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An Empirical Investigation of Working Capital Management Components and its Association with Firm's Profitability (ROE)

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Abstract

A well-managed working capital could reduce the possibility of a firm's future financial constraints and be the sign of a firm's value. Working capital management is important because it enables firms to free up cash and improve liquidity. Therefore, the main objective of this study is to examine the relationship between working capital management components (inventory, receivable, and payable turnover) and the firm's profitability measured by return on equity. We used the cash conversion cycle, a comprehensive measure for working capital management, and assess the firm's performance with a return on equity ratio. We evaluated the cash conversion cycle with the help of three accounting ratios: creditor's turnover, debtor's turnover, and inventory turnover. The empirical evidence is based on non-financial firms listed in the Pakistan Stock Exchange from period of 10 years. PLS-SEM was used for analysis, by examining descriptive statistics, correlations coefficient, path coefficient, t-statistic, P-value, confidence interval, and R-square. From the multivariate analysis, we found that without any moderating effect, all the components of working capital management have significant positive relationships with the profitability of the firm. From univariate analysis by using firm size as moderator, it was found that firm size moderating the relationship between debtor's turnover and return on equity ratio, while it has no significant moderating effect on the relationship between inventory turnover, creditor's turnover, and overall cash conversion cycle ratio with firm's profitability. This study suggests that management must pay attention to every component of the working capital management altogether, to increase the profitability of the firm. The firm's managers must seriously consider the efficient management of all of the components of working capital such as inventory, receivable, and payable.

Keywords: Working Capital Management (WCM), Return on Equity (ROE), Cash Conversion Cycle (CCC), Average Inventory Turnover (ITO), Days Debtors Turnover (DTO), Days Creditor Turnover (CTO), Profitability, Short term Investment.

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1. Introduction

Conducting a measurement of a firm's performance is primarily intended to measure its profitability. The results of this measurement play an important role to the firms' managers regarding decision making for financial structure, subsidiaries divestment value, acquisition value, projects continuation or stopping and even setting the proper incentive for employees. In the world of business, what inventors need is the maximizing of the shareholder's wealth. To do this, the management meets the effects of internal factors as well as external factors. That is why; both the management and the investors need a measurement tool that can cover the needs of both parties. The right tool is needed because each of the management's decision shows the credibility of the management. While to reach a credibility decision, it depends on the tools and the methods that are used for the analysis.

The current competitive environment of the industry has made various firms find difficulties to generate and maximize the shareholders' wealth. For the firms, capital must have the maximum uses so it can give the highest returns for the shareholders. One of the tools to improve the firm's liquidity and to control the financial limitations is by applying efficient working capital management (WCM). Some measurement tools considered best to measure the firm's performance are the return of asset (ROA), return on equity (ROE), return on capital employed (ROCE), earnings before interest and tax (EBIT), gross profit, and net operating profit after tax (NOPAT). The working capital's efficient management is to make sure that the firm has sufficient ability to pay the future operational expenditure and the matured short term debts (Maeenuddin, Bansal, et al., 2020).

(Maeenuddin, Bansal, et al., 2020) said that the main objective of the efficient WCM is to make sure that the firm's operational activities are run efficiently and to make sure that the firm has enough capability to pay the future operational expenditure and debts that are matured in short term. (Gumber & Kumar, 2012) stated that WCM deals with the management of the current assets and current liabilities that aims to maximize the ROA and to minimize the risks of liquidation and bankruptcy. Whatever the industrial fields are, all firm managers agree that WCM is an important aspect of financial management. (Kasahun, 2020) studied the effects of WCM on businesses' profitability and healthiness. The study collected data from sole proprietorship manufacturing firms in Adama City, Ethiopia, and claimed to be the first study on WCM impacts on this kind of firm. From the financial statements of 2007-2012, this study measured the profitability in terms of net operating profit (NOP) and used descriptive statistics and balanced fixed effect panel regression to analyze the data. The findings show that there is a significant relationship between the average payment period and profitability. The efficient management of working capital and financing of working capital components increase the operating profitability of sole proprietorship manufacturing firms.

