Nexus between Working Capital Management and Firm Profitability: Evidence from the Cement Industry in Bangladesh

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ARTICLE INFO	ABSTRACT
	The cement industry has a significant contribution to the economic progress in Bangladesh. The profitability of this industry is significantly dependent on effective working capital management. However, the industry's profitability is not satisfactory. This research brings to light the profitability and working capital situation of the cement industry, as well as the relationship between the two and if working capital management influences profitability. Ratio analysis, Correlation matrix, and Regression Analysis have been used to show the position of profitability and working capital and the association between these two. The authors used secondary data from the company's annual reports for this research. According to the findings, the profitability and working capital management positions of the cement companies are not satisfactory. There is a link between working capital management and profitability. Proper working capital management has a beneficial influence on profitability, according to the study.

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1. INTRODUCTION

One of the important decisions of a financial manager is an investment decision. Investment decisions are of two types: the first one is long-term decisions and the second one is short-term decisions. Short-term investments and financings are known as working capital. Working capital management indicates the management of four short-term assets—cash, accounts receivables, inventories, and short-term securities (Brealey et al., 2006). Alternatively, it is said that working capital management consists of four main components: cash, marketable securities, inventories, and accounts receivables (Brigham & Ehrhardt, 2013). According to Schall & Haley (1991), working capital management is generally defined as the management of a company's current assets and current liabilities. Working capital management is crucial for financial managers because they require to maintain a balance between profitability and working capital assets while conducting firms' day-to-day operations.

Both excessive and inadequate working capital positions are dangerous for a firm. Excessive working capital indicates that the firm is holding idle funds that generate no profits for the firm. On the other hand, inadequate working capital indicates the deficiency of liquid money for purchasing raw materials or for meeting day-to-day operations. Insufficiency of working capital not only affects the firm's profitability but also results in production interruptions and sales disruptions (Rahman & Nasr, 2007). Horne & Wachowicz (2004) opine that the excessive level of liquid assets harms a firm's profitability, whereas an insufficient level of current

assets may lead to difficulties in maintaining smooth operations. Therefore, working capital management plays an important role in a firm's profitability and risk as well as its value. Thus, a sound working capital position should be maintained. The firm should have adequate working capital to run its day-to-day business operations. According to Smith & Begemann. (1997), working capital management has a strong impact on the profitability and risk factor of the firms which in turn enhances the value of the firms. Research has confirmed empirically that there is a strong relationship between working capital management and profitability. Deloof (2003) showed a huge number of firms invest a huge amount of liquid assets as working capital to maximize firm value. He took a sample of 1009 Belgium firms for the period 1992-1996. He used inventory, number of days, accounts receivables, cash conversion cycle, and accounts payable as independent variables and gross operating income as the dependent variable. After applying correlation and coefficient regression tests, Deloof (2003) found a negative relationship between gross operating profit and days in inventory, days in receivables, and days in payable. Based on Deloof's (2003) finding it can be suggested that if day's payable and day's receivable is shortened, profitability can be maximized.

Generating a sufficient amount of cash inflow to satisfy the stockholders of an organization and maximizing firm value is known as profitability. The difference between total earnings and total expenditures is known as profit. Profit is the absolute measure of the firms' performance whereas profitability is the relative measure of firms' performance.

Many thoughtful pieces of research such as Mazumder (2015), Hoque et al. (2015), and Barine (2012) have been conducted on working capital management in both the public sector and private sector in Bangladesh and abroad. Other researchers tried to find the relationship between working capital management and corporate achievements.

Largay & Stickney (1980) reported the importance of liquidity to the sustainability of a company. Lazarid & Tryfonidies (2006), Shin & Soenen (1998), Smith & Begemann (1997), and Deloof (2003), found a link between profitability and working capital efficiency. Wilson (2000) reported that in the UK corporate sector, more than 80% of everyday trade was done on credit terms. Cote & Latham (1999) argued that the management of accounts receivable, inventory, and accounts payable has a significant impact on cash flow, which in turn affects the profitability of the company.

