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## Working Capital Management: Study of the Cement Industry of Pakistan

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**Abstract:** This article investigates how working capital influences firm profitability. Pakistan's cement industry. Further, the research analyses the Average Collection Period, Average Payment Period, Inventory Turnover in Days, and Cash Conversion Cycle's impact on profitability. This analysis utilizes annual reports from PSE cement businesses (PSX). It included firm info. Quantitative research uses two approaches. Models first. Pearson correlates variables. Second, regression analysis is to determine profitability, liquidity, and other variables' causes. Working capital management (WCM) increases profitability by positively affecting the cash conversion cycle, inventory turnover, and sales. Managers are asked to give WCM more thought. Management must know how much money to use for fixed assets and working capital. Poor working capital management results.

**Key Words:** Working Capital Management (WCM), Average Collection Period, Average Inventory Period, Average Payment Period, Cash Conversion Cycle

**JEL Classification:** E32.

### Introduction & Background

Corporate finance is an important and enormous realm for business organizations. Decisions of the finance professionals in the field of corporate finance exert influence on the profitability of business which significantly affects the stakeholders and maximizes the value of the business. Finance managers choose to take up risk minimization strategies and for such purpose, they adopt numerous measures to ensure routine operational smoothness. Well-organized financial decisions besides helping to avoid liquidity

problems also strengthen the prospects of profitability for an organization. The working capital management (WCM) concept addresses the problem that how companies can govern their short-term capital needs for the smooth running of operations. The major objective of WCM is to preserve profitability by ensuring to maintain minimum expected liquidity desires of a business organization to enhance value for the shareholders.

The role of working capital in a business organization is like a strand in corporate finance. A company can determine its interim financial health just by experiencing its

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working capital levels. The working capital level can be determined by subtracting current liabilities from the current assets and this difference represents a company's short-term need for cash to meet its current obligations. Working capital also indicates the surplus amount required for the smooth execution of operational activities. Short-term resources to pay the company's short-term liabilities are known as current assets, whereas current liabilities are the dues outstanding in a period of twelve months. When a working capital balance shows a positive outcome, it means a company has enough resources to pay its liabilities. Whereas a negative balance of working capital represents that company has not had enough resources to pay off its short-term liabilities.

### Accounts Receivables

The outstanding revenues or the money a company owed to its customer is called Accounts Receivables. It's a company's right to receive against the sales made to customers. Efficient collection against accounts receivables is crucial for a company to run its operations smoothly. This item is recorded as an asset in the balance sheet but actually, it is not an asset until it is collected. Analysts use a common metric to assess the collection of accounts receivables Days Sales Outstanding, this metric reveals the time in number of days to collect revenues.

### Accounts payable

Accounts payable represent business liabilities that need to be paid off within twelve months. These payables are actually short-term debts to its creditors. It's a very tricky component of working capital management as its role in maintaining the cash flows is immensely important. Cash flows can be maximized by delaying payments to a reasonable extent. The metric used to gauge how long a company should pay its suppliers is Days Payables Outstanding. Adequately shorter time to settle payables can help maintain long-term relationships with suppliers.

### Inventory

Inventory is an asset that is waiting to be sold to convert stocks into sales revenues. The mechanism of maintaining the inventory is an important measure that directly affects the revenues. The metric Average Inventory Period is used to measure how long an inventory stays in a company and this metric is used as an indication that how well the company's purchasing, manufacturing and distribution process is managed. Both, excessively high and too low levels of inventories are dangerous and represent inefficient and wasteful use of working capital.

Working capital management is about strengthening the control of aforesaid components of working capital by maximizing the returns on the company's assets and minimizing the liability payments adeptly. This whole process of controlling payables and creating liquidity needs to be managed efficiently and effectively. The study considers working capital management strategies to generate liquidity and enhance profitability. This empirical research could help financial management professionals in taking specialized decisions for routine operations by achieving optimal efficiency levels. The results obtained from the experience of the cement industry may bring worthwhile developments to other manufacturing industries in the Pakistani economy.