A study conducted by (Khidmat & Rehman, 2014) on 36 companies of Pakistan with data from 2001-2009 to measure the effect of liquidity and solvency on the firm's profitability. The researchers used ROA and ROE as dependent variables. This research came up with the findings that the relationship between a firm's liquidity and ROA is positive, with every rise in liquidity, ROA also rises. On the contrary, there are significant negative

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relationships between a firm's solvency and ROA and ROE. (Sugosha, Gede, & Artini, 2020) stated that a growing ROE means the company's potentially increasing profits. The higher ROE is, means the company's performance is better. In this case, ROE is a ratio that presents a firm's ability to produce a net income for a return on shareholder's equity.

Many previous studies were conducted on the management of working capital in different countries in the world. Measuring the firm's performance becomes a challenging task because each researcher came out with different results on how WCM (or in this case, CCC, ITO, DTO, and CTO) affect the firm's profitability. However, in regards to the Pakistani industry, little results show the exact financial picture. Especially when discussing the real financial picture of the non-financial sector which plays a vital role in the development of Pakistan's economy. Non-financial sector firms maintain an important position in the export sector of Pakistan.

Therefore, this undertaking study investigates the effects of the WCM components which are average inventory turnover (ITO), debtors' turnover (DTO), and creditor turnover (CTO) on the firm's performance measured by ROE. Data was taken from the Pakistan Stock Exchange (PSE) of 69 non-financial sector firms of Pakistan listed from 2007 to 2017. This study contributes some knowledge on how the management of working capital in non-financial sector firms to increase firms' performance. This study focuses on the impact of WCM components on the firms' profitability measured by ROE. The findings highlight the importance of providing a better service for the needs of shareholders, customers, and employees. From the findings of this study, it is hoped that the contribution can help the firm managers to manage the firm's working capital thus increase the firm's profitability at the end.

2. Literature Review

Many research subjects and objectives have been conducted by researchers on WCM studies by applying various types of variables and environments. This section presents an analysis of these WCM research by investigating several variables, including inventory turnover ratio, debtor turnover ratio, creditor turnover ratio, and firm size.

(Wetzel & Hofmann, 2019) investigated the useful form of the relationship between working capital assets and firm performance outside the traditional single-company point of view. These perspectives are found in the results which are: 1) the existent of a profit-maximizing level of working capital, 2) the superior performance from firms that adopt an SCF-oriented WCM approach, 3) the higher levels of working capital of profit-maximizing for focal companies which are facing supply chain partners that are in financial constraint condition, 4) the positive performance impact of efficient inventory management, and 5) the modified payment strategies toward up-and downstream supply chain partners.

Working capital deals on how to manage the firm's day-to-day operations. Firms around the world are relying heavily on working capital which makes it a very important tool for firms. (Masri & Abdulla, 2018) stated that a firm's value, the level of competitiveness, the wealth of the shareholders, the firm's liquidity, and profitability are affected by the level of the working capital. Their study proposed multiple objective stochastic programming models,

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which can be used by a firm to determine its optimal working capital and to determine which working capital strategy is more efficient.

Key components of WCM are trade credit and inventory management which roles are important in describing the cross-sectional variation in firm performance (Maeenuddin, Akhtar, & Raza, 2020). For the comprehensive measure for WCM, this study used a cash conversion cycle (CCC). Uniquely, unlike previous studies, here the assessment of the firm's performance was conducted by using economic value added (EVA) momentum rather than accounting-based profits. This study examined CCC with the help of three accounting ratios, creditor's turnover, debtor's turnover, and inventory turnover. Based on descriptive statistics analysis, the results of the study showed that firms with relatively lower (higher) days inventory turnover and days debtor turnover (days creditors turnover) results in lower CCC and leads to higher EVA momentum.