Sayeduzzaman (2006) mentioned the efficiency of working capital management was very satisfactory with the aggressive inflow of funds and the planned approach to managing a key component of working capital. He found that working capital management helps to maintain overall operational efficiency.

Deloof (2003) applied correlation and regression tests to find the relationship between gross operating profit and days in payable, days in inventory, and days in receivables. Based on this application, he found a negative relationship between profitability and working capital management. A firm's

profitability can be maximized if no. of days payable and no. of days receivable are shortened. According to Karaduman et al. (2011), Return On Asset (ROA) has a depressing affiliation with Cash Conversion Cycle (CCC). Lazaridis & Tryfonidis (2006) used CCC for the measurement of Working Capital Management (WCM) on 131 companies during 2001-2004 and found there is a significant relationship between the two. By controlling their CCC effectively and also maintaining various ingredients (receivables, inventory, etc.) to a certain amount, successful management can increase revenue. Padachi (2006) researched the relationship between the WCM and the profitability of firms. In this study, he used ROA as the dependent variable and the measurement of profitability. He took data from 58 companies and observed that the companies investing more into inventories and receivables, got less profit.

Karaduman et al. (2011) showed ROA has a positive relationship with CCC, which is a measurement of working capital management. Tryfonidis & Lazaridis (2006) also proved the significant relationship between CCC and WCM in their research among 131 companies over 2001 to 2004. In their research, they concluded that effective management can increase profits by maintaining their CCC efficiently and also keeping different ingredients (Accounts receivables, inventory, etc.) to a certain level. After analyzing the data of 58 companies Padachi (2006) was concluded that profit will decrease if more investment in inventories and receivables.

Haq et al. (2011) proved the relationship between profitability and working capital management. By taking a sample of fourteen companies from the cement industry they showed a moderate relationship between the profitability and the WCM. They used ROA, Return On Equity (ROE), Inventory days, etc. for their different tests.

There are seven cement companies listed both in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). Profit is one of the best measures of performance. So, in this research, it is tried to find if there is any relationship between working capital management and profitability. It is also tried to find if profitability is dependent on working capital management.

This study aims to find the relationship between working capital management and profitability of the cement industry, which is composed of six enlisted cement companies in the DSE.

2. MATERIALS AND METHODS

2.1. Data Set and Population

This study mainly focuses on secondary data collected from the annual reports of different cement companies listed on the DSE. This study has focused on five years of data starting from 2015 to 2019. The reason for restricting this period was that the latest data for investigation was available for this period. There are seven listed cement companies in DSE. Among them, six companies contain the necessary information for this study.

Table 1 Sample cement companies

Name of sample cement industries	Incorporation Year	Enlistment year
Confidence Cement Ltd. (CCL)	1994	1995
Heidelberg Cement Bangladesh Ltd. (HCBL)	1998 (Start operation in Bangladesh)	1989
Lafarge Holcim Bangladesh Ltd. (LHBL)	1997	2003
M.I. Cement Factory Ltd. (MICFL)	1994	2011
Meghna Cement Mills Ltd. (MCML)	1992	1995
Premier Cement Mills Ltd. (PCML)	2001	2013

2.2. Variables

This study undertakes the issue of identifying key variables that influence working capital management of the cement industry in Bangladesh. The choice of the variables is influenced by the previous studies on working capital management. As this research aims to analyze the relationship between profitability and working capital management of the cement industry, it is necessary to find the working capital position and profitability.

In this study, the researchers used Gross Profit Margin Ratio (GPMR), Net Profit Margin Ratio (NPMR), Operating Profit Margin Ratio (OPMR), Return On Capital Employed Ratio (ROCE), and Return On Asset Ratios (ROA) to measure the profitability position. And Current Ratio (CR), Quick Ratio (QR), Net Working Capital Turnover Ratio (NWCT), Inventory Turnover Ratio (ITOR), Accounts Receivables Turnover Ratio (ARTR), and Asset Turnover Ratio (ATOR) have been used to measure the working capital condition.