The manufacturing sector can be considered the dominant industrial sector of Pakistan which is rapidly going towards enhancement, in order to make it necessary to know whether companies in this sector manage their working capital efficiently or not. Manufacturing is the second major sector of Pakistan which is believed to be the major aspect of economic progress as compared to the other areas of the economy. The manufacturing sector is comprised of Engineering, Chemicals, Fertilizers, Glass and Ceramics, Automobiles parts assemblers and accessorize, Food and Personal care products, Leather and tanneries, Textile and woollen, Cable and electric goods, Pharmaceutical, Oil and Gas companies, Sugar etc. The manufacturing sector's contribution to

GDP was 13.6 in the year 2019 and has shown improvements in the last few years. The reason that the manufacturing sector does not perform up to the mark in the past year 2017-18 was due to many internal and external problems and hindrances including political instability, energy crisis and worldwide slow economic progression. However, in recent years, numerous initiatives for the restoration of the manufacturing sector have been taken by the government. For example, through the Formation of the China-Pakistan Economic Corridor (CPEC) and more devotion has been given to the energy sector to resolve the energy crisis, according to Pakistan's finance ministry. (Pakistan Economic Survey, 2018-2019). Widespread research on Working Capital Management has been executed both in private and public sectors plus multinational companies. Earlier research has taken all manufacturing sectors into consideration, however, this study is solely focusing on the cement sector.

### Research Gap

Numerous types of research have already been carried out on the subject of working capital management (WCM) to analyze its impact on profitability by considering various financial ratios and by using statistical techniques to draw some practical and helpful inferences. The literature on the subject matter shows enough evidence of the existence of a relationship between a company's profitability and its working capital management strategies. Mostly the research has been done either on all listed companies excluding the financial sector or on some specific sectors containing numerous companies. The importance of this research cannot be denied because as a researcher I believe every contribution made toward the fulfilment of a specific goal is strongly linked to some substantial achievement and it is a great contribution towards economic development. The industrial sector plays an important role in economic development. The industrial sector of Pakistan serves nearly about 24% of the GDP. Pakistan's largest industries include Manufacturing, Automotive, Engineering,

Construction, Technology, Electricity, Gas and Water supply etc.

This empirical study is being carried out to cater to the industry-specific needs of working capital management instead of covering all industries in an economy because the operational cycle of every industry is different based on the nature of the product and seasonality of operations. Each and every industry needs separate massive-scale research on working capital management to help specific business segments. The current research has been executed on the Cement sector from the Pakistani construction industry because this industry has consistently been of social and economic importance to the country.

### Significance

Working capital management plays a conspicuous role in the entire financial set-up of any business organization. It plays a key role in the overall business of the company. Analyzing the future prospects, the research on working capital management is worth doing for the cement sector because cement is the prime ingredient used in the construction industry. Economic growth is somehow dependent on cement consumption which has a greater impact on the development of the standard of living of a society. Its importance in the cement industry is much enhanced mainly due to the following factors:

- High-cost components are imported from other countries through banking channels.
- The huge imported plant needs imported spares for its maintenance.
- Needs to maintain minimum inventory level for plant operations and emergency maintenance due to transit time for imported items.
- Short credit periods from suppliers.
- Collection from huge dealer network against the sale of cement.
- High interest-bearing short-term financing from banks.

In cement manufacturing following major cost components are more critical in WCM;

## **Fuel**

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Fuel is the main component of cement manufacturing cost which is approximately 33% of the total cost of cement. It mainly consists of imported coal, furnace oil and diesel.

Coal is imported through a letter of credit (LC) after fulfilling all requirements of banks. It takes 30 to 40 days in transit to reach the coal from the origin port to the destination. So efficient inventory management is required to maintain sufficient stock at the plant site to keep the operations smooth. Further, it involves price fluctuation in the global market and currency exchange risk which makes it the most critical item in working capital management. Any delays at any stage of the process from placing the order to the retirement of LC and clearance from port involve huge financial risk including price fluctuation, exchange rate fluctuation, demurrages, environmental penalties etc.

Furnace oil and diesel are purchased locally but due to no credit period for these items, these become an important part of working capital management.

## **Power**

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Power is a second major component in working capital management in cement manufacturing which consists of almost 22% of the total cost of cement. It includes the cost of own generation and electricity obtained from the national grid. There is no concept of any delay in payments against electricity purchased from the national grid otherwise huge surcharges are imposed. For own generation, again the major cost components consist of imported coal, furnace oil, diesel and LNG. All these components require very critical cash management and stock management to keep cement manufacturing continued without any interruptions.