Generally, working capital consists of trade receivables, inventories, and trade payables. (Tsuruta, 2019) investigated how during the global financial crisis the level of working capital diverged from the firm's target level, by studying the relationship between working capital with the firm's performance. From this paper, it is found that the working capital's level increased during the global financial crisis. The reasons behind the increase are 1) The firm inventory level became unexpectedly excessive with the firm sales rapidly decline; 2) Many firm customers began to postpone payments on goods and services due to economic distress experience. It means there is an increase in unpaid trade receivables. 3) A decline in trade payables as the result of a decline in firm sales and the purchase of goods. This paper resulted that especially for bigger firms, the relationship between excess working capital and the firm's performance is significantly negative during the crisis. But it turned out that this condition didn't last long because the firm borrowed from banks and reduce the internal cash during and after the crisis period.

In financial management, three major issues are capital budgeting, capital structure, and WCM. WCM is described as, the management of the firm's current assets and the financing needs to support current assets (Raza, Bashir, Latif, Shah, & Ahmed, 2015). This study investigated the effect of WCM on the firm's profitability in the oil sector of Pakistan from the period of 2006 until 2010. To test the WCM, this study used CCC, average receivable, average inventory, average payable, and current ratio, and used the gross operating profit to measure the firm's profitability. A firm's current assets are cash, bank balance, account receivable, raw material, work in process, and finished goods. Current assets are regarded as the lifeblood for a firm's business and play a vital role in day-to-day business operations. To achieve a successful business in the long term, current assets and current liabilities are considered a very important component of total assets and need to be managed carefully. This study concluded that WCM provides profit by using average payable and gross operating profit.

The study conducted by (Dhole, Mishra, & Pal, 2019) took samples from Australian firms to investigate the relationship between efficient WCM and financial constraints. This study investigated the significance of WCM in reducing the probability of future financial limitations and give warning to higher firm value. This study gave a contribution to the literature by becoming the first study for Australian firms to use a text-based measure. By

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using this measure, it is shown that efficient WCM is related to the firm's lower financial constraints in the next two to three years. From this study, it is confirmed that WCM is important because it makes firms able to free up cash and improve liquidity. It is also shown that with efficient WCM, firms have higher market valuations although having financial constraints, which means there is a negative relationship between financial constraints and future share price.

(Chen & Kieschnick, 2018) did a study on U.S. corporations from 2000 to 2016 and found out that different working capital policies of firms are influenced mostly by its size, the proportion of its tangible assets, its profit margins, its sales, and general administrative expense, its sales growth and its use of fixed claims financing. Some of the findings of this study are, there is a significant difference in the working capital policies of bank-dependent and non-bank-dependent firms. As expected, in managing their working capital, bank-dependent firms tend to hold more in current assets and rely more on current liabilities than do less bank-dependent firms. This finding is consistent with their lesser access to sources of non-bank financing. This study also found that bank-dependent firm's working capital responses to changes in the availability of bank credit are different from the responses of less bank-dependent firms in many areas. However, these differences depend on bank-dependent firm's age. It looks like that younger and smaller firms manage to adjust their use and extension of reverse trade credit more to fluctuations in the availability of bank credit.

Research on WCM can be conducted using both primary and secondary data as well. Like the study by (Rahman, Ibrahim, & Uddin, 2015) which collected the primary data by using a structured questionnaire that was prepared in the light of the study's objectives, and secondary data of 10 sample companies listed in the Chittagong Stock Exchange (CSE) of Bangladesh to investigate the relationship between WCM and profitability. It was found out that there is a positive correlation between efficient management of working capital and the company's operating profit.

(Maeenuddin, Bansal, et al., 2020) said that ROE is the firm's percentage of net income relative to its stockholder's equity. ROE shows how much earned by a firm per dollar invested by the investor in the business. A high ROE ratio means the firm is more able to produce cash internally and less dependent on debts. Growing profitability increases investor's confidence, attracts the investor, thus also attracts the capital in the form of shares (Sugosha et al., 2020).