This study also aims to determine the dependency of profitability on working capital management. For this reason, researchers applied regression analysis. Net Profit Margin Ratio (NPMR), Operating Profit Margin Ratio (OPMR), and Return On Capital Employed (ROCE) have been used as the dependent variable, and Current Ratio (CR), Quick Ratio (QR), Net Working Capital Turnover (NWCT), Inventory Turnover (ITOR), Accounts Receivables Turnover (ARTR), and Asset Turnover Ratios (ATOR) have been used as independent variables.

This research contains two types of data analysis: descriptive and quantitative. Descriptive analysis is the first step in this analysis. It will help to describe relevant aspects. In quantitative analysis, researchers applied two methods: First: the correlation models, especially Pearson correlation

Table 2 Profitability ratios

CCL	HCBL	LHBL	MICFL	MCML	PCML	Measurements
Gross Profit Margin Ratio						
13.57	19.19	23.48	16.03	10.86	15.06	Mean
16.37	16.37	16.37	16.37	16.37	16.37	Industry Average
5.19	6.51	4.72	2.69	0.63	4.68	SD
0.38	0.34	0.20	0.17	0.06	0.31	CV
Net Profit Margin Ratio						
9.78	8.00	9.97	5.47	1.24	5.39	Mean
6.64	6.64	6.64	6.64	6.64	6.64	Industry Average
3.22	6.59	4.16	3.11	0.18	1.29	SD
0.33	0.82	0.42	0.57	0.14	0.24	CV
Operating Profit Margin Ratio						
6.31	10.94	14.26	10.59	6.70	11.08	Mean
9.98	9.98	9.98	9.98	9.98	9.98	Industry Average
5.44	6.72	4.84	2.43	0.69	2.11	SD
0.86	0.61	0.34	0.23	0.10	0.19	CV
Return on Capital Employed						
8.79	19.15	9.73	12.95	20.21	18.34	Mean
14.86	14.86	14.86	14.86	14.86	14.86	Industry Average
9.17	10.56	3.20	2.39	5.38	3.55	SD
1.04	0.55	0.33	0.18	0.27	0.19	CV
Return on Asset						
6.16	8.89	5.62	3.45	1.12	4.45	Mean
4.95	4.95	4.95	4.95	4.95	4.95	Industry Average
2.73	7.00	2.45	1.94	0.30	1.64	SD
0.44	0.79	0.44	0.56	0.27	0.37	CV

to measure the degree of association between different variables under consideration. Second: the Regression

analysis to estimate the causal relationships between profitability variable, liquidity, and other chosen variables.

The collected data were analyzed and interpreted with the help of different financial ratios, statistical tools like mean, standard deviation (SD), coefficient of variation (CV), correlation coefficient, and regression analysis calculated by SPSS (Version 23).

3. RESULTS

The results have been presented in four parts. The first part shows the profitability position of this industry, the second part shows the working capital situation of this industry, the third part shows the correlation between profitability position and working capital position of this industry, and the fourth part shows the dependency of profitability on working capital.

3.1. Profitability Position of Sample Cement Companies

Profitability is the ability of a firm to generate its income by using all of its resources after meeting all costs. It shows the capacity of generating income for a company from its operations. In this study, the researchers use gross profit margin (GPM), net profit margin (NPM), operating profit ratio (OPR), return on capital employed (ROCE), and return on asset (ROA) as the determinant of profitability. Table 2 shows the different profitability ratios of sample cement companies.

3.1.1. Gross Profit Margin Ratio (GPMR)

Gross profit is the difference between the sales revenue and the cost of goods sold. When gross profit is divided by the sales revenue then Gross Profit Margin Ratio is obtained. From table 01 it is seen that all the sample company's GPMR are lying between 7.41 and 27.47. The industry average is 16.37 and three company's GPMR is below the industry average. But the GPMR of MICFL is very close to the industry average. HCBL has the highest value of SD which shows unstable GPMR from 2015 to 2019. On the other hand, MCML shows the lowest SD. The coefficients of variations of the companies are quite stable except for MCML.

