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WORKING CAPITAL MANAGEMENT AND PROFITABILITY: EVIDENCE FROM THE CEMENT INDUSTRY IN BANGLADESH.

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ABSTRACT: *Cement Industry plays a vital role in the socio-economic development of Bangladesh. Profitability of this industry is highly related with the efficient working capital management, but the profitability of this industry is not satisfactory. This study is designed to show the profitability and working capital position of Cement industries, correlation between them and whether the profitability is affected by Working Capital Management. Ratio Analysis, Correlation Matrix and Regression Analysis have been used to show Profitability. Working Capital position, correlation between them and the impact of Working Capital on Profitability respectively. For the source of data the author mainly relied on Annual Reports and official records. It is observed from the study that profitability and Working Capital Management position of the Cement industry are not satisfactory.The study reveals that correlation exist between Working Capital Management and Profitability. The study also brings to fore that Working Capital Management has a positive impact on Profitability.*

KEYWORDS: Profitability, Working Capital Management, Cement Industry, Efficiency.

INTRODUCTION

Working capital management involves management of current assets and current liabilities of a firm. A firm's value cannot be maximized in the long run unless it survives in the short run. Thus, sound working capital management is a requisite for a firm's survival. Working capital policy refers to the firm's basic policies regarding target levels for each category of current assets and how current assets will be financed (Bsesley and Brigham, 2008).To produce the best possible returns, the firm should keep no unproductive assets and should finance with the cheapest available sources of funds. In general, it is often advantageous for the firm to invest in short-term assets and to finance with short-term liabilities (Scherr, 2007).

In any typical organization a financial manager has to perform three functions like as: The management of long-term assets, the management of long-term capital and the management of short-term assets and liabilities. The management of short-term assets and liabilities refers to management of working capital (Khan, 2002). A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. Working Capital Management includes maintaining optimum balance of working capital components-receivables, inventory and payables and using the cash efficiently for day-to-day operations. Proper optimization of working capital balance means minimizing the working capital requirement and realizing maximum possible revenues (Ganesan, 2007).

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Both excessive as well as inadequate working capital positions are dangerous from the firm's point of view. Excessive working capital means holding costs and idle funds which earn no profits for the firm. Paucity of working capital not only impairs the firm's profitability but also results in production interruptions and inefficiencies and sales disruptions (Pandey,

2007).Van Horne and Wachowicz (2004) stated that excessive level of current assets may have a negative effect on firm's profitability, whereas a low level of current assets may lead to lowers of liquidity and stock-outs, resulting in difficulties in maintaining smooth operations. Smith (1980) pointed out that working capital management plays and important role in a firm's profitability and risk as well as its value. The firm should maintain a sound working capital position. It should have adequate working capital to run its business operations.

The ability of the company to earn profit can be referred to as the profitability. There is a strong linear relationship between profitability of the firm and its working capital efficiency. Profit is determined by deducting expenses from the revenue incurred in generating that revenue. Profit is determined by matching revenue against cost associated with it (Salauddin, 2001).The amount of profit can be a good measure of the financial performance of a company, therefore we can use profitability as a measure of the financial performance of a company. Effective working capital management is very important due to its significant effect on profitability of company and thus the existence of company in the market (Agha, 2012). If a firm minimizes its investment in current assets, the resulting funds can be invested in value creating profitable projects, therefore it can increase the firm's growth opportunities and shareholders return.

In the study the researcher computed two major types of profitability ratios: (i) Profitability in relation to sales and (ii) Profitability in relation to investment. Gross Profit Margin (GPM), Net Operating Margin (NOM), Return on Total Assets (ROTA), Return on Equity (ROE), and Return on Capital Employed (ROCE) are the main measures of profitability. Profit is used here as absolute measure and profitability is used as a relative measure of efficiency of the operation of an enterprise.

The companies whose are publicly traded are the economic pulse of a nation. Their emergence, growth and demise generally reflect the financial condition of the country. Side by side the rapid growth of trade, commerce and industries, the number of publicly traded companies is considerably increasing in Bangladesh. These companies play a vital role on the economy of the country. Cement companies are the important adjuncts of industrialization in the country. For a developing country like Bangladesh, cement industry has a lucrative future. The government is looking to invest in infrastructure while encouraging FDI in secondary sector. In addition, the standard of living of the population is increasing giving rise to demand for Real Estate. Bangladesh Cement industry is the 40th largest market in the world. Currently, the demand for cement stands at 17.5Mn Mt against production capacity of 28MnMt as of 2013. In Bangladesh, Cement Consumers are categorized as follows: (i) Individual home maker (25%), (ii) Real Estate developer (35%) and (iii) Govt. organization, i.e. LGED, RHW etc. (40%).