## **Store & Spares**

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A cement plant is a huge imported plant that consists of mechanical and electrical spares. Most of its parts are not available in the local market. To keep the cement plant in its running condition it needs maintenance and

replacement of spares after certain useful life. Further, it needs to maintain an inventory of emergency spares in case of any breakdown as these spare parts are custom-made and need minimum time to be delivered from the manufacturer of the cement plant.

These stores and spares consist of approximately 9% of the total cost. Most of these specialized spares are imported from Europe and payments are made through banking channels after fulfilling all requirements. The frequent use of such spares, requires efficient planning of funds utilization to pay for such huge costs in foreign currency as any delays in payments can result in increased costs, the credibility of the company with foreign suppliers, and penalties.

## **Taxes and Duties**

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Cement manufacturing plant contributes a gigantic amount to the national exchequer in the form of taxes and duties. These taxes consist of direct sales tax and federal excise duty on cement, sales tax and customs duties on the import of coal and spares, royalties, Income tax on profits, provincial sales tax on services received, advance taxes and withholding tax. To comply with all these requirements timely payments need to be managed from the working capital of the company to avoid any non-compliance with laws.

## **Receivables**

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Cement is sold through distributors and dealers network that is spread all over Pakistan. It is an uphill task to recover funds from all dealers. This collection is made through banking channels to comply with legal requirements. Normally 15 days of credit is given to dealers and distributors against the sale of cement. To maintain this credit limit and to make recovery in due time is very crucial to make timely payments of fuel, power, store & spares and government taxes. Any delay in recovery from customers can cause a halt in the manufacturing of cement resulting in huge losses.

## **Short Term Borrowings**

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To comply with all of the above major

requirements and, in addition, to make payments to local suppliers, the company needs to obtain short-term financing arrangements with banks. It includes facilities for running finances, cash finances, financing against Trust Receipt Facility (FATR), Letter of Credit (LC) lines etc. As these facilities are interest-bearing so their effective management is the key to keeping the interest cost at an optimum level. Any delay in shipments, payments of import duties or foreign currency payments to foreign suppliers and LCs can result in heavy interest costs.

## Problem Statement and Research Objectives

### Problem Statement

“Does Working Capital Management Affect Profitability of Cement Industry?”

In order to conduct an analysis of the problem statement that was presented earlier, we have formulated some primary goals for our research, the most critical being working capital management. This topic hasn't been explored much in Pakistan, and the industrial sector requires work. This empirical study examines the implications of working capital management on Pakistan's cement sector.

### Main Research Objective

The major intent of the current research is to analyze the WCM and its components in the context of a company's profitability, for this purpose cement industry has been selected for research. The most recent five years' data is considered in this study. The specific objectives of the study are as follows;

- To test the relationship between working capital management and profitability.
- Effects of different components of working capital management on profitability.

## Research Methodology, and Sample Data

### Population, Sample and Data Selection

The goal of this study is to demonstrate a very significant part of financial management for the cement sector in Pakistan, known as working capital management (WCM) (WCM).

Here, we'll look at how well some cement firms on the Pakistan Stock Exchange have done over the past five years in connection to how well they've implemented WCM practices. This study uses a variety of statistical methods to analyse the variables collected in order to probe the connection between effective working capital management and financial success.

## Source and Method of Data Collection

The information can be obtained through the Pakistan Stock Exchange (PSX), as well as the internet and the websites of various companies. Companies listed on the Pakistan Stock Exchange in the last five years. The research spans five years, from 2015 to 2019. The sample includes 15 Pakistan Stock Exchange-traded cement companies' financial statements. The sample also includes enterprises that submitted data on accounts receivable, inventories, accounts payable, and operational income.

## Period of Study and Population

For the purpose of this study, data is collected from the annual reports of the selected cement companies listed on the Pakistan stock exchange.

- The period of study contained 5 years of data from 2015 to 2019.
- The total number of companies is 15
- The total numbers of observations are 75.

