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**Impact of working capital on the profitability of cement industry  
in Pakistan before and during covid-19.**



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# DEDICATION

This thesis is dedicated to my parents, who have raised me to the person I am today. You have been with me every step of the day, through good time and bad. Thank you for all the unconditional love, guidance and support you have given me, helping me to succeed and instilling in me the confidence that I can do anything I put my mind to. Thank you for everything.

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**Shahzaib Qaiser (01-221212-030)**

## **Abstracts**

The topic of this Research is The Impact of working capital on the profitability of cement industry in Pakistan before and during Covid-19. The Variable of this research are ROA and ROE, which are Dependent variables. Working Capital Management is indirect variable, Size, Growth GDP and Inflation are control variables. Covid-19 is dummy variable. This study has used Generalized least squares regression model GLS, fixed effect regression model FEM, and Hausman Test. In this study it is found that WCM has positive impact on Profitability and Covid-19 has negative impact on profitability.

**Keywords:** Working Capital, Profitability, Covid-19, Cement Industry.

# Table of Contents

Chapter 1 INTRODUCTION .....	8
1.1 Introduction .....	8
1.2 Research Gap .....	10
1.3 Problem Statement:.....	10
1.4 Research Question: .....	11
1.5 Research Objective: .....	11
1.6 Significance of this research: .....	11
Chapter: 2 Literature Review: .....	12
2.1 Working Capital Management: .....	12
2.2 Covid effect on profitability: .....	16
2.3 Profitability:.....	16
2.4 Theoretical Framework.....	17
2.5 Hypothesis testing: .....	17
Chapter 3: Research Methodology: .....	18
3.1 Introduction: .....	18
3.2 Research Design:.....	18
3.3 Research Approach: .....	18
3.4 Data collection and population.....	18
3.5 Panel Data Analysis .....	19
3.6 Data Analysis .....	19
3.7 Regression test.....	19
3.8 Co-linearity test.....	20
3.9 Correlation analysis.....	20
3.10 Descriptive statistics .....	20
3.11 Hausman Test.....	20
3.12 Fixed Effect Model and Random Effect Model .....	20
3.13 Model of Estimation: .....	21
CHAPTER 4: RESULTS AND FINDINGS.....	22
4.1 Introduction .....	22
4.2 Descriptive statistics .....	22
4.3 Correlation Analysis .....	23
4.4 Dependent Variable: ROE .....	24
4.5 Dependent Variable: ROA .....	24
4.6 Hausman Test.....	25
4.7 Results.....	25
4.8 Discussion.....	27
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS.....	28

5.1 Implications.....	28
5.2 Contribution.....	28
5.2.1 Contribution to literature .....	28
5.2.2 Contribution to corporate management .....	29
5.2.3 Contribution to researchers.....	29
5.3 Limitations and scope for further research .....	29
5.4 Recommendations .....	30
References: .....	31

# Chapter 1 INTRODUCTION

## 1.1 Introduction

In every business the Working capital Management has a major role in the profitability of a business as it has a direct link with the profitability. Working Capital Management is the strategically designed operations to effectively monitor the use of current assets and current liabilities in a business. (Tabot, Samuel. 2022). Working capital is basically the deference between the company current assets and current liabilities When working capital managed efficiently then it resulted as the success of a company. When the working capital is positive then it means that the current assets are greater than current liabilities, zero working capital means the current assets are equal to current liabilities and negative working capital means the current assets are lower than current liabilities, in such conditions the company goes towards failure because of not getting managed in current assets and current liabilities. (Larkin, Richard & Tommaso, 2015) For a smooth run of a firm the Working capital must be managed otherwise it is a downfall of the firm. The management of working capital is a difficult task because over the period of time, the amount of working capital varies across firms due to the nature of business, operation, production, availability of raw materials, credit policy etc. Majority of businesses in Pakistan have been a major affectee during the Covid-19 pandemic (Shafi, Liu, and Ren, 2020).

Working capital measures, the extent to which firms can be protected from their liquidity problem and it is also a very useful measure of firms efficiency and their short term financial health. (Larkin, Richard & Tommaso, 2015) has proved that Working capital generally referred as net working capital is a dollar difference current assets and current liabilities of the firm, and calculated

as

$$\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities.}$$

An organization's current assets and liabilities. It is a term used to describe an assets that, when business is used it may happen quickly convert sales into cash within a year without incurring a decline in value or having the operation disrupted. Working Capital Management main goal is to give companies peace of mind in terms of their daily operations and meeting their commitments as and when they arise. It has long been understood that excessive availability or a lack of current assets in a company is not a problem as long as there is



adequate planning and control of working capital. Most firm directors usually enlist the help of financial experts who have the knowledge and professionalism to detangle the complexities of working capital management. (Frankline Chasha Sogomi, 2021)

WCM practices vary from industry to industry that's the reason companies from different industries follow different approaches for working capital management, favorable to their industry. In a less competitive industry, to increase the cash flows firms tends to focus on reduction of their receivables. (Ganesan, 2007)

Working Capital Management is considered as a very sensitive area in the field of financial management. It deals with the decisions regarding size and composition of current assets and also financing of those assets. Management of working capital is very important as current assets of a typical manufacturing firm accounts for over half of its total assets. (Raheman & Nasr, 2007)

A substantial amount of liquid assets are required to every business to fulfill everyday requirements of their operations. Companies need certain amount of cash, to pay wages and salaries to keep their work force and to pay creditors to ensure their suppliers. Management of working capital is not a short-term activity companies have to manage their working capital if they want to survive their business in long run. To avoid the failure of business, an adequate amount of cash flows are required even to the profitable firms to payback their liabilities. (Shah & Sana, 2006)

Firms may use aggressive working capital policy by keeping level of their current assets low, as a percentage of its total assets or it may also adopt it for financing decisions of the firm by keeping level of its current liabilities high, as a percentage of total liabilities. Firms with high level of current assts may results in substantial decrease in their profitability where as, low level of current assets may create liquidity problem and stock outs that may lead to the hindrance in keeping smooth operations of the business. Consequently, by understanding role and determinants of WC firms can easily enhance their overall performance along with their risk minimization. (Aregbeyen, O. 2013)

Firms are required to keep a balance between their liquidity requirements and profitability while conducting their daily operations. Liquidity is considered as a precondition to ensure

the firm's ability to meet their due short term liabilities and its continued flow can be assured by a profitable venture. (Kesseven, 2006)

In financial management, WCM is a crucial function due to its potential to strengthen an entity and also become the reason of its failure (Deloof , 2003). An important aspect such as credit restrictions, or those occurring in the situation amidst crisis caused due to COVID-19, or any other situations affecting the ability of entity to reach its goal, strengthens this theory that working capital management (WCM) could be an electromotive force in back of entity's performance. Firms have certain objectives which they set, and then they devise strategies to achieve those objectives just to outperform their competitors. WCM is crucial factor in this regard. Assets and liabilities which are to be liquidated within the time duration of one year, if properly invested in, make WCM more efficient.