Apart from the local market, players have started exporting to India. Bangladesh is currently exporting up to 15000 – 20000 tons of cement per month to India. (Source: Bangladesh Bank).In the long run, industry leaders see a great prospect in entering both the African and Middle Eastern

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markets. Based on industry experts, demand is expected to grow at an average of 20% to 25% for the next 5 years. Each year, the government is allocating funds for infrastructure development under ADP. Over the last five years, government's allocation of funds on bridge and road division is increasing. Recently, the government has undertaken a number of large infrastructure projects on bridges, airports, flyovers and monorail. According to the UN Population Fund (UNFPA) report, 28% people of our country live in urban areas where the population growth is 3.2 per thousand. Urbanization and demand for accommodation are increasing day by day. Thus it is expected that the real sector will grow steadily with the household users' increasing cement consumption pattern. Considering the "Life cycle of the Industry", Currently Cement industry of Bangladesh is in the growth stage. Sales of Cement are increasing due to growing demand for cement in both the local and foreign markets. Currently, multinational cement companies are facing intensive competition with local companies. Local manufacturers have been pursuing more innovative and aggressive business strategy compared to multinationals. Local manufacturers seek to seize large market by reaching mass people through economies of scale while multinationals cater the needs of specific group of customers by charging high price through superior brand value and quality. The contribution of Cement Companies to Bangladesh economy is encouraging. The investment in this sector is increasing which indicates the potentiality of this sector. There are 7 listed Cement Companies both in Dhaka Stock Exchange and Chittagong Stock Exchange. Though this sector satisfied the demand of the local market and also exports to the international market, the performance of this sector is not satisfactory as compared to the performance of other manufacturing sectors like -Garments sector etc. Against this backdrop an attempt has been made to examine the reason of poor performance of Cement Industry and to explore whether the poor performance is the result of poor Working Capital Management. The researcher has used correlation matrix and regression analysis to examine the relationship between profitability and working capital management. Some statistical tools like mean, standard deviation and co-efficient of variance were used to evaluate the performance.

LITERATURE REVIEW

Extensive research work on working capital management has been done in both public and private sectors including multinational companies in Bangladesh. The attention of academician and managers over optimizing working capital component is not new, rather, many have provided with a variety of thoughts for the welfare of business over many years. For over 30 years ago, Largay and Stickney (1980, p.53) had reported the importance of cash position for sustainability of the firm. Lazarid and Tryfonidis (2006), had found a relationship between working capital management efficiency and profitability and so did Shin and Soenen (1998), Deloof (2003) and many others. Wilson (2000) report that in UK corporate sector more than 80% of daily business transactions are on credit terms. Cote and Latham (1999, p.261) argued the management of receivables, inventory and accounts payable have tremendous impact on cash flows, which in turn effect the profitability of the firm. Sayaduzzaman (2006) in his article on "Working Capital Management: A study on British American Tobacco Bangladesh Limited" mentioned that the efficiency of working capital management of British American Tobacco Bangladesh Ltd. is highly satisfactory due to the positive cash inflows and planned apporoach in managing the major elements of working capital. He found that working capital management helps to maintain all

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around efficiency in operations. Rahaman and Florin (2007) investigated the relative relationship between aggressive and conservative working capital practices of six major manufacturing industries over a period of five years in Bangladesh. Analysis revealed that working capital investment and policies of Pharmaceutical, Textile, Food, Engineering, Cement and miscellaneous industries are not significantly different but their working capital financing policies are different.

As found by Long, Malitz and Ravid (1993) it is seen that liberal credit terms to the customers increase the sales level of the firm, though having a continuous trouble with managing short term financing in the finance department. But extensive use of liberal credit terms to customers reduces the profitability of the firm. It is up to the firm depending on its nature of business to decide whether to choose liberal credit terms to enhance marketing to the customers or to focus on profitability of the firm with minimizing its cash conversion cycle and optimize level of cash holdings. Reheman (2007) studied the effect of different variables of working capital management including the Average Collection Period, Inventory turnover in days, Average Payable Period, Cash Conversion Cycle and Current Ratio on the next Operating Profitability. He also found that as the cash conversion cycle increase, it leads to decrease in profitability of the firm and manager can create a positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level. Moyer, Meguigan and Kretlow (1995, p.11) found that Working Capital consists of a large portion of a firm's total investment in assets, 40 percent in manufacturing and 50%-60% in retailing and wholesale industries respectively. Scheer (1989,p. 16) claimed that by implementing best practices in Working Capital, Companies can strengthen strong cash flow levels, improve profitability, budgeting and forecasting process.

Objective of the Study

The broad objective of the study is to examine and evaluate the correlation between Working Capital Management and Profitability in Cement Industry over a period of Six years from 2009 to 2014.The specific objectives of the study are as follows:

i. To examine the profitability position of the selected Cement industries.

ii. To examine the management of cash, inventory and accounts receivable of selected Cement industries.

iii. To assess the current liability position and the efficiency with which the overall working capital is being managed.

iv. To assess the relationship between working capital management and profitability.

METHODOLOGY OF THE STUDY

Sample Selection

There were seven listed Cement companies both in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). For this study five companies were taken as sample; this covers more than

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70% of the population. Due to unavailability of all year's secondary data rest of the two companies were not taken as sample. List of the five selected sample companies provided in the Appendix.

Selection of Period

The study was conducted in 2015.To make the study a contemporary and up to date, the data should be of latest. Therefore 6 annual reports of the 5 selected companies were collected for the year of 2009 to 2014.

Data Sources

The present study was conducted on the basis of secondary data. The secondary data were collected from annual report of the selected companies, research paper etc. The annual reports were collected from the website of the respective companies. Research papers were also collected from the website.

Techniques used for data analysis

The collected data were analyzed and interpreted with the help of different financial ratios, statistical tools like Mean, Standard Deviation (S.D), and Correlation Coefficient etc. With the help of SPSS software, Correlation Matrix and Regression analysis were also focused out for analysis.

Findings and Analysis

The findings and analysis part of the research work have been divided in four sections. The first section shows the profitability position of the Cement industry. Second part analyzed the position of working capital. The third section focused on the correlation between profitability and working capital management and the last section showed the impact of working capital management on profitability.