3.1.2. Net Profit Margin Ratio (NPMR)

Net Profit Margin is a monetary proportion that is utilized to ascertain the level of benefit an organization can make from its total income. NPMR is calculated by dividing Net profit by total revenue. This mathematical proportion represents the overall profitability of the sample cement companies. In table 01, it is seen that the NPMR of sample cement companies lies between -2.17 and 14.62. The industry average is 6.64. The NPMRs of all companies except MCML are very close to the industry average. But, the SD of MCML is the lowest and shows the lowest CV. The HCBL shows the highest SD and CV of 6.59 and 0.82 respectively.

3.1.3. Operating Profit Margin Ratio (OPMR)

The Operating Profit Margin Ratio is a monetary proportion that shows the total earning efficiency of a firm. It reflects the percentage of profit a firm produces from its operation, before subtracting taxes and interest charges. It is calculated by dividing the operating profit or EBIT (Earnings Before Interest and Taxes) by total sales revenue. The larger proportion shows the greater efficiency. In table 01, it is seen that all values are lying between 0.94 and 18.36. The industry average of this ratio is 9.98. Only two companies, CCL and MCML are staying below the industry average. The standard deviations of CCL and MCML are 5.44 and 0.69 respectively. The table shows HCBL holds the highest SD of 6.72 and MCML holds the lowest SD. MCML also holds the lowest CV of 0.10. MCML shows steady growth and steady performance over five years.

3.1.4. Return on Capital Employed (ROCE)

Return on Capital Employed shows the efficiency of current assets for generating income. When operating profit or EBIT is divided by capital employed return on capital employed is determined. Capital employed is calculated by subtracting current liabilities from total assets. The ratios of the sample cement companies are lyes between 0.84 and 30.69. The industry average of this ratio is 14.86. Three companies are staying below this industry average but MICFL is very close to it. From table 01, it can be said that except for CCL the overall industry has a very insignificant CV that shows the efficient use of capital.

3.1.5. Return on Asset (ROA)

The ratio of Return on Asset indicates the efficiency of a firm by using its total asset. When net income is divided by total assets then ROA is found. The more the ROA rate the more the company is efficient. In table 01 it is shown that the values are lying between -2.56 and 14.80. The industry average is 4.95 and only two companies (MCML 1.12 and MICFL 3.45) are staying behind the industry average. The SD is highest in HCBL of 7.00.

3.2. Working capital management position of sample cement companies

Working capital management is a corporate practice involved with the efficient use of its current asset and its current liability. The difference between a company's current assets and its current liabilities is known as its working capital. The primary goal of WCM is to ensure that the organization has enough cash flow to cover its short-term operating expenses and debt obligations. To determine the current state of the working capital of the sample cement firm's the researchers use the Current Ratio, Quick Ratio, Net Working Capital Turnover Ratio, Inventory Turnover Ratio, Accounts Receivables Turnover Ratio, and Asset Turnover Ratio. Table 03 shows the working capital position of the selected cement industries.

3.2.1. Current Ratio (CR)

One of the solvency demining ratios is the current ratio. It determines the firm's ability to cover its short-term liability by using its short-term assets. From table 03, it is seen that the mean values of the sample cement companies are lying between 0.77 and 3.21. The industry average is 1.30. This indicates the cement industry is in good condition and can meet up its short-term liabilities. The highest SD is 1.05 of LHBL which indicates low risk. The CV of this industry is negligible.

