the previous studies adopted these selected variables and tools altogether to perform their study in our present research area, which provided the required spur to conduct our study.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- to explore the existing working capital management practices of the selected power sector companies in Bangladesh
- to test the differences between the sample mean and individual sample companies' mean concerning selected working capital ratios
- to examine the variation in each of the selected working capital ratios over the study period of the sample companies

METHODOLOGY OF THE STUDY

By purposive sampling technique and availability of data we have taken 3 (three) selected power sector companies from the 19 (nineteen) listed fuel and power sector companies in Dhaka Stock Exchange Ltd. (Dhaka Stock Exchange Ltd., 2018). The study period covered a time span of 6 (six) years from 2010 to 2015. The sources of collected data were the DSE archive, published annual reports, and official websites of the selected companies. Descriptive statistics, t-test, and ANOVA are adopted on the collected and compiled financial data to perform our study. The undertaken hypotheses are also tested through the statistical process to reach at a systematic conclusion. To conduct a complete analysis of working capital

management of the sample companies we have used the selected working capital ratios such as quick ratio, cash to current liability, inventory turnover, receivable turnover, and cash conversion cycle (inventory conversion period + average collection period - payables deferral period) (Brigham & Houston, 2013) in our study.

List of Sample Companies under Study

Name of the Sample Companies	Acronym used in the Study
Baraka Power Limited	Baraka
GBB Power Limited	GBB
Khulna Power Company Ltd.	Khulna

HYPOTHESES OF THE STUDY

The hypotheses of the study are as follows:

- H_{0a}: The difference between the sample mean and individual sample companies' mean concerning selected working capital ratios is not significant.
- H_{0b}: There are no significant differences among the selected power sector companies regarding the selected working capital ratios over the study period.

ANALYSIS AND FINDINGS OF THE STUDY

Quick Ratio Analysis of the Selected Power Sector Companies over the Study Period

Table 1: Quick Ratio (QR) Analysis of the Selected Power Sector Companies

Name of the Company	Baraka	GBB	Khulna
Growth Rate	14.69	-6.23	6.73
Mean (2010-2015)	1.55	4.46	0.77
Sample Mean	2.26	2.26	2.26
SD	0.85	1.66	0.28
CV (%)	55.08	37.28	36.31
t-value	-2.03	3.24	-13.17

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Table 1 shows that the growth rate of the quick ratio of Baraka is maximum (14.69%) followed by Khulna (6.73%) and GBB (-6.23%) respectively. The sample average of the quick ratio is 2.26 over the study period which is satisfactory for the sample power sector companies. The variation in quick ratio during the study period is very high for all the selected power sector companies. The average quick ratio of GBB (4.46) is the highest among the sample companies, and GBB should search profitable investment opportunities to invest from excess quick assets. The calculated t-values show that (t_{5%}, 2-tailed) there is a significant difference in quick ratio between the sample average and all the selected power sector companies except Baraka. Thus overall the quick ratio position of GBB is the best among the selected power sector companies during the study period followed by Baraka and Khulna in order.

Table 2: ANOVA (Single Factor) concerning Quick Ratio

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	6	9.31	1.55	0.73
Column 2	6	26.75	4.46	2.76
Column 3	6	4.59	0.77	0.08

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	45.42	2	22.71	19.08	0.00	3.68
Within Groups	17.85	15	1.19			
Total	63.27	17				

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Here the null hypothesis is taken as there are no significant differences among the selected power sector companies regarding the quick ratio over the study period. Table 2 shows the ANOVA (single factor) of the quick ratio of the sample companies over the study period. It also shows that the calculated value of 'F' of the quick ratio (19.08) is greater than the critical value (3.68). Thus our undertaken null hypothesis is rejected, and we can comment that there are significant differences among the selected power sector companies concerning quick ratio over the study period.