Profitability of the selected Cement Companies

Profitability of the Cement industries can be measured by gross profit margin ratio, net profit ratio, operating profit ratio, return on capital employed and return of total assets. Table-1 depicts various profitability ratios of the selected cement industries for the period under study.

Gross Profit Margin

Gross profit margin is measures of how well a company control its costs. It is calculated by dividing a company's gross profit by its revenues and expressing the result as percentage. The higher the gross profit margin is, the better the company is thought to control costs. Investor uses the gross profit margin to compare companies in the same industry as well as in different industries to determine what are the most profitable. Some authors consider that a profit margin ratio ranging from 20% to 30% may be considered as the standard norm for any industrial enterprise. Table-1 shows that the average gross profit ratios range from highest 29.52% in LAFSUR to lowest 16.84% in CONFID. From the study it is found that the industry average gross ratio is 21.37% and the

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average gross profit ratio of all but two samples is below industry average. Variation of gross profit over the years is negligible, which speaks about the stability of gross profit earning of this sector.

Table 1: Profitability Ratios of Selected Cement Industries.

Ratios	ARAMIT	CONFID	MICEMENT	HIDELB	LAFSUR	Year
Gross Profit Margin	23.08	18.83	17.34	25.08	38.25	2009
	22.80	13.77	22.43	23.71	10.22	2010
	21.38	14.03	19.10	15.75	9.190	2011
	19.47	17.17	13.27	19.14	39.37	2012
	22.37	20.57	16.08	23.18	41.51	2013
	23.84	16.68	15.75	19.16	38.56	2014
	22.16	16.84	17.33	21.00	29.52	Mean
	21.37	21.37	21.37	21.37	21.37	Industry Avg.
	1.55	2.66	3.15	3.55	15.39	S.D
	0.07	0.16	0.18	0.17	0.52	C.V
Net Profit Margin	7.19	11.81	8.20	12.57	13.20	2009
	8.65	14.02	10.62	12.00	-28.97	2010
	6.04	8.85	10.84	8.80	-35.87	2011
	4.65	8.57	9.89	11.86	14.42	2012
	4.99	9.51	9.74	14.80	22.47	2013
	1.66	6.58	8.44	11.23	24.34	2014
	5.53	9.89	9.62	11.88	1.60	Mean
	7.70	7.70	7.70	7.70	7.70	Industry Avg.
	2.40	2.63	1.09	1.95	26.80	S.D
	0.43	0.27	0.11	0.16	16.76	C.V
Operating Profit Ratio	19.33	15.20	17.50	20.94	31.66	2009
	18.43	10.18	18.26	17.93	-19.73	2010
	16.75	10.91	15.18	10.18	3.39	2011
	15.98	14.23	10.16	14.30	31.35	2012
	17.74	17.12	12.04	16.72	35.18	2013
	15.79	12.20	11.73	12.44	32.62	2014
	17.34	13.31	14.15	15.42	19.08	Mean
	15.86	15.86	15.86	15.86	15.86	Industry Avg.
	1.41	2.67	3.33	3.90	22.38	S.D
	0.08	0.20	0.24	0.25	1.17	C.V
Return on Capital Employed	91.65	9.87	47.49	39.31	24.96	2009
	86.53	6.70	10.76	0.32	-14.46	2010
	37.60	8.67	10.84	0.31	1.98	2011
	68.85	16.10	7.77	22.10	33.10	2012
	52.87	17.84	11.29	20.04	82.57	2013
	14.38	13.43	13.48	17.65	24.49	2014
	58.65	12.10	16.94	16.62	25.44	Mean
	25.95	25.95	25.95	25.95	25.95	Industry Avg.
	29.69	4.40	15.08	14.76	33.06	S.D
	0.51	0.36	0.89	0.89	1.30	C.V

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Return on Total Assets(ROA)	8.44	6.17	12.34	8.55	5.76	2009
	8.08	7.45	14.55	13.90	-9.15	2010
	5.01	5.31	6.22	9.36	-11.79	2011
	3.32	6.87	5.64	14.06	10.00	2012
	2.74	7.22	6.80	13.75	23.30	2013
	0.46	4.73	5.94	11.60	14.10	2014
	4.68	6.29	8.58	11.87	5.37	Mean
	36.79	36.79	36.79	36.79	36.79	Industry Avg.
	3.14	1.09	3.85	2.44	13.60	S.D
	0.67	0.17	0.45	0.21	2.53	C.V

Source: Annual Report and official Record of the Selected Cement Companies(2009 to 2014)

Net Profit Margin

Net profit margin ratio revels the overall profitability of the concern, that's why it is very much useful to the shareholders and prospective investors. It also indicates management efficiency in manufacturing, administrating and selling of the products. Table-1 shows that the net profit ratios range from highest 11.88% in HIDELB to lowest 1.60% in LAFSUR. The HIDELB earned the highest average net profit margin (11.88%) and industry average is 7.70%. The calculated net profit margin ratios in Table-1 shows that in case of CONFID, MICEMENT and HIDELB it is in the above of industry average and incase of LAFSUR and ARAMIT it is in the below of industry average. Lower profitability position refers to the company's failure to achieve satisfactory return on owner equity. The coefficient of variation of the net profit ratios of the samples reveals that the variation variation of net profit margin over the years is negligible except LAFSUR, which speaks about the stability of net profit earning of the sector.