Empirical results show that ineffective management of working capital is one of the important factors causing industrial downfall. Efficient working capital management is thus an important indicator of stable organization which requires reduction of unnecessary capital in order to bring down the cost of financing. In the light of the above, this study attempts to examine working capital management of cement industry by critically analyzing the 22 cement industries listed on Karachi Stock Exchange.

## **1.2 Research Gap**

In past many studies have been carried out to determine the impact of working capital on the profitability of cement industry from 2001 to 2013. Moreover, some studies have been carried out to determine the impact of working capital on the various industries and companies. I have found a significant gap in finding the working capital of cement industry during before and during Covid time period to analyze its impact on profitability.

## **1.3 Problem Statement:**

The research in the area of finance covers working capital management and its impact on profitability but with many loopholes. There is rare consensus of researchers at one determinant of profitability. Researchers are tempted to build consensus of various measures of working capital management (Muhammad Tahir, 2016). And there is no study conducted to determine the impact of working capital management in the probability of cement industry which includes the Covid-19 in to determine the difference before and during covid times.

#### **1.4 Research Question:**

- Does working capital management has significant impact the profitability of cement industry in Pakistan?
- How Covid-19 affected the Profitability of Cement Industry in Pakistan?

#### **1.5 Research Objective:**

Specific purposes of the study are:

- To examine the working capital management practices efficiency on cement industry.
- To identify the variables of working capital management that affect the profitability of cement industry in Pakistan.
- To examine the impact working capital on the profitability of cement industry in Pakistan before and during covid 19.

#### **1.6 Significance of this research:**

The Research gives important significance to Government, Cement industry, policymakers, investors and future analysts.

## **Chapter: 2 Literature Review:**

Many researchers have studied working capital from different views and in different situations. The following are very useful for this research:

### **2.1 Working Capital Management:**

**Othuon, D. O., Gatimbu, K. K., Musafiri, C. M., & Ngetich, F. K. (2021)** assessed the impact of working capital management on small-scale financial performance Coffee wet grinders. Data were collected from 41 small scale wet coffee grinders in Embu County, eastern Kenya. To analyze working capital, we adopted a multivariate regression analysis approach on panel data (2014–2018) Impact on performance of small coffee wet grinders. Our result is the current Average payment terms also had a negative impact on return on assets for small wet coffee grinders. and that's how it happened Wet mill processors can reduce payment terms and power ratios to improve their return on investment. the study Company size and age were also found to have positive and negative effects on return on assets, respectively. small coffee grinder. Both the average payout period and the current rate had a positive impact on returns farmers.

**Othuon, D.O. et al. (2021)** evaluated the impact of working capital management on the financial performance of a small coffee wet grinder. Data were collected from 41 small coffee wet grinders in Embu County, eastern Kenya. A multivariate regression analysis approach was employed on panel data (2014-2018) to analyze the impact of working capital management on the financial performance of small coffee wet grinders. Our results showed that current ratios and average payment terms have a negative impact on profit margins for small wet coffee grinder assets. Wet mill processors can therefore reduce payment terms and power ratios to improve their return on investment. The study also found that company size and age also have a positive and negative impact on small coffee wet grinder return on investment, respectively. Both the average payment term and current ratio had a positive impact on farmers' earnings. Working capital management, that is, H. Average payment term and liquidity ratio have a negative impact on his ROA but have a positive impact on the farmer. Therefore, coffee wet grinder management needs to increase the liquidity ratio and lengthen the average payment period to increase the income paid to the farmers.

**Rey-Ares, L., Fernández-López, S. and Rodeiro-Pazos, D. (2021)** examines the impact of WCM laws on the economic and financial success of Spanish firms engaged in the fish

canning business. The fish business is a significant part of the Spanish economy, and Spain produces more canned seafood than any other country in the EU. Using a sample of 377 businesses from the years 2010 to 2018, we employed a dynamic panel data methodology to determine the association between WCM and profitability. Researchers might get the conclusion that the collection period (also known as Days Sales Outstanding or DSO) and the inventory conversion period are related to the financial viability of fish canning businesses (Days Inventory Outstanding or DIO). The best number of receivables is one that strikes a balance between the advantages of growing sales and the opportunity costs of customer funding, according to empirical data. The results additionally specify a convex link exists between inventory investment and economic success.

**Morshed, A. (2020)** elucidated that the study's objective is to quantify the impact of prudent working capital management on profitability in order to understand the connection between accounting and finance. sixteen finance managers were interviewed using a semi-structured interviewing technique. The research revealed that accounting and finance have a complementary relationship since working capital management, project appraisal, and managing corporate funding resources are all areas where finance provides support for the accountant. With these abilities, the accountant can advance to the financial manager level. The most major influences on profitability are working capital investment and finance practices. Since the conservative policy will minimize both risk and return and the aggressive one will have the opposite effect, these policies are related to the risk and return hypothesis.

**Enqvist, J., Graham, M. and Nikkinen, J. (2014)** used a sample of publicly traded Finnish companies over an 18-year period to assess the impact of oscillations on the assets-profitability relationship. We find that compared to economic booms, the effects of the business cycle on the link between operational capital and profitability are more prominent during economic downturns. When the economy is struggling, we tend to emphasize more how crucial cost-effective inventory management and asset conversion periods are. Our findings show the importance of active working capital management and the need for it to be considered in business financial planning.

**Ullah, R. (2019)** examines and contrasts the effects of working capital elements on the profitability indicator return on asset (ROA) for KSE listed manufacturing companies over two time periods, including average collection period (ACP), inventory conversion period (ICP), average payment period (APP), and cash conversion cycle (CCC). For this purpose,

the years 2004–2006 and 2008–2009 cover, respectively, the pre- and post-financial crisis periods. As a research sample, 40 manufacturing companies with KSE registrations were chosen. The impact of WC components on return on asset was examined using multiple linear regression and correlation approaches. The results showed that the average collecting period in both periods had a detrimental effect on the company's success. The cash conversion cycle affects a company's profitability both positively and negatively depending on the situation. Similarly, the equities conversion period has a negative effect before the crisis and a positive effect during the crisis. However, there is a subtle relationship between the average payment term and a company's return on investment.