Cash to Current Liability Analysis of the Selected Power Sector Companies over the Study Period

Table 3: Cash to Current Liability (CCL) Analysis of the Selected Power Sector Companies

Name of the Company	Baraka	GBB	Khulna
Growth Rate	36.03	1.22	61.36
Mean (2010-2015)	55.17	224.26	25.00
Sample Mean	101.47	101.47	101.47
SD	98.86	132.17	18.74
CV (%)	179.21	58.94	74.97
t-value	-1.15	2.28	-9.99

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Table 3 shows that the growth rate of cash to current liability ratio of Khulna is maximum (61.36%), followed by Baraka (36.03%) and GBB (1.22%) respectively. The sample average of cash to current liability ratio is 101.47% over the study period which is satisfactory for the sample power sector companies. The variation in cash to current liability ratio during the study period is very high for all the selected power sector companies. The average cash to current liability ratio of GBB (224.26) is the highest among the sample companies and GBB should invest excess cash in the profitable investment sector. The calculated t-values show that (t_{5%}, 2-tailed) there are no significant differences in cash to current liability ratio between the sample average and all the selected power sector companies except Khulna. Thus overall the cash to current liability ratio position of GBB is the best among the selected power sector companies during the study period followed by Baraka and Khulna respectively.

Table 4: ANOVA (Single Factor) concerning Cash to Current Liability

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	6	330.99	55.17	9773.66
Column 2	6	1345.53	224.26	17467.84
Column 3	6	149.99	25.00	351.27

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	138409.35	2	69204.68	7.52	0.01	3.68
Within Groups	137963.85	15	9197.59			
Total	276373.20	17				

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Here the null hypothesis is taken as there are no significant differences among the selected power sector companies regarding the cash to current liability ratio over the study period. Table 4 shows the ANOVA (single factor) of cash to current liability ratio of the sample companies over the study period. It also shows that the calculated value of 'F' of cash to current liability ratio (7.52) is greater than the critical value (3.68). Thus our undertaken null hypothesis is rejected, and we can comment that there are significant differences among the selected power sector companies concerning cash to current liability ratio over the study period.

Inventory Turnover Analysis of the Selected Power Sector Companies over the Study Period

Table 5: Inventory Turnover (IT) Analysis of the Selected Power Sector Companies

Name of the Company	Baraka	GBB	Khulna
Growth Rate	-74.65	-29.57	-8.89
Mean (2010-2015)	13.82	9.02	10.26
Sample Mean	11.03	11.03	11.03
SD	21.98	5.45	4.33
CV (%)	159.08	60.43	42.24
t-value	0.31	-0.91	-0.44

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Table 5 shows that the growth rate of inventory turnover of all the selected companies is negative. The sample average of inventory turnover is 11.03 times over the study period which is satisfactory for the sample power sector companies. The variation in inventory turnover during the study period is very high for all the selected power sector companies. The average inventory turnover of Baraka (13.82) is the highest among the sample companies. The calculated t-values show that ($t_{5\%}$, 2-tailed) there are no significant differences in inventory turnover between the sample average and all the selected power sector companies. Thus the inventory turnover position of Baraka is the best among the selected power sector companies during the study period followed by Khulna and GBB in order.

Table 6: ANOVA (Single Factor) concerning Inventory Turnover

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	6	82.91	13.82	483.18
Column 2	6	54.09	9.02	29.67
Column 3	6	61.55	10.26	18.78

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	74.56	2	37.28	0.21	0.81	3.68
Within Groups	2658.15	15	177.21			
Total	2732.72	17				

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Here the null hypothesis is taken as there are no significant differences among the selected power sector companies regarding the inventory turnover over the study period. Table 6 shows the ANOVA (single factor) of inventory turnover of the sample companies over the study period. It shows that the calculated value of 'F' of inventory turnover (0.21) is less than the critical value (3.68). Thus our undertaken null hypothesis is accepted, and we can comment that there is no significant difference among the selected power sector companies concerning inventory turnover over the study period.

Receivable Turnover Analysis of the Selected Power Sector Companies over the Study Period

Table 7: Receivable Turnover (RT) Analysis of the Selected Power Sector Companies

Name of the Company	Baraka	GBB	Khulna
Growth Rate	-19.47	-15.51	-19.26
Mean (2010-2015)	4.57	3.96	7.78
Sample Mean	5.44	5.44	5.44
SD	1.93	2.07	3.49
CV (%)	42.30	52.13	44.78
t-value	-1.10	-1.75	1.65

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Table 7 shows that the growth rate of the receivable turnover of all the selected power sector companies is negative. The sample average of the receivable turnover ratio is 5.44 times over the study period which is almost satisfactory for the sample power sector companies. The variation in receivable turnover during the study period is very high for all the selected power sector companies. The average receivable turnover of Khulna (7.78) is the highest among the sample companies. The calculated t-values show that ($t_{5\%}$, 2-tailed) there is no significant difference in receivable turnover between the sample average and all the selected power sector companies. Thus overall the receivable turnover position of Khulna is the best among the selected power sector companies during the study period followed by Baraka and GBB respectively.