Table 3 Working capital position

CCL	HCBL	LHBL	MICFL	MCML	PCML	Measurments
Current Ratio						
0.92	1.46	2.21	1.24	1.02	0.92	Mean
1.30	1.30	1.30	1.30	1.30	1.30	Industry Average
0.23	0.46	1.05	0.14	0.12	0.11	SD
0.25	0.32	0.48	0.11	0.12	0.12	CV
Quick Ratio						
0.42	0.99	1.28	0.84	0.39	0.36	Mean
0.71	0.71	0.71	0.71	0.71	0.71	Industry Average
0.09	0.55	0.77	0.16	0.08	0.10	SD
0.21	0.55	0.60	0.19	0.19	0.27	CV
Net Working Capital Turnover Ratio						
-14.23	-32.84	13.37	6.51	8.89	-19.32	Mean
-6.27	-6.27	-6.27	-6.27	-6.27	-6.27	Industry Average
33.12	84.04	23.51	3.49	20.59	70.90	SD
-2.33	-2.56	1.76	0.54	2.32	-3.67	CV
Inventory Turnover Ratio						
9.70	8.13	8.11	11.74	7.81	11.74	Mean
9.54	9.54	9.54	9.54	9.54	9.54	Industry Average
3.63	1.45	1.47	0.75	2.97	4.24	SD
0.37	0.18	0.18	0.06	0.38	0.36	CV
Accounts Receivables Turnover Ratio						
1.42	0.04	-0.09	0.22	-0.71	0.13	Mean
0.17	0.17	0.17	0.17	0.17	0.17	Industry Average
3.08	0.27	0.69	0.23	0.29	0.16	SD
2.17	6.79	-7.91	1.04	-0.41	1.23	CV
Asset Turnover Ratio						
1.64	2.18	1.63	1.14	1.33	1.90	Mean
1.64	1.64	1.64	1.64	1.64	1.64	Industry Average
0.45	0.82	0.25	0.13	0.29	0.25	SD
0.28	0.37	0.15	0.11	0.21	0.13	CV

3.2.2. Quick ratio or Acid test ratio (QR)
This ratio indicates the firm's ability to fulfill the short-term obligations with its most liquid assets. Table 03 shows, the average quick ratios are lies between 0.36 and 1.28. The industry average is 0.71. The SD and CV are very negligible. So, it is said that the firm can fulfill the short-term obligations with its most liquid assets.

3.2.3. Net Working Capital Turnover (NWCT)
Net Working Capital Turnover is a quantitative relation between sales and average working capital. It shows the efficiency of working capital for achieving sales. The higher ratio indicates the more efficiency of working capital for attaining sales. From table 03, it is seen that the mean values of selected cement companies are lying between -32.84 and 13.37. In the year 2019, it is seen that CCL and HCBL broke the normal behavior of NWCT which is seen in the previous years. The NWCT of CCL and HCBL decreased dramatically. This has a bad impact on the mean, SD, and CV of these companies. The industry average of this ratio is -6.27.

3.2.4. Inventory Turnover Ratio (ITR)
The inventory Turnover Ratio shows the time of selling and replacing inventories during a given period. From table 03, the mean values of selected cement companies are lying between 7.81 and 11.74. The industry average is 9.54. Standard Deviations are lying between 07.75 and 4.24. The CVs are showing a very negligible rate.

3.2.5. Accounts Receivables Turnover Ratio (ARTR)
ARTR is a quantitative measure that shows the company's effectiveness in collecting accounts receivables. A higher ARTR shows the more effectiveness of a firm in collecting its accounts receivables. In table 03, it is seen that the minimum mean value is -0.71 and the maximum mean value is 1.42. The industry average is 0.17. Companies' SDs are lying between 0.16 and 3.08. The coefficient of variation indicates the unstable situation in cement industries.

3.2.6. Asset Turnover Ratio (ATOR)
ATOR is a mathematical measure that shows the efficiency of attaining profit using its assets. The higher ATOR indicates more efficiency. Table 03 shows the mean values are lying between 1.14 and 2.18. The industry average is 1.64. The SD and CV are negligible.