**Aldubhani, M.A. et al. (2022)** identified that whether working capital management practises have an impact on the profitability of manufacturing companies listed on the Qatar Stock Exchange was the main goal of this study. The authors used a multiple regression analysis methodology in all ten manufacturing companies listed on the Qatar Stock Exchange between 2015 and 2019 to evaluate the association between working capital management and profitability. As stand-ins for working capital management, average collection time, inventory turnover, average payment time, and cash conversion cycle were chosen. The study found that businesses that have faster cash conversion and receivables collection cycles are more lucrative. Higher profitability of the businesses is correlated with longer accounts payable payment terms and inventory turnover times.

**Anton, S. and Afloarei Nucu, A. (2020)** investigated the connection between working capital and business profitability for a sample of 719 listed Polish companies over the years 2007 to 2016. The research on the working capital-financial performance relationship is motivated by the dearth of empirical information for emerging economies as well as the significance of working capital efficiency. The paper uses various panel data approaches in a quantitative manner (ordinary least squares, fixed effects, and panel-corrected standard errors models). The empirical findings show an inverted U-shape relationship between business profitability and working capital level, indicating that working capital positively affects Polish firms' profitability up to a break-even point (optimum level). Working capital starts to have a negative impact on firm profitability after the break-even point.

**(Md. Rahman and S. Ahmed 2020)** The effects of working capital management (WCM) on the profitability of listed firms in Bangladesh's cement and tannery industries have been looked into. Dhaka Stock Exchange has been used to gather company data. Exchange

between 2008 and 2017. By using a straightforward random selection procedure, five companies were selected from each industry. A study discovered that WCM significantly affects profitability. The results showed that the average payment time and cash conversion cycle contribute to a drop in all four profitability ratios for the companies in the cement business. While the current ratio (CR) has a strong beneficial impact on NPM, the cash conversion cycle has a significant negative impact on ROE. In contrast, days sales outstanding (DSO) had a detrimental influence on the tannery business. Stretching payables has decreased ROE & ROCE while increasing inventory turnover has decreased ROA & NPM. On the NPM of the firms in the tannery industry, DSO has a significant negative influence and CR has a significant positive impact. By lowering the days sales outstanding, days inventory turnover, cash conversion cycle, and average payment period, managers can boost the profitability of their organisations.

**S.Md. Rahman and S.Ahmed. (2021)** emphasis of working capital management (WCM) on the profitability of listed companies in Bangladesh's cement and tannery industries was examined by the researcher. From the Dhaka Stock Exchange, information on the companies was gathered between 2008 and 2017. By using a straightforward random selection procedure, five companies were selected from each industry. A study discovered that WCM significantly affects profitability. The results showed that the average payment time and cash conversion cycle contribute to a drop in all four profitability ratios for the companies in the cement business. While the current ratio (CR) has a strong beneficial impact on NPM, the cash conversion cycle has a significant negative impact on ROE. In contrast, days sales outstanding (DSO) had a detrimental influence on the tannery business. The study has consequences for corporate management, suppliers, customers, and competitors in terms of practise and public policy because increased profitability affects all stakeholders both directly and indirectly.

**Hameer, N.A., Ramakrishnan, S. and Hassan Gillani, S.M. (2021)** examine the relationship between WCM and company performance in Malaysian manufacturing enterprises owned by Bumiputera and Non-Bumiputera people. From 2009 to 2018, a sample size of 40 publicly traded manufacturing enterprises was used for the examination of panel data. This investigation examined the impact of inventory days, accounts receivable days, and accounts payable days (independent variables) on business performance as evaluated by return on assets using descriptive statistics, correlation analysis, and pooled ordinary least

squares (OLS) (ROA). The results indicate that the impact of account receivable and inventory days on firm performance is significantly negative. While account payable days have a negligible effect on the profitability of manufacturing companies, they have a beneficial influence on non-bumiputera firms and a negative impact on bumiputera firms.

## **2.2 Covid effect on profitability:**

(Demiraj, Dsouza, and Abiad, 2022) working capital management's effects on business profitability in Europe's automotive sector before and after the COVID-19 outbreak. As a significant contributor to the overall industrial value contributed to the GDP of the continent, the automotive industry is essential to the health of the European economy. There is a gap in the literature addressing the impact of working capital management on firm performance during times of crisis, and the existing research on this topic is inconclusive. This study, unlike most others, is industry-specific to better understand how working capital management affects firm profitability. Additionally, it includes the COVID-19 factor to emphasise the significance of good working capital management, particularly during challenging economic times. The findings indicate that both the pre-pandemic and pandemic periods' receivables collection period, inventory conversion period, accounts payable period, and cash conversion cycle significantly negatively impacted ROA. As a result, managers should exercise caution when deciding how generous to be with credit terms and how quickly to collect receivables.