ROE calculates the firm's profitability of the managed shareholder's money. ROE is measured as the profit's ratio produced to the total investment capital. (Khidmat & Rehman, 2014) studied ROE regarding the firm's liquidity. The owners of the company supply the equity invested by the company. Return on equity is measured as the ratio of profit generated to the total investment capital yielded by the firm's owners. Each shareholder has awareness of the firm's liquidity situation. The firm's employees must also be concerned with the firm's liquidity to identify whether the firm can accommodate the employees' rights, such as salary, pension, etc. This means a firm must have continuous sufficient liquidity so that it affects profits of which a number of

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the portion that will be divided into shareholders. Firm's liquidity, solvency, and profitability are closely related because whenever one increases the other decreases.

(Ibrahim, 2020) analyzed data of the four Islamic banks in the United Arab Emirates during the global financial crisis in 2007 until 2008 to measure profitability. The study focused on three profitability indicators, ROI, ROA, and ROE. To analyze profitability performance, this study used various types of analysis. First, the comparative analysis between pre-crisis data, 2004 to 2007, and the crisis data, 2008 to 2009. This comparison explained that the crisis there is a significant effect on the performance of these indicators. ANOVA analysis was used to investigate if there is a difference in the behavior pattern of the indicators across the banks. The result showed there is a significant difference in the behavior pattern of the indicators across the banks, whereas, with the mean performance, there is relatively more similarity in behavior. This study's findings contribute to policymakers and banks' management by explaining the UAE individual Islamic banks' financial performance during the crisis.

3. Methodology

3.1. Research Framework

The methodology is an imperative part of any type of research. It is a way of getting a solution to the problem by following diverse strategies, structures, and arrangements. Furthermore, this part is prominent for the researcher to examine the objectives of any kind of study (Bhatti & Rehman, 2019). Besides, the researcher inveterate that suitable analysis methods necessary to achieve objectives and solve any problem practical or theoretical (Bhatti, Saad, & Gbadebo, 2020). In the present study, a quantitative approach used for data collection and solve the research problem. This study examined the relationship between WCM (as the independent variable) and the firm's profitability by measuring ROE (as the dependent variable). The prediction of the relationship is illustrated in the following Figure 1.

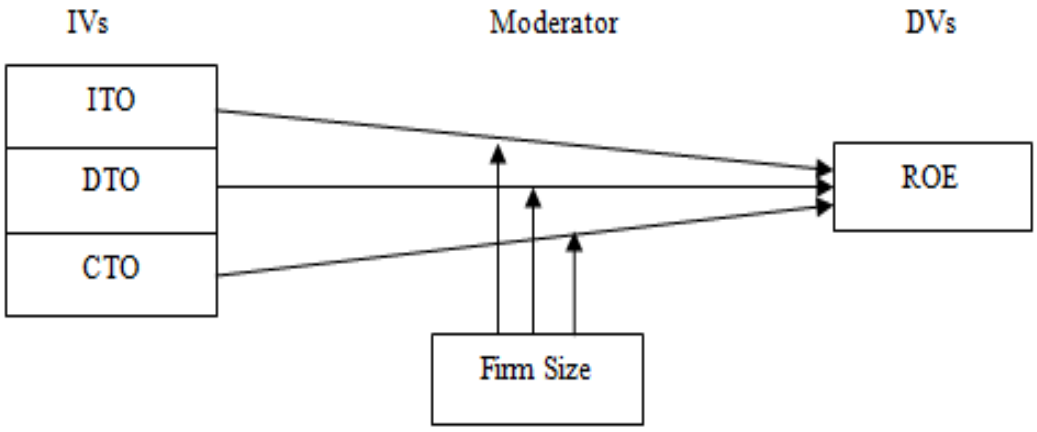

Figure 1: Research Framework

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3.2. Data Collection and Sample

The samples for this undertaking study consist of 69 firms of the non-financial sector listed in the Pakistan Stock Exchange (PSE), using a purposive stratified random sampling technique. Data sources used are secondary data from the internet and websites of the sample firms, State Bank of Pakistan, and PSE. For this study, data collected are taxes paid, interest paid, sales, EBIT, interest-bearing long term and short-term debts, and equity. For the selection of the samples, this study adopts the procedure of (Maeenuddin, Akhtar, et al., 2020). From each industrial sector, the sample-based on the available data selected 30% of firms. To be chosen for samples, the condition is that the selected firms should not be delisted even a single time from PSE during the entire period of 2007 to 2017. This current study used Smart PLS-SEM to compute the measurement model and, a structural model.