## Theoretical Framework

The purpose of this research is to examine the relationship between WCM and the profitability of an organization and the research proposes a combination of conclusive assumptions;

### Hypothesis 1- H1

There is a significant relationship between the Cash Conversion Cycle (CCC) and the Profitability of the firm.

### Hypothesis 2 - H2

There is a significant relationship between

components of the Cash Conversion Cycle (CCC) and the Profitability of the firm.

### Variable Definition

Variables used in the study are defined as follows:

**Table 1.** Dependent Variable

Variable	Symbol	Formula
Net Operating Profit	NOP	= EBIT + Depreciation

**Table 2.** Independent Variables

Variable	Symbol	Formula
Inventory Turnover In Days	IDIT	= Inventory*365/Cost of goods sold
Average Collection Period	ACP	= Accounts Receivables*365/ Sales
Average Payment Period	APP	= Accounts payable*365/ Cost of goods sold
Cash Conversion Cycle	CCC	= Inventory Turnover in Days + Average Collection Period - Average Payment Period

**Table 3.** Control Variables

Variable	Symbol	Formula
Debt Ratio	DR	= (Total Debts/Total Assets)*100
Natural Logarithm of sales	LN Sales	

Debt Ratio and SalesLN have been used as control variables to measure the relationship between liquidity and firm size with a firm's profitability.

### Citation

All above defined variables are used in earlier studies; Mathuva (2010); Lazaridis & Tryfonidis (2006); Mansoor & Dr. Muhammad (2012); Raheman Nasr (2007) and Dong (2010) Falope & Ajilore (2009); Mansoor & Muhammad (2012); Raheman & Nasr (2007); Dong .H.P (2010); Deloof (2003) and Ruichao. Lu (2013). The formula used in the paper for the Dependent variable NOP is (EBIT + Depreciation). Adding back depreciation to profitability is uncommon but these variables are defined in earlier studies such as; the WCM & profitability study of Pakistani firms by Abdul Rahman and Mohamed Nasr Vol.3 No.1. March 2007 and in a Swedish paper on WCM by Erik Rehn (2012)

### Model Application

Two methods have been used in quantitative analysis studies. The first is a related model specifically, the Pearson correlation is used to measure the degree of correlation between the

different variables considered. Second: Regression analysis to determine the causality between profitability factors and determining liquidity and other selected variables.

The pooled ordinary least squares and generalized least squares (cross-sectional weights) methods have been used for analysis. Panel data is used in a summary regression where time series and cross-sectional observations are combined and estimated. For analysis purposes, Stata software has been used to analyze financial data, especially in the case of aggregated data.

### Regression Equation (Model 1)

$$NOP = a_0 + a_1 CCC + a_2 Sales LN + a_3 DR + \epsilon$$

### Regression Equation (Model 2)

$$NOP = b_0 + b_1 ITID + b_2 ACP + b_3 APP + b_4 Sales LN + b_5 DR + \epsilon$$

### Results and Analysis

#### Descriptive Analysis

Description of the data assists in developing a useful understanding of variables that are the basis to measure the relationship between independent and dependent variables. Table

5.1 below presents the descriptive statistics for the variables used in the study. Descriptive statistics represent the central tendency of data as well as the dispersion of the variable values from their central point. Numerous methods and measures participate to develop the descriptive statistics, named as mean, median, mode, standard deviation, kurtosis, skewness etc. The central value of any data set is determined by its mean value and all other values in the data set to revolve around its mean value. For the sake to check a range of standard deviation or dispersion around the

mean value we need to look into the minimum and maximum statistics. Henceforth, the standard deviation is the measure of the dispersion from the mean or the central value of the data. Correspondingly descriptivism like standard deviation, maximum, and minimum assist in analysing the existence of any outliers in the data set. The zero value of standard deviation refers to the closeness of the data set to its centre point and on the other hand higher value of standard deviation indicates a broad dimension of dispersion of the dataset from its means value.