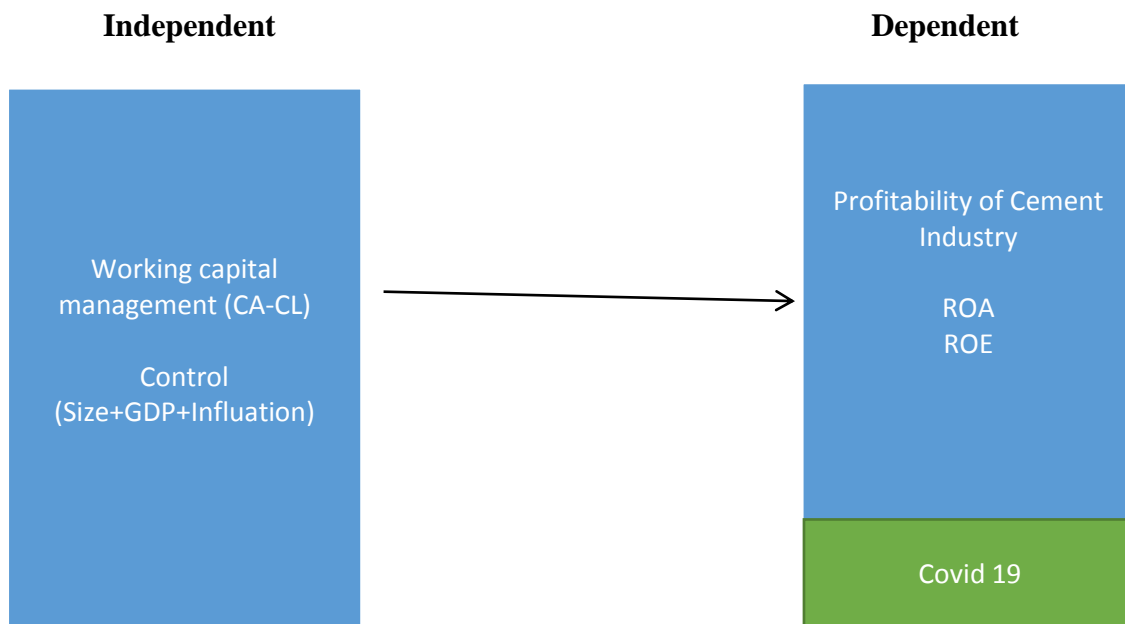
## **2.3 Profitability:**

NGUYEN, A.H., PHAM, H.T. and NGUYEN, H.T. (2020) examines that the profitability of the company is examined in this research in relation to working capital management. Over a nine-year period, from 2010 to 2018, the research sample consists of 119 non-financial listed companies on the Vietnam stock market. Two statistical techniques are To address econometric difficulties and increase the precision of the regression results, ordinary least squares (OLS) and fixed effects model (FEM) are used. The empirical findings demonstrate the negative and significant effects of working capital management on the firm's profitability as measured by return on assets. Working capital management is measured by the cash conversion cycle (CCC) and its three components, including accounts receivable turnover in days (ARD), inventory turnover in days (INVD), and accounts payable turnover in days (APD) (ROA). It means that businesses can boost profits by maintaining the working capital management optimization as assessed by the CCC, which involves accelerating the flow of inventories and maintaining a reduced payment period to creditors. In addition, factors



including age, firm size, debt, and the rate of sales growth all have an effect on a company's profitability. As a result, this paper offers managers fresh perspective on how to increase the firm's profitability through working capital management.

## 2.4 Theoretical Framework



## 2.5 Hypothesis testing:

H1: There is a positive relationship between working capital management and profitability of Pakistani cement industry.

H2: There is a positive relationship between Net operating working capital and Profitability.

## **Chapter 3: Research Methodology:**

### **3.1 Introduction:**

The scientific and organized way to find the answers to given problem is called research methodology. This chapter runs down on research design. This study has used Generalized least squares regression model GLS, fixed effect regression model FEM, and Hausman Test

### **3.2 Research Design:**

According to (Bickman, L., & Rog, D. J. 2008) research design is “the architectural blueprint of a research project, linking design, data collection, and analysis activities to research questions”. Data is gathered from the official annual reports of 18 cement companies of Pakistan which are listed on Pakistan stocks exchange and the data is in numerical form so quantitative approach will be more appropriate for this research.

### **3.3 Research Approach:**

The research approach I am using in this study is Quantitative. The data used in this study will be secondary data. I have seen many previous studies that already have done research on the impact of working capital on the profitability of cement industry in Pakistan. The research will be analyzing in the time period of Covid-19 and before the pandemic. Generalized least squares regression model GLS, random effect regression model REM, fixed effect regression model FEM, and Hausman Test will be run to find the profitability on 18 cement companies listed on Karachi Stock exchange.

### **3.4 Data collection and population**

WCM is undoubtedly an important area of finance due to the fact that if it is mismanaged it can lead to liquidation. On sectorial basis, the cement sector is chosen due to its significant contribution to revenue generation, tax and employment. Availability of data has guided the selection of sample. Firms undergoing mergers and acquisitions are excluded from the sample like researchers namely (Deloof, 2003; Lazaridis, Ioannis & Tryfonidis, Dimitrios. (2006); Padachi, 2006) have excluded firms from financial sector from their sample data. A sample of 18 companies is selected for a reason that it provides complete enumeration of the population and results are more precise and accurate (Kish, S. J. 2012). Selected study period is from 2015 to 2022.

<b>Sector</b>	<b>Total firms</b>
Cement	18

### **3.5 Panel Data Analysis**

The impact of WCM on an entity's profitability will be tested using panel data methodology. It allows for pooling of observations over several time periods. It is also called as longitudinal data analysis. Panel data regression, unlike ordinary least square regression covers two dimensions. These two dimensions are cross section units and the other in time series. This nature of panel data makes it suitable for this research because data set provides rich sources of information for accurate analysis. Time series suffer from the issue of multicollinearity which is less likely to happen using panel data methodology. Also, panel data controls individual heterogeneity and can handle large number of observations (Hsiao, C. (2005), Naeem, Muhammad Adnan & Bilal, . & Khan, Abdul. (2012)). It is used by many researchers (Padachi, 2006; Rehman and Nasr, 2007; Erasmus, 2010; Raheman et al., 2010; Keraduman et al, 2011; Osama, 2011; Yassine, 2011). The panel data methodology is more effective in analyzing the empirical findings of study.

### **3.6 Data Analysis**

The quantitative data analysis is using pooled Generalized least squares regression model GLS, fixed effect regression model FEM, random effect regression model REM and Hausman Test. The data has been analyzed using Stata software and the statistics included

### **3.7 Regression test**

The study has used regression test to establish the most appropriate model. It describes the relationship between variables. Primary objective of using this test is to determine the rate of change that independent variable causes to another variable. Data evaluation is based on r square, t-statistics and coefficient. The value of r square is represented in percentage and is in-between 0 to 1. Sign of coefficient is used to gauge the linkage between variables. Negative sign shows inverse relationship and positive sign shows positive association between variables.

### **3.8 Co-linearity test**

The study has used correlation and variance inflation factor to detect the problem of co-linearity. If there exists a strong correlation between different measures of variables it raises the problem of co-linearity that states that independent variables are not fully independent.

### **3.9 Correlation analysis**

To measure the potency of association between the variables, study has used correlation analysis (Tabachnick and Fidell, 2007). The positivity and negativity of correlation shows the direct and inverse relation respectively. When there is positive correlation, it is an indication if one variable increases the other also increases. If there exists a negative correlation that means with increase in one variable the other variable decreases. To compute correlation, correlation coefficient is computed and its value ranges from +1 to -1. +1 shows the perfect correlation that exists variables that means if one variable moves up the other variable follows the identical track. Correlation coefficient shows the strength of linear relation between variables.