3.3. Correlation Analysis
The relationship between profitability and working capital management can be determined by Pearson's Correlation Coefficient. For determining the correlation coefficient, researchers use SPSS version 23 software.

Table 4 Pearson's correlation

	CR	QR	NWCT	ITOR	ARTR	ATOR	GPMR	NPMR	OPMR	ROCE	ROA
CR	1										
QR	0.94**	1									
NWCT	0.36	0.21	1								
ITOR	-0.46	-0.34	-0.11	1							
ARTR	-0.27	-0.18	-0.37	0.36	1						
ATOR	0.10	0.12	-0.83*	-0.22	0.13	1					
GPMR	0.91*	0.92**	0.04	-0.21	-0.05	0.36	1				
NPMR	0.50	0.53	-0.25	-0.07	0.66	0.42	0.69	1			
OPMR	0.80	0.79	0.11	0.05	-0.28	0.26	0.90*	0.40	1		
ROCE	-0.35	-0.33	-0.33	-0.12	-0.67	0.27	-0.37	-0.74	-0.14	1	
ROA	0.33	0.47	-0.7	-0.17	0.45	0.80	0.60	0.79	0.34	-0.20	1

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

Table 4 shows Pearson's correlation between working capital management and profitability of sample cement industry over five years. In the above table, current ratio, quick ratio, inventory turnover ratio and accounts turnover ratios are used as the representative measurement of working capital management and gross profit margin ratio, net profit margin ratio, return on capital employed and return on assets are considered as the representative measurement of profitability. Table 4 shows that the current asset ratio and quick ratio have a positive relationship with all the profitability ratios. The current ratio and quick ratio have a significant positive relationship with the gross profit margin ratio. Operating Profit Margin is has a significant positive relationship with Gross Profit Margin Ratio. Quick Ratio has a significant positive relationship with Current Ratio. So it

can be said that working capital management has a positive relationship with profitability. To maximize profitability a firm has to concentrate on its proper management on its working capital management.

3.4. Regression Analysis

In the following discussion, the researchers have constructed multiple regression analyses for finding out the dependency of profitability on working capital management of sample cement industries. Here the researchers deduct some variables that are used in the correlation section to avoid Multicollonearity. For that reason, the researcher uses Return on Capital Employed as a dependent variable and Net Working Capital Turnover, Inventory Turnover Ratio, Current Ratio, and Accounts Receivables Turnover Ratio as independent variables in regression analysis.

Table 5 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.999[a]	0.999	0.995	0.36340

a. Dependent variable: ROCE
b. Predictors: (Independent variables), Accounts Receivables Turnover Ratio, Current Ratio, Net Working Capital Turnover, Inventory Turnover Ratio

The adjusted R-squire of the above model indicates 99.50% variation in ROCE of sample cement industry that can be explained by the regression model. That is all independent variables (ARTR, CR, NWCT, ITOR) are

contributed 99.50% for changing the dependent variable (ROCE). The error term represents the unexplained term of the model.

Table 6 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	21.578	1.322		16.321	0.039
Net Working Capital Turnover	-0.146	0.010	-0.539	-14.615	0.043
Inventory Turnover Ratio	-0.070	0.105	-0.025	-0.663	0.627
Current Ratio	-4.459	0.395	-0.440	-11.297	0.056
Accounts Recivables Turnover Ratio	-7.082	0.268	-0.983	-26.468	0.024

Dependent Variable: Return On Capital Employed

Table 7 Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.995[a]	0.990	0.948	0.60209

    a.   Dependent variable: Return on Asset (ROA)
    b.   Predictors: (Constant), Accounts Receivables Turnover Ratio, Current Ratio, Net Working Capital Turnover, Inventory Turnover Ratio

Table: 8 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	0.249	2.190		0.114	0.928
Net Working Capital Turnover	-0.118	0.017	-0.830	-7.113	0.089
Inventory Turnover Ratio	-0.109	0.175	-0.076	-0.627	0.644
Current Ratio	3.685	0.654	0.693	5.636	0.112
Accounts Recivables Turnover Ratio	1.377	0.443	0.364	3.105	0.198