**Table 4**

Variables	Obs.	Mean	Std. Dev	Min	Max
NOP	75	.163511	.1308914	-.1602786	.4891544
ITID	75	49.36172	40.6637	3.846191	191.2763
ACP	75	11.13274	11.91319	.1649656	54.20987
APP	75	105.762	71.01164	4.702993	316.259
CCC	75	-45.26757	87.43573	-286.5898	147.9039
DR	75	.6068701	.4706359	.1196136	3.131579
SalesLN	75	17.79373	2.291737	15.20275	22.14504

*Panel variable: Company (strongly balanced), Time variable: Years, 2015 to 2019, Note: Total Number of Observations = 75, Source: SPSS output*

The descriptive statistic in the above table above represents that profitability (Net Operating Profit) is 16.35% with a standard deviation of 13%. The maximum Net Operating Profit (NOP) is 48.9% whereas the minimum NOP is -16%. That represents the average performance of the firms for the period under consideration.

Companies in the cement sector in Pakistan on average take forty-nine (49) days to convert the inventory into sales. It can be said that the average days of inventory rotation indicate that these companies need approximately 40 days to change the inventory to sales or accounts receivable. Efficient companies take less than four days to quickly convert inventory into sales. However, stagnant companies take a maximum of 191 days to change the inventory into sales. This represents the healthy statistics for the cement industry.

The average collection period (ACP) is 11 days which indicates that the firms take approximately eleven days to change

inventory to sales revenue. The average payment period (APP) is 105 days. The mean value for both ACP and APP are healthy for the cement industry because they enhanced the liquidity of the companies. The average cash conversion cycle (CCC) is negative in the cement industry which is -45 days which is a good sign that shows the efficient management of accounts payables and accounts receivables. Furthermore, it indicates that it takes minimum time to convert stocks into cash. The longest cash conversion cycle in the cement industry is approximately 148 days and it serves as evidence of good management of cash.

Debt ratio (DR) is used here as a control variable to interpret the percentage of the company's assets financed by the debt. In the cement industry debt ratio on average is 0.6 in the period under study which indicates that 60% of companies' assets are financed by debt which can be considered risky as it is implying an element of financial risk. However, the debt ratio in the manufacturing, construction and

technology sectors is usually high because of their heavy investment in fixed assets i.e. plant and machinery.

Some variables in the results of descriptive statistics show higher standard deviations like ITID (40%), APP (71%), and CCC (87%) but this trend is normal in the cement sector because of the uncertainty of market trends regarding collection from customers and payment to the suppliers.

### Correlation Analysis

In order to measure the two variables' linear relationship strength and direction, we use correlation statistics. It paves a way for further

analysis of the desired outcome. It might be positive or negative. If there is a change in one variable result in the same change in the same direction in other variables. This means there exists a positive correlation. If the respondent moves in the opposite direction, then there is a negative correlation and in case of no change, we can say that there is no correlation among variables. The value of the correlation coefficient ranges between +1 to -1. (+1) represent perfect positive correlation, (-1) is for perfect negative correlation and (0) represents no correlation at all. Table: 5.2 show the relationship of the entire study variable on the basis of correlation statistics.

Table 5

	NOP	ITID	ACP	APP	CCC	DR	Sales LN
NOP	1.0000						
ITID	0.1123	1.0000					
ACP	-0.0935	-0.1288	1.0000				
APP	-0.5742	-0.1578	-0.0120	1.0000			
CCC	0.5058	0.5757	0.0861	-0.8872	1.0000		
DR	-0.3786	0.2216	0.2946	0.3105	-0.1090	1.0000	
SalesLN	-0.4145	0.2825	-0.0559	0.5967	-0.3609	0.2378	1.0000

Panel variable: Company (strongly balanced), Time variable: Years, 2015 to 2019, Note: Total Number Of Observations = 75 Source: SPSS output

The correlation results of the study show that Net operating profit has a positive correlation with Cash Conversion Cycle (CCC). Efficient CCC has a positive impact on profitability and these results align with our hypothesis 1. The level of correlation is strong with CCC (0.5058).

Inventory turnover in days (ITID) has also a positive weak correlation with net operating profit (NOP). The level of correlation of ITID with profitability is (0.1123). The inventory conversion period can be used good predictor of profitability. This variable is also positively correlated with the cash conversion cycle. Aside from positive correlation results there exists a negative correlation between Net Operating Profit (NOP) and Average Collection Period (ACP), Average Payment Period (APP) and Sales LN.