### **3.10 Descriptive statistics**

It is the main feature of collected data as it is the parameter of quantitative measure. It is used to bridge the sample and is not based on probability theory. It provides summaries about the sample and between made observations. It serves two purposes. This statistic provides basic information about variables and highlights significant associations between variables.

### **3.11 Hausman Test**

It is also described as test for model specification. In panel data, this test is performed to check what model will be taken into consideration when choosing between fixed and random effects model. Interpreting the results using this model is easy. If the p value is less than 0.05 one must reject the null hypothesis and use fixed effect model.

### **3.12 Fixed Effect Model and Random Effect Model**

There exists no specific accepted methodology for any type of analysis (Shah and Khan 2007). It depends on data selection method, time span and structure and number of variables. Fixed effect model is a class of statistical model in which the values of independent variables are assumed fixed and dependent variables changes in response to independent variables.

Variables have different effects at different points in time. Fixed effect model holds the idea variables will have same effect at different points.

Random effect model in a panel data is a special case of mixed model. It assumes no fixed effects. If the omitted variables are not related then random effect model is preferred because standard errors of estimates tend to be smaller.

### 3.13 Model of Estimation:

Model estimation is the use of statistical analysis techniques to find parameters of explained observed data. The following equation analyzes the association between measures of Working Capital Management and firms profitability for the panel data.

$$\text{Variable} = \beta_0 + \beta_1 (x) + \epsilon$$

$\beta_0$  = The intercept of the equation.

$\beta_1$  = The change co-efficient for X variables

x = The different independent variables selected for analysis.

$\epsilon$  = The error term

$\beta_0, \beta_1$  &  $\beta_2$  = Coefficient of the model.

Specially, by changing the above general least square equation into specified variables selected for this research, the equation will be:

$$\text{ROA} = \beta_0 + \beta_1 \text{WCM} + \beta_2 \text{Covid} + \epsilon$$

$$\text{ROE} = \beta_0 + \beta_1 \text{WCM} + \beta_2 \text{Covid} + \epsilon$$

$$\text{GDP growth} = \beta_0 + \beta_1 \text{WCM} + \beta_2 \text{Covid} + \epsilon$$

$$\text{Size} = \beta_0 + \beta_1 \text{WCM} + \beta_2 \text{Covid} + \epsilon$$

$$\text{Inflation} = \beta_0 + \beta_1 \text{WCM} + \beta_2 \text{Covid} + \epsilon$$

ROA and ROE are representing dependent variables, GDP growth, Size and Inflation represent control variables and E represent error term also called disturbance term.

## CHAPTER 4: RESULTS AND FINDINGS

### 4.1 Introduction

This chapter furnishes the purpose of conducted research. Results of the data are depicted in this section and they show the association between WCM and profitability of cement industry of the Pakistan before and during Covid-19. This research has used quantitative analysis in a logical sequence of methods i.e. descriptive analysis, correlation analysis, Generalized least squares regression model GLS, fixed effect model, hausman test and random effect random model.

### 4.2 Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
ROE	144	9.405486	17.17377	-95.16	93.72
ROA	144	5.380903	8.257564	-20.15	30.11
WCM	144	6.278785	0.640222	4.393171	7.556596
Covid-19	144	0.375	0.4858127	0	1
Size	144	7.273536	0.5703353	5.657046	8.702161
GDP Growth	144	3.9375	2.387874	-1.3	6.5
Inflation	144	8.92375	6.697366	2.53	24.5

This table represents descriptive analysis. The dependent variables are ROA and ROE, independent variables WCM and control variables are Size, GDP Growth and Inflation and Dummy variable is Covid-19.

Unlike inferential statistics, descriptive statistics summarizes and describes the data. It presents the qualities in the data. Concept of central tendency states that there exists one single variable that best summarizes whole set of measurements. Mean is called the central tendency of the data. Standard deviation is the measurement of average distance between each quantity and mean. It is measure of variability.

Unlike inferential statistics, descriptive statistics summarizes and describes the data. It presents the qualities in the data. Concept of central tendency states that there exists one single variable that best summarizes whole set of measurements. Mean is called the central tendency of the data. Standard deviation is the measurement of average distance between each quantity and mean. It is measure of variability.

To very extent it can be said, ROA has a mean value of 5.3809 with a standard deviation of 8.2575, revealing maximum and minimum value of 30.11 and -20.15 respectively. Whereas ROE has a mean value of 9.4054 with a standard deviation of 17.1737, revealing maximum and minimum value of 93.72 and -95.16 respectively. The positive result of ROA ad ROE shows that on average firms is profitable. Working Capital management has a mean of 6.2787 with standard deviation of 0.6402, having maximum and minimum value of 7.5565 and 4.3931 respectively. It shows the on average the firms have more current assets than current liabilities. Covid-19 is a dummy variable which has a mean value of 0.375 with a standard deviation of 0.4858, revealing maximum and minimum value of 1 and 0 respectively. Maximum value of 1 shows that that it has an impact on the profitability of cement companies. Size which are the total assets of company has a mean value of 7.2735 with a standard deviation of 0.5703, revealing maximum and minimum value of 8.7021 and -5.6570 respectively. It shows that larger the investment of the firm, greater will be the profitability. GDP Growth has a mean value of 3.9375 with a standard deviation of 2.3878, revealing maximum and minimum value of 6.5 and -1.3 respectively. Shows that the growth of economy also has an impact in profitability. Inflation has a mean value of 8.9237 with a standard deviation of 6.6973, revealing maximum and minimum value of 24.5 and 2.53 respectively, shows that Inflation of country effects the profitability of firms.

### 4.3 Correlation Analysis

	<b>ROE</b>	<b>ROA</b>	<b>WCM</b>	<b>Covid-19</b>	<b>Size</b>	<b>GDP Growth</b>	<b>Inflation</b>
<b>ROE</b>	1						
<b>ROA</b>	0.6174	1					
<b>WCM</b>	0.1808	0.1979	1				
<b>Covid-19</b>	-0.3915	-0.3828	0.0806	1			
<b>Size</b>	0.1208	0.2039	0.5786	0.2074	1		
<b>GDP Growth</b>	0.4566*	0.4293	0.1031	-0.392	-0.0533	1	
<b>Inflation</b>	-0.1855	-0.24	0.0546	0.7184	0.2379	-0.3112	1

This table represents the correlation matrix. The dependent variable is ROA and ROE and independent variables Working Capital.