Dependent Variable: Return On Asset

Table 9 Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.996[a]	0.991	0.957	0.68581

a. Dependent variable: Net Profit Margin Ratio
b. Predictors: (Constant), Accounts Receivables Turnover Ratio, Current Ratio, Net Working Capital Turnover, Inventory Turnover Ratio

Table: 10 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.877	2.495		-0.351	0.785
Net Working Capital Turnover	-0.044	0.019	-0.246	-2.335	0.258
Inventory Turnover Ratio	-0.036	0.199	-0.020	-0.180	0.887
Current Ratio	5.363	0.745	0.801	7.200	0.088
Accounts Recivables Turnover Ratio	3.794	0.505	0.798	7.513	0.084

Dependent Variable: Net Profit Margin Ratio

Table 7 shows the accounts receivables turnover ratio, current ratio, net working capital turnover ratio, and inventory turnover ratio have 94.80% contribution of changing Return on Asset (ROA). Table 9 shows the independent variables (ARTR, CR, NWCT, and ITOR) have a 95.70% contribution on Net Profit Margin Ratio.

4. DISCUSSION

The empirical study shows that the gross profit margin has a significant relationship with the current ratio and the quick ratio. On the other hand, it has a negative relationship with the inventory turnover ratio. But, these can be negligible. Because the other ratios show a strong positive relationship between working capital management and profitability.

Banos-Caballero et al. (2012), Enqvist et al. (2014), and Wohrmann et al. (2012) particularly focus on working capital management and profitability and they found that the relationship is not linear rather the relationship is concave.

Their research are suggesting that profitability is not only dependent on working capital management but also on many components. But, the efficiency of working capital management plays an important role to maximize profitability. Enqvist et al. (2014) and Wohrmann et al. (2012) consider the type of relation between working capital management and profitability in different business cycles.

In this study, ROCE has a significant dependency on working capital ratios (accounts receivables turnover ratio, current ratio, net working capital turnover, and inventory turnover ratio). Similarly, ROA and NPMR also have a significant dependency on working capital ratios. Meyer and Ludtke (2006) also show Net Trade Cycle (NTC) has a negative impact on ROCE. They applied this research on 7416 German firms in 2003 and proved a well-controlled NTC can maximize profit. So did Wohrmann et al. (2012) on 19,852 German firms over 2007-2010 and proved if NTC declines then the ROCE increases.

Jose et al. (1996) and Wang (2002) showed a negative impact of working capital on return on asset and return on

equity. Similarly, Enqvist et al. (2014); Banos-Caballero et al. (2012); Karaduman et al. (2011) and Garcia-Teruel & Martinez-Solano (2007) also proved their relationship and negative impact of working capital on return on assets. This study also finds a negative relationship between return on asset and jointly on net working capital turnover ratio and inventory turnover ratio. But, this study also shows the positive relationships between return on asset and other working capital ratios like current ratio, quick ratio, accounts receivables turnover ratio, and asset turnover ratio. The regression analysis shows that working capital ratios have a 94.80% contribution to changing return on assets.

5. CONCLUSION

It may be presumed, relying on the coefficients and respective level of significance, that in this industry, gross profit margin ratios, net profit margin ratios, operating profit margin ratios, return on capital employed ratios, and return on asset ratios play useful roles in determining overall profitability. The correlation matrix vividly shows that working capital efficiency and profitability ratios of the selected cement firms are positively correlated, with several exclusions where the correlation is negative. Compare to the industry average, profitability is not adequate. From the regression and correlation matrix, it is clearly stated that profitability is dependent on working capital management and in this research, the poor management of working capital is the main reason behind the poor profitability of selected firms under the study period. The research revealed that the cement industrys' working capital management is inefficient. The management of working capital plays a crucial role in the performance of the industry. Management should keep an eye on it every time.

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