The strength of liquidity results in a strong negative correlation in the case of Debt Ratio (DR) with Net Operating Profit (-0.3786), which means higher DR have a negative impact on profitability.

The average payment period has a strong negative correlation (-0.5742) than that of ACP (-0.0935). This means that one day increase in the collection period results in a negative impact on profitability. As per correlation, the Sales LN is negatively associated with the Net Profit. (-0.4145) These results provide a preliminary view of our study. In order to validate our findings, we have to rely on regression analysis results.

### Regression Analysis

#### Regression Equation (Model 1)

$$NOP = a_0 + a_1 CCC + a_2 Sales LN + a_3 DR + \epsilon$$

**Table 6.** Fixed Effect Regression Results

Independent variable	NOP		
	Coefficient	Std. Err	Significance (p-value < 0.05)
CCC	.0487221	.0002259	0.035
SalesLN	.0726885	.0186761	0.000
DR	-.0312455	.0199629	0.123
Constant	-1.088874	.3279368	0.002
Hausman (Prob>chi2)	0.0002		

Notes: R2 = 0.2333 , Prob>F = 0.0016 (F=5.78)

Panel variable: Company (strongly balanced), Time variable: Years, 2015 to 2019, Note: Total Number of Observations = 75, Source: SPSS output

### Regression Equation (Model 2)

$$NOP = b_0 + b_1 ITID + b_2 ACP + b_3 APP + b_4 Sales LN + b_5 DR + \epsilon$$

**Table 7.** Fixed Effect Regression Results

Independent variable	NOP		
	Coefficient	Std. Err	Significance (p-value < 0.05)
ITID	.0010564	.0004162	0.014
ACP	.001549	.001391	0.270
APP	-.000218	.0002701	0.423
SalesLN	.0622479	.0199288	0.003
DR	-.0408782	.0206069	0.052
Constant	-.9656413	.3409589	0.006
Hausman (Prob>chi2)	0.0002		

Notes: R2 = 0.2763 , Prob>F = 0.0026 (F= 4.20)

Panel variable: Company (strongly balanced), Time variable: Years, 2015 to 2019, Note: Total Number of Observations = 75, Source: SPSS output

## Discussion of the Results

### Results of the Hausman Test

Hausman test is applied to check whether the fixed effect regression model results are appropriate or the random effect model. The (Prob>chi2) of this test is less than 0.05. Therefore the Fixed effect model results have been considered in our study.

N=75

R2= Represent strength of the model. Our results show that 23%

Model Fit= Prob>F = 0.000 (probability of F is less than 0.05 so our Model is fit)

### Hypothesis1: Impact of Cash Conversion Cycle (CCC) on Profitability

Cash conversion cycle has p-value = 0.035 < 0.05 which indicates significant positive relation with Net operating profit. The positive

relation between the cash conversion cycle and profitability means an increase in the cash conversion cycle has a positive impact on profitability. A significant relationship indicates increase or decrease in the cash conversion cycle has an impact on profitability and results are supporting the first hypothesis H<sub>1</sub>. Results are consistent with the findings of Gill (2012); Biger & Mathur (2012) and Lyroutdi & Lazaridis (2000).

Sales LN has p-value = 0.000 < 0.05 which indicates significant positive relation with Net operating profit. A positive relation between sales and profitability means an increase in sales has a positive impact on the profitability of a company. A significant relationship indicates increase or decrease in sales has an impact on profitability and results are supporting the hypothesis.

Debt Ratio is being added as a control variable to check that either the liquidity level of the company has an impact on profitability or not. The test statistics show that the Debt Ratio (DR) has  $p\text{-value} = 0.123 > 0.05$  which indicates insignificant relation with Net Operating Profit. An insignificant relationship between DR and profitability indicates increase or decrease in the liquidity level of the company has no impact on profitability or it can be said that in this particular model DR is not a good predictor to judge profitability. Hence, these DR results are not supporting the hypothesis.