#### 4.4 Dependent Variable: ROE

Random-effects GLS regression

Group variable: CN

Number of obs = 144

Number of groups = 18

R-squared:

Within = 0.3236

Between = 0.3295

Overall = 0.3228

Obs per group:

min = 8

avg = 8.0

max = 8

#### 4.5 Dependent Variable: ROA

Random-effects GLS regression

Group variable: CN

Number of obs = 144

Number of groups = 18

R-squared:

Within = 0.4065

Between = 0.1369

Overall = 0.2768

Obs per group:

min = 8

avg = 8.0

max = 8



## 4.6 Hausman Test

It is also described as test for model specification. In panel data, this test is performed to check what model will be taken into consideration when choosing between fixed and random effects model. Interpreting the results using this model is easy. If the p value is less than 0.05 one must reject the null hypothesis and use fixed effect model.

	(b)	(B)	(b-B)	Sqrt(diag(V_b-V_B))
	fe	re	Difference	Std. err.
<b>WCM</b>	2.623641	2.345545	0.2780965	0.4010204
<b>Covid-10</b>	-7.355503	-7.710645	0.3551418	.
<b>Size</b>	-3.719403	0.6537798	-4.373183	2.105549
<b>Inflation</b>	0.1490218	0.0803725	0.0686493	0.0293509

The research attempts to select fixed or random effect model based on Hausman criteria. Hausman test (1978) takes hypothesis that random effect is preferred if  $p > 0.05$  and is rejected if  $p < 0.05$ . The results of Hausman test are presented in the table. In the first column variables are mentioned. In the second column the regression coefficient value obtained from fixed effect are mentioned. Third column shows regression coefficient value from running random effect model. The last column shows the standard error.

$P > 0.05$  then Random effect model is appropriate

Test	Chi square	Prob >chi2
Hausman Test	5.05	0.2820

This shows if prob>chi2 is greater than 5% confidence level then assumptions for fixed effect model are violated. Here, random effect model needs to be used.

## 4.7 Results

So, according to Random effect model

#### 4.7.1 Dependent Variable: Return on assets ROE

**Table 1**

ROE	Coefficient	Std. err.	z	P> z	[95% conf.	Interval]
<b>WCM</b>	4.199258	2.497857	1.68	0.093	-0.6964524	9.094969
<b>Covid-19</b>	-19.61276	3.789211	5.18	0.000	-27.03948	-12.18604
<b>Size</b>	3.05513	2.911184	1.05	0.294	-2.650685	8.760946
<b>Inflation</b>	0.4626253	0.278186	1.66	0.096	-0.0826092	1.00786
<b>_cons</b>	-35.95592	17.45042	2.06	0.039	-70.15811	-1.75373

The random effect on ROE shows the following result:

- WCM shows the positive impact on ROE and the significance of WCM is also positive which means WCM has a positive relation with profitability.
- Covid-19 shows negative impact on ROE and the significance of Covid-19 is also strongly negative which means Covid-19 has a negative relation with profitability.
- Size being control variable shows the positive impact on ROE and the significance of Size is also positive which means Size has a positive relation with profitability.
- Inflation shows the positive impact on ROE and the significance of Inflation is also positive which means Inflation has a positive relation with profitability.

#### 4.7.2 Dependent Variable: Return on assets ROA

**Table 2**

ROA	Coefficient	Std. err.	z	P> z	[95% conf.	Interval]
<b>WCM</b>	2.345545	1.187054	1.98	0.048	0.0189624	4.672127
<b>Covid-19</b>	-7.710645	1.475522	5.23	0.000	-10.60261	-4.818675
<b>Size</b>	0.6537798	1.899966	0.34	0.731	-3.070086	4.377645
<b>Inflation</b>	0.0803725	0.1104904	0.73	0.467	-0.1361848	0.2969298
<b>_cons</b>	-11.92729	12.69819	0.94	0.348	-36.81528	12.9607

The random effect on ROA shows the following result:

- WCM shows the positive impact on ROA and the significance of WCM is also positive which means WCM has a positive relation with profitability.

- Covid-19 shows negative impact on ROA and the significance of Covid-19 is also strongly negative which means Covid-19 has a negative relation with profitability.
- Size being control variable shows the positive impact on ROA and the significance of Size is also positive which means Size has a positive relation with profitability.
- Inflation shows the positive impact on ROA and the significance of Inflation is also positive which means Inflation has a positive relation with profitability.

#### **4.8 Discussion**

Each hypothesis was tested by analysing the relevant empirical data and to deem the hypothesis valid or invalid descriptive analysis, correlation analysis, and regression analysis were performed.

WCM shows the positive impact on ROE and the significance of WCM is also positive which means WCM has a positive relation with profitability. It is interpreted as the current assets of majority of companies are higher than its current liability. In such case the company has enough capital to pay off its expenses, short-term debt and bill and can invest to grow the business (Demiraj, Dsouza, and Abiad, 2022)

Covid 19 took the life of millions of people which was resulted in lock down. That caused all the businesses to be closed during the high number of cases. A lot of businesses were closed due to the high number of cases of covid-19. Some businesses were closed permanently due to the lack of capital to continue. So most of the companies were highly effected by the Covid 19 (Shafi, Liu, J. and Ren, 2020). Cement industry was also affected by this pandemic as they were closed for time period which caused them. In this research it is found that the Covid 19 has a inverse relation with the profitability with a high significance of negative relation with profitability.

The size of a company as has a direct relation with profitability as the size of affirm will be high then the Profit of firm will also be high. (Demiraj, Dsouza, and Abiad, 2022). Size being control variable shows the positive impact on Profitability and the significance of Size is also positive which means Size has a positive relation with profitability.

A high rate of inflation may have a variety of effects on how well businesses perform. First of all, a greater inflation rate indicates that people's actual income will decline once inflation is factored in, which will lead them to spend less money on products and services, lowering demand and affecting firms' sales (Alaloul, W.S. et al. 2021). In this research it is examined that the inflation has significantly higher relation as the inflation goes up the prices also goes up which effects the profitability of cement industry.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

The study finds a positive relationship between WCM and ROE and also between WCM and ROA. This complies with the research findings on many other researcher and theories. It also recommends that firms should pay serious attention in planning their short term assets. It is very clear that efficient management of working capital is a key feature towards company's success. This research clearly asserts that Covid-19 has significant negative relationship with profitability. This is only relevant to Cement sector of Pakistan. If Covid-19 pandemic is greater it would have negative impact on profitability of the company.