3.3. Measurement of Variables

3.3.1. Return on Assets (ROE)

It is the percentage of net income of the firm relative to its total assets. It shows how much a firm earns for this one-dollar investment in fixed assets. It can be calculated as;

$$ROE = EBIT / Shareholder's\ equity$$

3.3.2. Working Capital Management (WCM)

The WCM is reflected in the CCC (Leach & Melicher, 2011; Juan García-Teruel & Martinez-Solano, 2007). CCC can be calculated as:

$$CCC = DTO + ITO - CTO$$

Where:
DTO = Days debtors' turnover; ITO = Days Inventory turnover; CTO= Days payable turnover
The components of CCC will be measured as follows:

$$Debtors\ turnover = (Accounts\ receivable / Sales) \times 365$$
$$Inventory\ turnover = (Inventory / Cost\ of\ goods\ sold) \times 365$$
$$Payable\ Turnover = (Accounts\ payable / Purchase\ or\ CGS) \times 365$$

4. Empirical Results and Discussion

Statistical tool PLS-SEM was used to analyze data and to investigate the relationships between variables. This study used PLS-SEM because it does not require the data normality assumption. To explain the existence of the relationships between the variables, this study used the path coefficient. To examine the impact levels of independent variables on the dependent variable, and to test the significance of the relationships, T-statistic were used. P-value the confidence interval of the path coefficient was used in examining the significance of the relationships.

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Firstly, the descriptive statistic which shows the measures of central tendencies (mean, median, standard deviation, minimum and maximum value) was conducted. Then, to investigate the overall relationships between different indicators with each other to check if there is multicollinearity, the correlations between the indicators were examined. This study used overall analysis by regressing WCM components (ITO, DTO, CTO) all together on ROE to examine the relationship between WCM and ROE without any moderating effect.

Table 1: Collinearity Statistics (VIF)

	ROE	**ITO**	**DTO**	**CTO**
ROE				
ITO	1.063			
DTO	1.021			
CTO	1.052			

Table 1 indicated missing value, mean value, median value, minimum value, maximum value, kurtosis, and skewness for each of the variables. At the last stage, this study tested the hypothesis by investigating the relationships between independent variables (ITO, DTO, CTO) and dependent variable (ROE) individually with the firm size as the moderating variable (see Table 2).

Table 2: Overall Descriptive Statistics

Indicators	**Missing**	**Mean**	**Median**	**Min**	**Max**	**SD**	**Excess kurtosis**	**Skewness**
ROE	0	5.153	5.160	3.255	8.159	0.284	28.974	0.430
ITO	0	5.056	5.017	5.002	5.995	0.122	20.002	4.265
DTO	0	5.108	5.045	5.003	5.970	0.154	7.693	2.615
CTO	0	5.081	5.032	5.001	5.927	0.130	11.401	3.161
CCC	0	5.083	5.037	4.185	5.935	0.205	3.533	0.628
Firm size	0	23.056	23.134	16.948	27.803	1.651	0.745	-0.275

From the results, it was found that there is no missing value in the data set. The mean values for ROE, ITO, DTO, CTO, CCC, and firm size are 5.153, 5.056, 5.108, 5.081, 5.083, and 23.056 respectively. Similarly, the median values are 5.160, 5.017, 5.045, 5.032, 5.037, and 23.134. The standard deviations for each of the variables of ROE, ITO, DTO, CTO, CCC, and firm size are 0.284, 0.122, 0.154, 0.130, 0.205, and 1.651. Similarly, the minimum values, maximum values, skewness values, and kurtosis values are also available in the above-mentioned table of descriptive statistics. Table 3 shows the correlation between the indicators/variables.