### **Hypothesis2: Impact of components of Cash Conversion Cycle (CCC) on Profitability**

Inventory turnover in days (ITID)  $p\text{-value} = 0.014 < 0.05$  which indicates significant relation with Net Operating Profit and it means that increase in inventory has a positive impact on profitability and results are supporting the second hypothesis  $H_2$ . To incorporate the effects of inventory levels on profitability it is more important to consider the further detailed analysis and other factors to check the efficiency comprehensively. Findings are consistent with Lazaridis & Tryfonidis (2006); Falope & Ajilore (2009); Mansoor & Muhammad (2012); Raheman & Nasr (2007); Dong .H.P (2010); Deloof (2003) and Ruichao. Lu (2013).

Average collection period (ACP) has  $p\text{-value} = 0.270 > 0.05$  which indicates insignificant relation with Net operating profit. Insignificant relation between the average collection period and profitability indicated that an increase or decrease in the day a company takes to collect its receivables has no impact on profitability. A shorter or longer collection period does not use as a benchmark to compare the profitability across companies rather it can be used for searching the trend among competitors to grab business.

Average payment period (APP) has  $p\text{-value} = 0.423 > 0.05$  which indicates insignificant relation with Net operating profit. Insignificant relation between the average payment period and profitability indicated

that an increase or decrease in the day a company takes to pay off its outstanding payments has no impact on profitability. Shorter or longer payment periods directly affect the creditworthiness of a company but at times high profit-making companies focus on expediting their payments instead stretching payables.

ACP and APP results are not supporting the second hypothesis. Results are consistent with the findings of Mathuva (2010); Lazaridis & Tryfonidis (2006); Mansoor & Dr Muhammad (2012); Raheman & Nasr (2007) and Dong (2010)

It is evident that the study shows unconventional and exceptional results. The reason for these sorts of results in a developing country like Pakistan is the inefficient utilization of resources. Management is not well aware of how much part of capital should be allocated to fixed capital and working capital. Due to this working capital is not properly managed. Another reason for such type of results could be sample size is small as it consists of only 15 cement companies in Pakistan out of 24 listed companies. This could be a reason which may arise differences because companies have different strategies to manage their finances. It is suggested that managers should pay more concentration to the management of each of the components of working capital management because the manufacturing sector is becoming a more progressive sector in the last few years. Managers should also consider other factors like cash, and other marketable securities in the study and should also consider other proxies for profitability. In future, some survey-based research should also be conducted.

Cash flows are largely affected by business receivables, especially in the case where companies mostly rely on credit sales to generate income. The negative relationship of ACP with profitability signifies that delays in receiving payments from customers negatively affect companies' profitability. Further, in comparison, the fact of the negative relationship of APP with profitability signifies that delays in payments to suppliers can damage the reputation of the company.

## Conclusion

Working capital is a significant element of corporate finance and it is a major requirement to effectively manage and smoothen the operations of business organizations. Since last few years manufacturing sector of Pakistan's industry is constantly moving

forward in direction of progress. It has become necessary to investigate the significance of working capital management in the cement sector of Pakistan's economy because working capital is like a life-giving force to any business organization. The optimum combination of working capital management components of the manufacturing cement sector is under consideration in this study. Fifteen companies listed on the Pakistan stock exchange have been analysed. All the data is gathered from the annual reports for the period of 2015 to 2019 and results are examined by using Stata. Some robustness tests have also been performed which indicate only one independent variable. The way a company manage its inventory affects profitability and our study shows that increase in inventory level has a positive impact on the profitability of the cement sector because the cement plant is a huge imported plant that consists of an inventory of mechanical and electrical spares and most of its parts are not available in the local market. So sufficient inventory levels are required to be maintained to avoid the huge operational cost. Stretching the payment period to vendors has a negative impact on profitability which shows that an increase or decrease in the payment period has indirect relation with profitability. The findings of this study indicate a direct positive relationship between the cash conversion cycle with a firm's profitability which examines the power of handling suppliers and customers while maintaining long-term relationships with them. This research concludes the positive relationship between sales and profitability which means an increase in cement sales has a direct impact on an increase in profitability which is quite reasonable. In addition to analysing the profitability, its impact on liquidity level has also been studied. Debt ratio has been used as a measure to test the liquidity

of the companies and insignificant negative relation between Debt Ratio and profitability indicates that the increased liquidity level of the company has no impact on profitability.