Also, rather than keeping individual focus on inventory, receivable and payable management, a collective policy regarding working capital management to control financial expenses should be the prime focus. This insignificance of working capital management in terms of profitability calls for attention to be paid on management of working capital and especially on unexplained variables to ultimately boost shareholder's wealth.

Random model has revealed that certain measures of working capital management have positive impact on profitability and negative impact on Covid-19. Hence consistent policies over a period of time will help firms boost their financial performance. Thus, the study finds enough evidence that for a firm to enjoy better profitability it needs to efficiently manage its cash position.

### **5.1 Implications**

Managers can get the idea from this research that by achieving optimal level of working capital, profitability can be achieved. Studies have shown that higher WCM can prove to be beneficial for Cement firms while Covid-19 proved to be insignificant. Higher number of cases of Covid-19 will lead to low profitability. This proved to be new evidence from Pakistan on determining impact of working capital management on the profitability of cement industry before and during covid-19.

### **5.2 Contribution**

Several worthy contributions to existing body of literature have been made by this research.

#### **5.2.1 Contribution to literature**

A series of research have been done so far in various parts of globe to determine the association between working capital and profitability. These findings blend an innovation

drive in growing body of working capital literature. Literature showed volatility in terms of pertinent decision making when it comes to working capital. This research is done on sectoral basis in developing country like Pakistan and can be used as a guide by management when making decisions about working capital. It also fills in the existing gap by keeping this research limited to sectoral basis.

### **5.2.2 Contribution to corporate management**

The findings of the research reveal that policy makers should focus on devising comprehensive future policy in order to strengthen their position when world has already become a global village. This research has also shown which determinants of working capital, Cement firms should focus on by providing evidence to look into factors vital for financial management. Research has also highlighted by its results that decisions in terms of working capital management are influenced by distinctive behavior in which they operate. Sectoral basis research in Pakistan Sectors vary a lot in terms of their financial pattern, so this research is a contribution to management of the firms by adding share to sector wise analysis.

### **5.2.3 Contribution to researchers**

Ample amount of research done on studying the impacts of working capital by researchers have shown contradictory, incoherent results leading to massive literature gap. Economies are different, working capital policies are also different also firms in various sectors vary in terms of customer base, products and their market orientation. Researchers can use methods applied in this study in order to understand association of various measures of working capital with financial profitability.

### **5.3 Limitations and scope for further research**

The results of this study are purely on sectoral basis. Furthermore, data representing the period of 8 years was used in this research. Sample size used in the research is small and besides research is only focused on sugar sector so results may differ for other sectors. The research only caters the companies listed on stock exchange. No mediator and moderator effect analyzed. The study has eliminated financial sector because of their distinct nature of characteristics from non-financial firms. Availability of data is another limitation because data base of firms is not well systemized in Pakistan. The research can be extended to other sectors of the market especially on those companies that are not listed on stock exchange.

A potential avenue for future research could be extended by taking primary data collected from financial managers. As requirements of working capital management differs from those of non-financial sectors so it opens new avenues of research to be done on working capital, both in financial and non-financial sectors. Future research can be extended to evaluate the influence of the exchange rate, political risk, business risk and competitor risk on working capital management.

#### **5.4 Recommendations**

Management of working capital has prodigious sway on profitability of the firms. Companies should consider investing in working capital management in terms of managing its current ratio. It can be improved by delaying any capital purchase requiring cash. Personal with draws can prove to be harmful for the business. They can also be controlled to improve the current to total assets. Delayed payments can cause serious implications for companies in terms of their reputation. Share holder should be on high priority and they should be dealt with a soft corner. Reducing the inventory adds to cost from its security and storage expenses. When time taken by inventory to convert into cash is higher the carrying, protection and storage costs are also higher. Management should revise their strategies to cope up with growing losses. Research has shown that higher the ROA and ROE, higher the profitability. The firm should go for a strategy where the size and share holders set to be priorities in their strategy. Firms should update and monitor their accounts receivables on regular basis to eliminate additional financing cost.

## References:

- Larkin, Richard & DiTommaso, Marie. (2015). Current Assets and Current Liabilities. 10.1002/9781118945209.ch19.
- Tabot, Samuel. (2022). A Meta-Analysis of the Impact of Working Capital on Profitability. *Eurasian Journal of Economics and Finance*. 10. 1-10. 10.15604/ejef.2022.10.01.001.
- Frankline Chasha Sogomi, M. K. (2021). *Working capital management, Liquidity and Financial Performance: Context of Kenyan SME's. International Journal of Current Aspects in Finance, Banking and*, Volume 4, 56-71.
- Othuon, Dancan O., et al. "Working Capital Management Impacts on Small-Scale Coffee Wet Mills' Financial Performance in Eastern Kenya." *Heliyon*, vol. 7, no. 9, Sept. 2021, p. e07887, 10.1016/j.heliyon.2021.e07887. Accessed 22 Sept. 2021.
- Othuon, D.O. *et al.* (2021) "Working Capital Management impacts on small-scale coffee wet mills' financial performance in eastern Kenya," *Heliyon*, 7(9). Available at: <https://doi.org/10.1016/j.heliyon.2021.e07887>.
- Rey-Ares, L., Fernández-López, S. and Rodeiro-Pazos, D. (2021) "Impact of working capital management on profitability for Spanish fish canning companies," *Marine Policy*, 130, p. 104583. Available at: <https://doi.org/10.1016/j.marpol.2021.104583>.
- Enqvist, J., Graham, M. and Nikkinen, J. (2014) "The impact of working capital management on firm profitability in different business cycles: Evidence from Finland," *Research in International Business and Finance*, 32, pp. 36–49. Available at: <https://doi.org/10.1016/j.ribaf.2014.03.005>.
- Morshed, A. (2020) "Role of Working Capital Management in profitability considering the connection between accounting and Finance," *Asian Journal of Accounting Research*, 5(2), pp. 257–267. Available at: <https://doi.org/10.1108/ajar-04-2020-0023>.
- Ullah, R. (2019) "The Impact of Working Capital Components on Profitability of Public Limited Firms in Pakistan (A Comparison of Crisis and Pre Crisis Period)."