Operating Profit Ratio

It represents the overall earnings of an enterprise and one can get a clear idea about the efficiency of an enterprise from its operating profit ratio. The operating margin ratio , also known as the operating profit margin, is a profitability ratio that measures what percentage of total revenue is made up by operating income in other words, the operating margin ratio demonstrates how much revenues are left over after all the variable or operating cost have been paid. Operating profit ratio ranging from 4% to 6% is considered the norm for the purpose of comparison and control by some authors. Table -1 show that the average operating profit ratio of the sample Cement companies ranges from highest 19.08% in LAFSUR to the lowest 13.31% in CONFID. The industry average operating profit ratio is 15.86% and most of the companies failed to attain the average but all of the companies operating profit ratio is more than standard. The coefficient of variation of operating profit ratios of the samples reveals that the variation of operating profit ratio over the years is negligible except in LAFSUR.

Return on Capital Employed

It refers the overall efficiency with which capital is used. A rate of return ranging from 11% to 12% on capital employed may be considered as reasonable for a selected enterprise. Table-1 shows that the average return on capital employed ranges from 12.10% in CONFID to 58.65% in

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ARAMIT. It appears from the table that the industry average return on capital employed is 25.95% which is satisfactory in terms of standard norm. It is seen from the table that all of the company's return on capital employed are below of their industry average except ARAMIT. It appears from the table that LAFSUR has the highest variation, MICEMENT and HIDELB has the second highest variation as indicated by the coefficient of variation which indicates extreme instability in their earnings. The variation of this ratio for ARAMIT and CONFID should be considered satisfactory. The lower ratios dictate that management should be more efficient in using the long term fund of owners and creditors.

Return on Total Assets

This ratio is calculated to measure the profit after the tax against the amount invested in total assets to ascertain whether assets are being utilized properly or not. Some authors consider 10% to 12% rate of return on total assets as reasonable norm for profitable firms and this may be considered as reasonable norm for the selected enterprise.Table-1 shows that the average return on total assets ranges from 4.68% in ARAMIT to 11.87% in HIDELB. It is seen from the table that the average returns on total assets 4.68% which is far away from standard norm. The average returns on total assets of all samples are below the standard norm except HIDELB which cannot be considered as satisfactory and desirable. The average returns on total assets of all samples are also below of their industry average. The lower ratios indicate the assets were not being utilized properly during the period. In the context of variation of this ratio over the years, it is found that the variation is almost stable except for ARAMIT and LAFSUR, in case of LAFSUR which is showing the more inconsistency.

From the profitability ratios it is clear that the performance of the sample Cement Industries is not satisfactory.

Working Capital Management position of the selected Cement industries

Working Capital position of Cement industries can be assessed by current ratio, quick ratio, net working capital to total assets, net working capital turnover, inventory turnover, debtors' turnover and current assets turnover. Table-2 shows the working capital position of the selected Cement companies.

Current Ratio

This ratio is a measure of the firm's short terms solvency. It indicates the ability of the company to meet its current obligations. Some author considers 2:1 as standard norm for current ratio. Table-2 shows that the industry average current ratio is 1.39:1 which indicates that the industry is able to meet its current obligations from its current assets but failed to fulfill the standard norm. The average current ratio ranges from 0.62:1 in LAFSUR to 2.41:1 in HIDELB. The average current ratios of all samples are below of their standard norm except HIDELB and this sample became also able to satisfy the industry average also. Therefore it can be said that the liquidity in terms of current ratio had been quite inadequate in all the years under study for all the Cement companies. From the coefficient of variation it is clear that the variation of current ratio over time is negligible without MICEMENT and LAFSUR.

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Liquid (Quick or Acid Test) Ratio

It measures the firm's ability to meet short term obligations from its most liquid assets.Table-2 shows that the industry average of liquid ratio is 1.11:1 which is higher than the standard (1:1) ratio. The table reveals that the average liquid ratio ranges from 0.45:1 in LAFSUR to 1.90:1 in HIDELB. The average liquid ratio of ARAMIT (0.56:1) and LAFSUR (0.45:1) are below the industry average as well as far away from the industry norm. The average ratio of CONFID (1.03:1) is above the standard norm but below the industry average. The average ratio of both MICEMENT (1.62:1) and HIDELB (1.90:1) are above the industry average as well as standard norm. It indicates that all Cement companies except ARAMIT and LAFSUR are financially very strong and have the ability to pay its most immediate liabilities. In the context of variation of this ratio over the years, it is found that the variation is almost fluctuating.

Table 2: Working Capital Position of selected Cement Companies.