The study was developed to provide empirical evidence on the effects of working capital management on profitability of a sample drawn of 15 cement companies listed on the Pakistan Stock Exchange, for the period 2015-2019. The results of the current paper align with the conclusion drawn from earlier studies of various researchers like; Shin and Soenen (1998), Deloof (2003), Lazaridis and Tryfonidis (2006), Rehman and Nasr (2007), Samiloglu and Demirgunes (2008) and Zariyawati (2009). These earlier studies conclude that a decrease or increase in the cash conversion cycle (CCC) affects profitability to the same extent. However, the positive relationship between profitability and CCC is concluded here is the same as the conclusion made by Padachi (2006). There is a negative relationship between profitability and independent variables; the Average Payment Period (APP) and Average Collection Period (ACP) also align with the earlier studies. Compared with the theoretical basis, working capital management and profitability show a positive relationship measured by the cash conversion cycle. The current research analysis shows that shortening the cash conversion cycle will have a negative impact on the company's profitability. The analysis of the relationship between the cash conversion cycle and profitability is very different from previous studies. The current relationship is positively correlated with the performance of the assets, which is a positive sign for selected Pakistani cement companies and the results are consistent with previous research.

## Limitations and Future Implications

The study does not cover all Pakistan Cement Companies listed on Pakistan Stock Exchange. However, 15 companies have been selected to perform analysis. It will use secondary data from the published balance sheet over the selected period of the most recent five years. Other limitations are as follows:

- The study is limited to the sample size of 15 selected listed cement companies

in Pakistan and is restricted to examining only 5 years of data from 2015 to 2019.

- Excluded the companies whose complete data was not available on their websites.
- Data of the companies not taken whose financial years are not uniform.
- The effect of inflation or long-term rise in the prices of materials and services has not been taken in the current study.
- The data used for this study is historical and does not necessary considered restated financial statements.
- The results are subject to analysis of is subject to the statistical tools used in the study.
- Direct observations are not taken because the research is exclusively made from a secondary source.
- Data of only listed companies was taken. The companies that are not listed on the Pakistan stock exchange (PSX) are not considered for research.
- Only some of the key financial variables are taken into account for analyzing the working capital management study based on logical reasoning.
- Corporate finance practices and policies are not uniform throughout the cement sector.

Considering the fact that various factors affect the working capital management strategies like target market, government policies, environmental factors, economic instability, regional preferences and so many factors that contribute towards profitability, excellence and efficiency of the cement sector in Pakistan.

### Scope for Further Study

The current study is only conducted by 15 Pakistani cement companies for a period of five years. Considering that more years and more companies are included in the sample, there may be significant space for further research to more effectively determine the issue of managing working capital and its solutions. This study can also be extended by adding some more variables to signify the results. Profitability relation with WCM can also be tested using Return on Assets instead using NOP. Control variable Debt Ratio can be used to segregate the low and high-leveraged firms in the cement sector. Total Assets could also be used as a control variable for estimating the firm size and the results can be compared to see differences.

Each segment of the manufacturing industry should be studied at the micro level for effective working capital management to assess which of the working capital management factors are more likely to affect profitability, and how working capital management can improve the productivity and profitability of different industries in Pakistan. The impact of interest rate risk, foreign exchange risk, commercial risk, political risk and competitor risk on working capital management can be analysed in future research. A further possibility of the study is the development of a risk-adjusted working capital rating. The traditional working capital ratio can be increased to a risk-adjusted working capital ratio. The scope of further research may extend to the working capital management segment, including cash, securities, accounts receivable, and inventory management.

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## Appendix 1

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**Table 1.** List of Cement Companies in Sample

Sr. No.	Company Name	Year of Incorporation
1	Gharibwal Cement Limited	1960
2	Lucky Cement	1996
3	Maple Leaf Cement	1992
4	Pakcem Limited	1993
5	Pioneer Cement Limited	1986
6	Power Cement Limited	1981
7	Safe Mix Concrete Limited	2005
8	Attock Cement Limited	1981
9	Bestway Cement Limited	1993
10	Cherat Cement Company Limited	1981
11	D.G Khan Cement Limited	1986
12	Dandot Cement Company Limited	1980
13	Fecto Cement Limited	1981
14	Flying Cement Company Limited	1992
15	Fauji Cement Company Limited	1992