Table 8: ANOVA (Single Factor) concerning Receivable Turnover

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	6	27.43	4.57	3.74
Column 2	6	23.77	3.96	4.26
Column 3	6	46.70	7.78	12.15

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	50.58	2	25.29	3.77	0.05	3.68
Within Groups	100.75	15	6.72			
Total	151.34	17				

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Here the null hypothesis is taken as there are no significant differences among the selected power sector companies regarding the receivable turnover over the study period. Table 8 shows the ANOVA (single factor) of receivable turnover of the sample companies over the study period. It also shows that the calculated value of 'F' of receivable turnover (3.77) is greater than the critical value (3.68). Thus our undertaken null hypothesis is rejected, and we can comment that there are significant differences among the selected power sector companies concerning receivable turnover over the study period.

Cash Conversion Cycle Analysis of the Selected Power Sector Companies over the Study Period

Table 9: Cash Conversion Cycle (CCC) Analysis of the Selected Power Sector Companies

Name of the Company	Baraka	GBB	Khulna
Growth Rate	120.71	22.12	46.94
Mean (2010-2015)	164.87	126.06	-4.14
Sample Mean	95.60	95.60	95.60
SD	142.03	40.10	76.62
CV (%)	86.15	31.81	-1852.91
t-value	1.19	1.86	-3.19

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Table 9 shows that the growth rate of the cash conversion cycle of Baraka is maximum (120.71%), followed by Khulna (46.94%) and GBB (22.12%) respectively. The sample average of the cash conversion cycle is 95.60 days over the study period which is almost satisfactory for the sample power sector companies, but they should try to reduce the length of the cash conversion cycle. The variation in the cash conversion cycle during the study period is very high for all the selected power sector companies, especially for Khulna. The average cash conversion cycle of Baraka (164.87) is the highest among the sample companies. The calculated t-values show that (t_{5%}, 2-tailed) there are no significant differences in the cash conversion cycle between the sample average and all the selected power sector companies except Khulna. Thus overall the cash conversion cycle position of Khulna is the

best among the selected power sector companies during the study period followed by GBB and Baraka in order.

Table 10: ANOVA (Single Factor) concerning Cash Conversion Cycle

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	6	989.20	164.87	20172.77
Column 2	6	756.33	126.06	1608.13
Column 3	6	-24.81	-4.14	5870.31

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	94034.69	2	47017.34	5.10	0.02	3.68
Within Groups	138256.06	15	9217.07			
Total	232290.75	17				

Source: Annual Reports (2010-2015) of the Selected Power Sector Companies

Here the null hypothesis is taken as there are no significant differences among the selected power sector companies regarding the cash conversion cycle over the study period. Table 10 shows the ANOVA (single factor) of the cash conversion cycle of the sample companies over the study period. It also shows that the calculated value of 'F' of the cash conversion cycle (5.10) is greater than the critical value (3.68). Thus our undertaken null hypothesis is rejected, and we can comment that there are significant differences among the selected power sector companies concerning cash conversion cycle over the study period.

CONCLUSION

The sample average of the quick ratio (2.26) showed that the sample companies can meet its short-term obligations in due time. The positive growth rate of QR (except GBB) of the sample companies showed a favorable position of the sample companies. The sample average of cash to current liability ratio (101.47%) showed a very strong position to meet current liability through cash by the selected companies. The positive growth rate of CCL showed the favorable position of the sample companies. The sample average of inventory turnover (11.03 times) showed a satisfactory level of inventory conversion period of the selected companies. The negative growth rate of IT showed a dissatisfactory position of the sample companies. The sample average of receivable turnover (5.44 times) showed an almost acceptable position of receivable turnover of the selected companies. The negative growth rate of RT showed an unfavorable position of the sample companies. The sample average of cash conversion cycle (95.60 days) showed an almost acceptable position, but the length of the cash conversion cycle should be reduced by the selected companies. The positive growth rate of CCC showed an alarming signal for the sample companies. CV showed that the variation in all the selected working capital ratios of the sample companies over the study period is very high and it should be more consistent. ANOVA also showed that

there are significant differences among the selected companies concerning all the selected working capital ratios over the study period except inventory turnover. Overall we can conclude that the working capital management practices of the sample companies over the study period are satisfactory, but the sample companies should develop a sustainable and consistent working capital management policy for further improvement of their working capital management practices.

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