Ratios	ARAMIT	CONFID	MICEMENT	HIDELB	LAFSUR	Year
Current Ratio	0.68	1.42	0.91	2.03	0.31	2009
	0.47	1.36	1.07	2.38	0.23	2010
	0.69	1.24	3.21	2.14	0.43	2011
	0.68	1.30	2.26	2.64	0.47	2012
	0.67	1.41	2.23	2.92	0.85	2013
	0.92	1.39	1.66	2.33	1.42	2014
	0.69	1.35	1.89	2.41	0.62	Mean
	1.39	1.39	1.39	1.39	1.39	Industry Avg.
	0.14	0.07	0.86	0.33	0.45	S.D
	0.21	0.05	0.45	0.14	0.72	C.V
Quick Ratio	0.57	1.04	0.63	1.52	0.15	2009
	0.26	0.87	0.67	1.74	0.11	2010
	0.57	0.88	2.78	1.61	0.36	2011
	0.58	0.99	2.08	2.08	0.39	2012
	0.60	1.22	2.06	2.46	0.59	2013
	0.79	1.16	1.51	1.96	1.08	2014
	0.56	1.03	1.62	1.90	0.45	Mean
	1.11	1.11	1.11	1.11	1.11	Industry Avg.
	0.17	0.14	0.85	0.35	0.36	S.D
	0.30	0.14	0.53	0.18	0.80	C.V
Net Working Capital to Total Assets (in time)	-0.24	0.08	-0.04	0.29	-0.31	2009
	-0.42	0.06	0.03	0.36	-0.44	2010
	-0.25	0.06	0.43	0.30	-0.25	2011
	-0.26	0.09	0.32	0.38	-0.24	2012
	-0.27	0.11	0.31	0.43	-0.48	2013
	-0.16	0.14	0.25	0.36	-0.10	2014
	-0.27	0.09	0.22	0.35	-0.30	Mean
	0.02	0.02	0.02	0.02	0.02	Industry Avg.
	0.08	0.03	0.18	0.05	0.14	S.D
	-0.32	0.344	0.84	0.15	-0.46	C.V
Net Working	-4.91	6.35	-38.03	4.77	-1.42	2009
	-2.22	7.68	50.97	3.20	-0.72	2010
	-3.28	10.37	1.33	1.97	-1.31	2011

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Capital Turnover	-2.72	9.27	1.76	3.10	-2.38	2012
	-2.02	6.78	2.22	2.15	-12.45	2013
	-5.18	5.30	2.78	2.86	-5.98	2014
	-3.38	7.63	3.51	3.00	-4.04	Mean
	1.34	1.34	1.34	1.34	1.34	Industry Avg.
	1.36	1.90	28.24	0.10	4.53	S.D
	-0.40	0.25	8.06	0.33	-1.12	C.V
Inventory Turnover	14.24	7.04	12.23	9.53	6.03	2009
	5.38	5.69	8.87	6.88	4.93	2010
	8.65	6.90	6.84	7.59	11.43	2011
	7.83	9.08	12.80	9.16	14.95	2012
	9.57	14.91	15.78	9.08	7.11	2013
	4.09	9.17	12.75	10.23	7.40	2014
	8.29	8.80	11.55	8.75	8.64	Mean
	9.20	9.20	9.20	9.20	9.20	Industry Avg.
	3.56	3.28	3.19	1.26	3.80	S.D
	0.43	0.37	0.28	0.14	0.44	C.V
Debtors Turnover	6.78	6.94	1.15	13.98	19.44	2009
	6.44	13.24	9.89	14.12	42.47	2010
	4.12	9.67	11.73	10.63	11.43	2011
	3.68	7.34	7.50	11.86	14.95	2012
	2.92	5.97	10.23	11.24	14.17	2013
	2.46	4.92	6.83	11.75	13.39	2014
	4.4	8.01	7.89	12.26	19.31	Mean
	10.37	10.37	10.37	10.37	10.37	Industry Avg.
	1.81	3.01	3.77	1.45	11.65	S.D
	0.41	0.38	0.48	0.12	0.60	C.V
Current Assets Turnover	2.29	1.88	3.71	2.43	3.15	2009
	2.46	2.03	3.32	1.86	2.44	2010
	1.48	1.98	0.91	1.88	1.77	2011
	1.25	2.12	0.98	1.93	2.68	2012
	1.01	1.98	1.23	1.41	2.18	2013
	0.47	1.49	1.10	1.63	1.78	2014
	1.49	1.91	1.88	1.86	2.33	Mean
	1.89	1.89	1.89	1.89	1.89	Industry Avg.
	0.76	0.22	1.28	0.34	0.54	S.D
	0.51	0.12	0.68	0.18	0.23	C.V

Source: Annual Report and official Record of the Selected Cement Companies (2009 to 2014)

Net Working Capital to Total Assets

It is seen from the table-2 that the industry average of net working capital to total assets ratio is 0.02:1. The table reveals that the average net working capital to total assets ratios of CONFID (0.09), MICEMENT (0.22) and HIDELB (0.35) are higher than the industry average and the average ratio of ARAMIT (-0.27) and LAFSUR (-0.30) are lower than the industry average and the figures are negative. From the calculated ratios it is clearly seen that the net working capital to total assets ratios is very small and two samples the ratio is negative. Such state of affairs indicates the inability and inadequacy of net working capital to the total assets of the selected enterprises for the period under review.

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Inventory Turnover Ratio

A low inventory turnover may indicate an excessive investment in inventories, a high ratio often means that the firm is running short of stock, resulting in poor service to customers. Higher the ratio the better it is because it shows that the stock is rapidly turned over.Table-2 shows that the industry average inventory turnover is 9.20 times. It is seen from the table that average inventory turnover ratio ranges from 8.29 times in ARAMIT to 11.55 times in MICEMENT. Some authors consider 8 to 9 times of inventory turnover ratio as the reasonable norm for an efficient concern. From the study it is seen that the average inventory turnover for all selected cement companies are above 8 times but except MICEMENT (11.55) all are below the industry average. Therefore according to the standard norm the samples are performing well but according to the industry average their performance is not satisfactory.

Debtors Turnover

Accounts receivable turnover ratio or debtor's turnover ratio indicates the number of times the debtors are turned over in a year. The higher the value of debtor's turnover the more efficient is the management of debtors or more liquid the debtors are. Similarly, low debtors turnover ratio implies inefficient management of debtors or less liquid debtors. Tabe-2 shows that the average debtor's turnover ratio ranges from 4.4 times in ARAMIT to 19.31 times in LAFSUR. Accordig to industry average the lower ratio for ARAMIT, CONFID and MICEMENT reveals that the management of debtors is inefficient and the situation is good for HIDELB and LAFSUR. From the coefficient of variance it is observed that the variance is negligible for all the sample companies.