- Aldubhani, M.A. *et al.* (2022) “Impact of Working Capital Management on profitability: Evidence from listed companies in Qatar,” *Journal of Money and Business*, 2(1), pp. 70–81. Available at: <https://doi.org/10.1108/jmb-08-2021-0032>.
- Anton, S. and Afloarei Nucu, A. (2020) “The impact of working capital management on firm profitability: Empirical evidence from the Polish listed firms,” *Journal of Risk and Financial Management*, 14(1), p. 9. Available at: <https://doi.org/10.3390/jrfm14010009>.
- V.Mondal. (2020) “*Impact of working capital management on profitability of Indian Cement Industry: Evidence from BSE*” ... - *IJBMI* (2020). Available at: [https://ijbmi.org/papers/Vol\(9\)6/Series-1/J0906016065.pdf](https://ijbmi.org/papers/Vol(9)6/Series-1/J0906016065.pdf) (Accessed: January 5, 2023).
- NGUYEN, A.H., PHAM, H.T. and NGUYEN, H.T. (2020) “Impact of working capital management on firm’s profitability: Empirical evidence from Vietnam,” *The Journal of Asian Finance, Economics and Business*, 7(3), pp. 115–125. Available at: <https://doi.org/10.13106/jafeb.2020.vol7.no3.115>.
- S.Md. Rahman and S.Ahmed. (2021) *Impacts of working capital management on profitability: A comparative Study on Cement and Tannery Industry of Bangladesh*. (2021). Available at: [https://www.researchgate.net/publication/353804454\\_Impacts\\_of\\_Working\\_Capital\\_Management\\_on\\_Profitability\\_A\\_Comparative\\_Study\\_on\\_Cement\\_and\\_Tannery\\_Industry\\_of\\_Bangladesh](https://www.researchgate.net/publication/353804454_Impacts_of_Working_Capital_Management_on_Profitability_A_Comparative_Study_on_Cement_and_Tannery_Industry_of_Bangladesh).
- Hameer, N.A., Ramakrishnan, S. and Hassan Gillani, S.M. (2021) “The impact of Working Capital Management on firm performance across Bumiputera and Non Bumiputera manufacturing firms in Malaysia,” *Studies of Applied Economics*, 39(4). Available at: <https://doi.org/10.25115/eea.v39i4.4585>.



Aregbeyen, O. (2013) “The effects of working capital management on the profitability of Nigerian manufacturing firms,” *Journal of Business Economics and Management*, 14(3), pp. 520–534. Available at: <https://doi.org/10.3846/16111699.2011.651626>.

Ganesan, Vedavinayagam. (2007). *AN ANALYSIS OF WORKING CAPITAL MANAGEMENT EFFICIENCY IN TELECOMMUNICATION EQUIPMENT INDUSTRY*. Available at: <https://www.researchgate.net/publication/239534086>

Padachi, Kesseven. (2006). *Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms*. *International Review of Business Research Papers*. 2. Available at: <https://www.researchgate.net/publication/238599541>

Shah, S.M. & Sana, A.. (2006). *Impact of working capital management on the profitability of oil and gas sector of Pakistan*. *European Journal of Scientific Research*. 15. 301-307. Available at: <https://www.researchgate.net/publication/287592853>

Raheman, Abdul & Nasr, Mohamed. (2007). *Working capital management and profitability-case of Pakistani Firms*. *International Review of Business Research Papers*. 3. 279-300.

Deloof, M. (2003). *Does working capital management affect profitability of Belgian firms?*. *Journal of business finance & Accounting*, 30(3- 4), 573-588.

Bickman, L., & Rog, D. J. (2008). *Applied Research Design: A Practical Approach*. In *Approaches to Applied Research* (pp. 3-43). Sage Publications. [https://www.sagepub.com/sites/default/files/upm-binaries/23770\\_Ch1.pdf](https://www.sagepub.com/sites/default/files/upm-binaries/23770_Ch1.pdf)

Deloof, M. (2003). *Does working capital management affect profitability of Belgian firms?*. *Journal of business finance & Accounting*, 30(3-4), 573-588.

Lazaridis, Ioannis & Tryfonidis, Dimitrios. (2006). *Relationship Between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange*. *Journal of Financial Management and Analysis*. 19.

Padachi, K. (2006). *Trends in working capital management and its impact on firms' performance: an analysis of Mauritian small manufacturing firms*. *International Review of business research papers*, 2(2), 45-58.

Hsiao, C. (2005). Why Panel Data? *The Singapore Economic Review*, 50, 143-154.  
<https://doi.org/10.1142/S0217590805001937>

Erasmus, V., Daha, T.J., Brug, H., et al. (2010) Systematic Review of Studies on Compliance with Hand Hygiene Guidelines in Hospital Care. *Infection Control and Hospital Epidemiology*, 31, 283-294.  
<https://doi.org/10.1086/650451>

Callaghan, R. C., Cunningham, J. K., Sykes, J., & Kish, S. J. (2012). Increased risk of Parkinson's disease in individuals hospitalized with conditions related to the use of methamphetamine or other amphetamine-type drugs. *Drug and alcohol dependence*, 120(1-3), 35-40.

Naeem, Muhammad Adnan & Bilal, . & Khan, Abdul. (2012). Firm's characteristics and capital structure: A panel data analysis of Pakistan's insurance sector. *African journal of business management*. 6. 4939-4947. 10.5897/AJBM11.2608.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). New York: Allyn and Bacon. 5(5):164-168. doi: 10.12691/ajams-5-5-2.

Shah, Attaullah & Khan, Safi. (2007). Determinants of Capital Structure: Evidence from Pakistani Panel Data. *International Review of Business Research Papers*. 3.

Shafi, M., Liu, J. and Ren, W. (2020) "Impact of COVID-19 pandemic on Micro, small, and medium-sized enterprises operating in Pakistan," *Research in Globalization*, 2, p. 100018. Available at: <https://doi.org/10.1016/j.resglo.2020.100018>.

Demiraj, R., Dsouza, S. and Abiad, M. (2022) "Working Capital Management Impact on profitability: Pre-pandemic and pandemic evidence from the European Automotive Industry," *Risks*, 10(12), p. 236. Available at: <https://doi.org/10.3390/risks10120236>.

Alaloul, W.S. *et al.* (2021) “Investigating the impact of inflation on labour wages in construction industry of Malaysia,” *Ain Shams Engineering Journal*, 12(2), pp. 1575–1582. Available at: <https://doi.org/10.1016/j.asej.2020.08.036>.

(Md. Rahman and S. Ahmed 2020)“ Impacts of Working Capital Management on Profitability: A Comparative Study on Cement and Tannery Industry of Bangladesh” Available on ISSN 2383-2126