Current Assets Turnover

The average Current Assets Turnover ratio varied between 1.49 times in ARAMIT and 2.33 times in LAFSUR during the study period. It is seen from the table that all of the company's Current Assets Turnover are below of their industry average except CONFID and LAFSUR. From the coefficient of variation it is observed that the variance is negligible for all the samples.

Correlation Analysis

The correlation between working capital Management and Profitability of the selected Cement companies can be assessed through Pearson's Correlation Coefficient.

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Table 3: Pearson Correlation Coefficient on Efficiency in Working Capital and Profitability 5 Cement companies, 2009-2014:6 years Observations

	Current Ratio	Quick Ratio	Gross Profit Margin	Net Profit Margin	Operating profit Ratio	Return on Capital Employed	Return on Total Assets
Current Ratio	1	.986**	-.199	.382*	-.037	-.376*	.378*
Quick Ratio		1	-.218	.342	-.055	-.359	.313
Gross Profit Margin			1	.577**	.868**	.451*	.569**
Net Profit Margin				1	.754**	.295	.872**
Operating Profit					1	.526**	.689**
Return on Capital Employed						1	.342
Return on Total Assets							1

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01level (2-tailed).

Table: 3 shows the relationship between the efficiency of working capital and profitability of selected Cement Companies for the study period. The efficiency of working capital has been shown through the current and quick ratios of the Cement companies. It has been found that the current ratio as well as quick ratio of the selected Cement Companies was negatively related with return on capital employed, gross profit margin and operating profit ratio but positively related with other important profitability variables of total assets turnover and net profit margin. Therefore there are relationship exist between the efficiency of working capital management and the profitability.

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Table 4: Pearson Correlation Coefficient on Earnings and Activity Level 5 Cement Companies, 2009-2014: 6-Years Observations

	Gross Profit Margin	Net Profit Margin	Operating Profit Ratio	Return on Capital Employed	Return on Total Assets	Net Working Capital to Total Assets	Net Working Capital Turnover	Inventory Turnover	Debtors Turnover	Current Assets Turnover
Gross Profit Margin	1	.577**	.868**	.451*	.569**	-.343	-.154	-.070	.053	.261
Net Profit Margin		1	.754**	.295	.872**	.311	.034	.032	-.351	.047
Operating Profit Ratio			1	.526**	.689**	-.122	-.131	.098	-.385*	.191
Return on Capital Employed				1	.342	-.513**	-.377*	.100	-.359	.180
Return on Total Assets					1	.271	.020	.062	-.219	.256
Net Working Capital to Total Assets						1	.268	.222	-.162	-.301
Net Working Capital Turnover							1	-.082	.097	.009
Inventory Turnover								1	-.279	.033
Debtors Turnover									1	.276
Current Assets Turnover										1

**Correlation is significant at the 0.05 level (2-tailed).*
***Correlation is significant at the 0.01 level (2-tailed)*

Table 4 shows the relationship between the efficiency ratio and the profitability ratio of the selected cement industries for the study period. Current Assets Turnover is positively related with Gross Profit Margin, Net Profit Margin, Operating Profit ratio, Return on Capital Employed, and Return on Total Assets. These relationships are not statistically significant. Debtor's turnover ratio is negatively related with Net Profit Margin, Operating Profit Ratio, Return on Capital Employed and Return on Total Assets but positively related with Gross Profit Margin and these relationships are not statistically significant except with Operating Profit Ratio. Inventory Turnover is positively related Net Profit Margin, Operating Profit ratio, Return on Capital Employed and Return on Total Assets but negatively related with Gross Profit Margin, and these relationship are not also statistically significant. Net Working Capital Turnover is positively related with Net Profit Margin and Return on Total Assets but negatively related with Gross Profit Margin, Operating Profit Ratio and Return on Capital Employed. The relationship between Net Working Capital Turnover and Return on Capital Employed is statistically significant and rest are not statistically significant. Net Working Capital to Total Assets ratio is positively related with Net Profit Margin and Return on Total Assets but negatively related with Gross Profit Margin, Operating Profit Ratio and Return on Capital Employed. The relationship between Net Working Capital to Total Assets and Return on Capital Employed are statistically significant but the relationship among Net Working Capital

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to Total Assets, Gross Profit Margin, Operating Profit Ratio and Return on Total Assets are not statistically significant.

Econometric Modeling

In this section the researcher has constructed a model that indicates the impact of working capital policy on the overall profitability (Return on Total Assets) of the cement industry. For this purpose the secondary time series data have been used. In this model an attempt has been made to trace out the impact of working capital policy on the Cement Industries' ROA. The researcher has selected a number of variables to construct the model and finally settled with the following best variables on the basis of their partial correlation coefficient. Thus the model is:

ROA= f (ARD, APD, INVD, CCCD, CASA, CLTA)

$ROA_{it} = \beta_0 + \beta_1 ARD_{it} + \beta_2 CASA_{it} + \beta_3 CLTA_{it} + €_{it}$

$ROA_{it} = \beta_0 + \beta_1 APD_{it} + \beta_2 CASA_{it} + \beta_3 CLTA_{it} + €_{it}$

$ROA_{it} = \beta_0 + \beta_1 INVD_{it} + \beta_2 CASA_{it} + \beta_3 CLTA_{it} + €_{it}$

$ROA_{it} = \beta_0 + \beta_1 CCCD_{it} + \beta_2 CASA_{it} + \beta_3 CLTA_{it} + €_{it}$

Here the subscript i denotes cement industries ranging from 1 to 30 and t denotes years (time series dimension) ranging from 1 to 6. The variables are ROA= Return on Total Assets, ARD = Accounts Receivable Turnover in Days, APD = Accounts Payable Turnover in Days, INVD = Inventory Turnover in Days, CCCD = Cash Conversion Cycle in Days, CASA = Current Assets to Sales, CLTA = Current Liabilities to Total Assets. After Applying partial correlation the model is:

$ROA_{it} = -4.628 - 0.173\ ARD_{it} + 0.473 CASA_{it} - 0.152 CLTA_{it} + €_{it}$

$ROA_{it} = 4.003 - 0.079\ APD_{it} + 0.194 CASA_{it} - 0.329 CLTA_{it} + €_{it}$

$ROA_{it} = 9.969 - 0.044\ INVD_{it} + 0.063 CASA_{it} - 0.106 CLTA_{it} + €_{it}$

$ROA_{it} = 4.334 - 0.064\ CCCD_{it} + 0.261 CASA_{it} - 0.232 CLTA_{it} + €_{it}$

Table 5: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.999[a]	.999	.996	.19169	.999	309.165	3	1	.042

a. Predictors: (Constant), CLTA, ARD, CASA

b. Dependent Variable: ROA

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The adjusted R-square of the above model is 99.6% which indicates that the variables CLTA, ARD and CASA explain 99.6% variation in ROA. It also shows that the influences of those variables are significant at 5% level of significant. The unexplained part of the model is the error term.

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4.628	.689		-6.720	.094
	ARD	-.173	.009	-1.946	-19.959	.032
	CASA	.473	.020	2.461	23.228	.027
	CLTA	-.152	.006	-1.140	-25.705	.025

a. Dependent Variable: ROA

The above table indicates the coefficient of the regression equation. This table also shows the individual effect of the independent variables upon the dependent variable (ROA). Here we see that at 5% level of significance all the variables (CLTA, ARD, and CASA) have the significant effect on ROA.

Table 7: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.989[a]	.977	.909	.88224	.977	14.277	3	1	.192

a. Predictors: (Constant), CASA, APD, CLTA

b. Dependent Variable: ROA

The adjusted R-square of the above model indicates 90.9% variation in the ROA of cement industry that can be explained by CASA, APD and CLTA jointly. The unexplained part of the model is the error term but the model is not statistically significant at 5% level of significance.

Table 8: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.003	1.921		2.084	.285
	APD	.079	.019	1.366	4.225	.148
	CASA	.194	.044	1.008	4.378	.143
	CLTA	-.329	.054	-2.460	-6.129	.103

a. Dependent Variable: ROA

The above table indicates the coefficient of regression equation. This table also shows the individual effect of the independent variables upon the dependent variable (ROA). Here we see

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that at 5% level of significance no variables (CLTA, ARD, and CASA) have the significant effect on ROA individually.

Table 9: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.562[a]	.315	.236	5.82464	.315	3.994	3	26	.018

a. Predictors: (Constant), CLTA, INVD, CASA
b. Dependent Variable: ROA

The adjusted R-square of the above model indicates 23.6% variation in the ROA of cement industry that can be explained by CASA, INVD and CLTA jointly. The unexplained part of the model is the error term but the model is statistically significant at 5% level of significance.

Table 10: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.969	122.460		.081	.948
	INVD	-.044	1.597	-.168	-.027	.983
	CASA	.063	1.460	.329	.043	.972
	CLTA	-.106	.990	-.792	-.107	.932

a. Dependent Variable: ROA

The above table indicates the coefficient of regression equation. This table also shows the individual effect of the independent variables upon the dependent variable (ROA). Here we see that at 5% level of significance no variables (CLTA, INVD, and CASA) have the significant effect on ROA individually.

Table 11: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.996[a]	.992	.967	.53043	.992	40.085	3	1	.115

a. Predictors: (Constant), CLTA, CCCD, CASA

b. Dependent Variable: ROA

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The adjusted R-square of the above model indicates 96.7% variation in the ROA of cement industry that can be explained by CASA, CCCD and CLTA jointly. The unexplained part of the model is the error term but the model is statistically significant at 5% level of significance.

Table 12: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.334	1.139		3.806	.164
	CCCD	-.064	.009	-.917	-7.152	.088
	CASA	.261	.032	1.356	8.130	.078
	CLTA	-.232	.021	-1.732	-10.884	.058

a. Dependent Variable: ROA

The above table indicates the coefficient of regression equation. This table also shows the individual effect of the independent variables upon the dependent variable (ROA). Here we see that at 5% level of significance no variables (CLTA, CCCD, and CASA) have the significant effect on ROA individually.

CONCLUSION

Considering the coefficients and their significance level, it can be concluded that in Cement Industry, the nature of working capital policy (CA to Sales), Financing of working capital (CL to TA), Inventory holding period (Inventory Turnover in Days), Accounts receivable collection period (Accounts Receivable Turnover in Days), Accounts Payable Period (Accounts Payable Turnover in Days), and Cash Conversion Cycle in Days plays an important role in determining Cement Industries' overall profitability Return on Total Assets (ROTA). From the correlation matrix it is clear that there is positive correlation between working capital efficiency and profitability ratios of the selected cement companies with some exceptions where the correlation is negative. From the profitability ratios it is clear that the performance of the selected Cement Companies under the study period is not satisfactory according to industry average. From the regression and correlation analysis it can be concluded that the poor management of working capital is one of the important causes for poor performance or poor profitability position of the selected cement industry under the study period. It is found from the study that the working capital management of cement industry is inefficient. This is evident from the study that working capital plays an important role in the overall performance of the industry.

However, in view of the concluding remarks, the following suggestions are given for increasing efficiency in working capital management as well as profitability on the basis of analysis:

a. Inventory should be turned out quickly.
b. Accounts Receivable turnover in days should be reduced.

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c. Inventory turnover in days should be reduced.
d. Cash Conversion Cycle is said to be the heart of working capital management .The study reveals that the cash conversion cycle should be reduced.
e. Investment in current assets should be increased.
f. Current liabilities should be reduced.
g. Most of the selected Cement Companies shows the negative net working capital. It should be improved.
h. Liquidity management should be more organized.

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APPENDIX

Table:13 List of the selected Cement Companies

Name of the Cement Companies	Name Used on the Study
Aramit Cement Limited	ARAMIT
Confidence Cement Limited	CONFID
M I Cement Factory Limited(Crown Cement)	MICEMENT
Hidelberg Cement Bangladesh Limited	HIDELB
Lafarge Surma Cement Limited	LAFSUR

Table: 14 Working Capital Position of Selected Cement Companies

Ratios	ARAMIT	CONFID	MICEMENT	HIDELB	LAFSUR	Year
Accounts Receivable Days (ARD)	53.83	52.59	317.39	26.11	18.78	2009
	56.68	27.57	36.91	25.85	8.59	2010
	88.59	37.75	31.12	34.34	31.93	2011
	99.18	49.73	48.67	30.78	24.41	2012
	125	61.14	35.68	32.47	25.76	2013
	148.37	74.19	53.44	31.06	27.26	2014
	95.28	50. 50	87.20	30.10	22.79	Mean
	57.17	57.17	57.17	57.17	57.17	Industry
	37.34	16.54	113.08	3.43	8.16	Avg.
	0.39	0.33	1.30	0.11	0.36	S.D
						C.V
Accounts Payable Days (APD)	76.04	17.46	14.96	59.35	57.12	2009
	55.77	20.89	41.91	68.15	94.40	2010
	208.99	34.51	10.03	83.36	107.03	2011
	156.63	19.50	9.58	63.66	66.74	2012
	177,96	20.22	7.32	78.26	73.05	2013
	199.23	16.85	4.93	85.76	72.24	2014
	139.33	21.57	14.79	73.09	78.43	Mean
	65.44	65.44	65.44	65.44	65.44	Industry
	70.23	6.53	13.70	10.91	18.61	Avg.
	0.50	0.30	0.93	0.15	0.24	S.D
						C.V
Inventories Days (INVD)	25.63	51.85	29.84	38.30	60.53	2009
	67.84	64.15	41.14	53.05	74.04	2010
	42.20	52.90	53.36	48.09	94.07	2011
	46.62	40.20	28.52	39.85	56.93	2012
	38.14	24.48	23.13	40.20	51.34	2013
	89.24	39.20	28.63	35.68	49.32	2014

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	51.61	45.46	34.10	42.53	64.37	Mean
	47.62	47.62	47.62	47.62	47.62	Industry Avg.
	23.02	13.80	11.14	6.62	16.98	S.D
	0.45	0.30	0.33	0.16	0.26	C.V
Cash Conversion Cycle (CCCD)	3.42	86.98	332.27	5.06	21.19	2009
	68.75	70.83	36.15	10.75	11.77	2010
	78.02	56.14	74.45	11.06	18.97	2011
	10.83	70.43	67.61	6.97	14.6	2012
	14.82	65.4	51.49	5.59	4.05	2013
	38.38	97.14	77.14	19.02	4.34	2014
	35.70	74.49	106.52	9.74	12.49	Mean
	47.79	47.79	47.79	47.79	47.79	Industry Avg.
	31.58	14.95	111.67	5.21	7.22	S.D
	0.88	0.20	1.05	0.53	0.58	C.V
CA to Sales(CASA)	43.72	53.24	26.94	41.22	31.73	2009
	40.58	49.15	30.16	53.86	40.98	2010
	135.35	50.49	109.29	53.33	56.58	2011
	79.97	47.22	101.80	51.85	37.29	2012
	98.99	50.58	81.59	70.69	45.81	2013
	313.62	67.22	90.99	61.38	56.17	2014
	79.72	50.14	69.96	54.19	42.48	Mean
	59.30	59.30	59.30	59.30	59.30	Industry Avg.
	39.67	2.20	39.15	10.57	9.42	S.D
	0.50	0.04	0.56	0.20	0.22	C.V
CL to TA (CLTA)	75.96	19.58	44.52	27.56	44.67	2009
	80.09	19.21	38.63	26.24	56.96	2010
	81.51	24.51	19.55	26.45	43.69	2011
	83.42	29.19	25.72	23.28	45.59	2012
	81.58	27.66	25.51	22.52	32.06	2013
	64.75	34.74	38.72	27.23	22.85	2014
	77.89	25.82	32.11	25.55	40.97	Mean
	40.47	40.47	40.47	40.47	40.47	Industry Avg.
	6.91	5.98	9.82	2.12	11.88	S.D
	0.09	0.23	0.31	0.08	0.29	C.V

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