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Table 3: Overall Indicator Correlations

Indicators	ROE	ITO	DTO	CTO	CCC	Firm Size
ROE	1.000					
ITO	0.060	1.000				
DTO	0.155	-0.117	1.000			
CTO	0.127	0.205	0.058	1.000		
CCC	0.072	0.377	0.642	-0.467	1.000	
Firm size	0.287	0.247	0.135	0.199	0.122	1.000

As per the results mentioned above, the correlation between ITO and ROE is 0.060, which means they are 6 percent correlated. The correlations between DTO with ROE and ITO are 0.155 and -0.117, show that both DTO and ROE have a positive correlation of 15.50 percent, while the correlation between DTO and ITO is 11.70 percent but in opposite direction. It displays that there is a negative relationship between DTO and ITO, wherewith every increase of one variable the other one decreases. The correlation values of CTO with ROE, DTO, and CTO are 0.127, 0.205, and 0.058 respectively. These show that there is a positive relationship of 12.70 percent between CTO and ROE, 20.50 percent with ITO, and 5.80 percent with CTO. The correlation of firm size (as the moderating variable) with ROE is 0.287 (28.70 percent), with ITO is 0.247 (24.70 percent), with DTO is 0.135 (13.50 percent), with CTO is 0.199 (19.90 percent), and with CCC is 0.122 (12.20 percent). These values show that firm size has positive relationships with all of the independent and dependent variables.

4.1.Relationship between WCM Components and ROE

4.1.1. Path coefficient and P-value

The relationships between independent variables (ITO, DTO, and CTO) with the dependent variable (ROE) are shown in Figure 2 below.

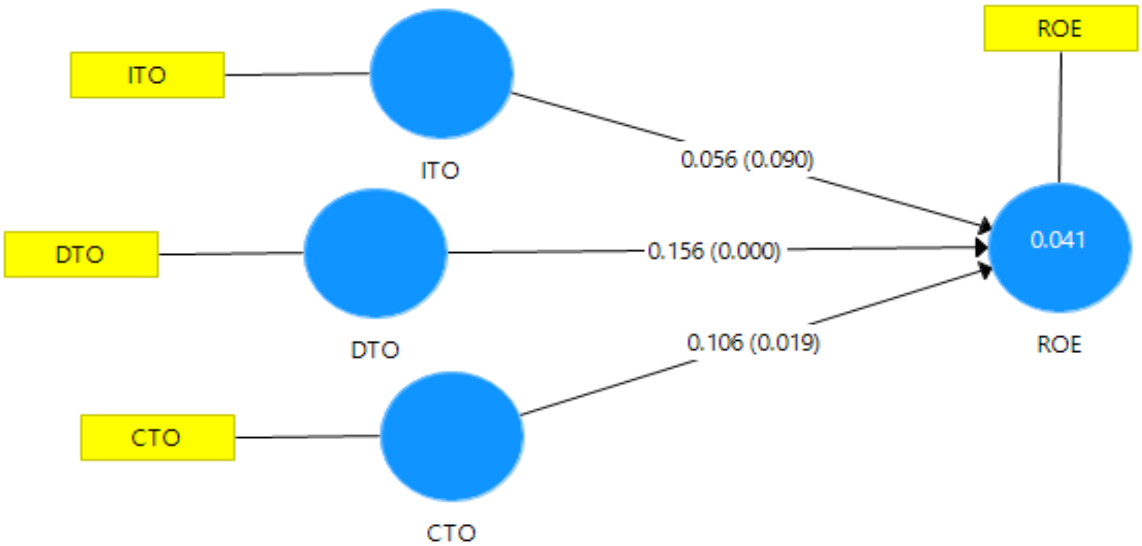

Figure 2: Path Coefficient with P-value

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Figure 2 shows the value of the path coefficient along with the P-value of significance. It also shows the explanatory power of the model or coefficient of determination R-square. The path coefficient shows the existence of a relationship as the null hypothesis for the path coefficient (H0 = the coefficient is zero). P-value shows the significance of the relationship between variables with the null hypothesis (H0 = the relationship between variables is not significant). R-square shows the explanatory power of the model, as to how many variations caused by independent variables due to the change in independent variables.

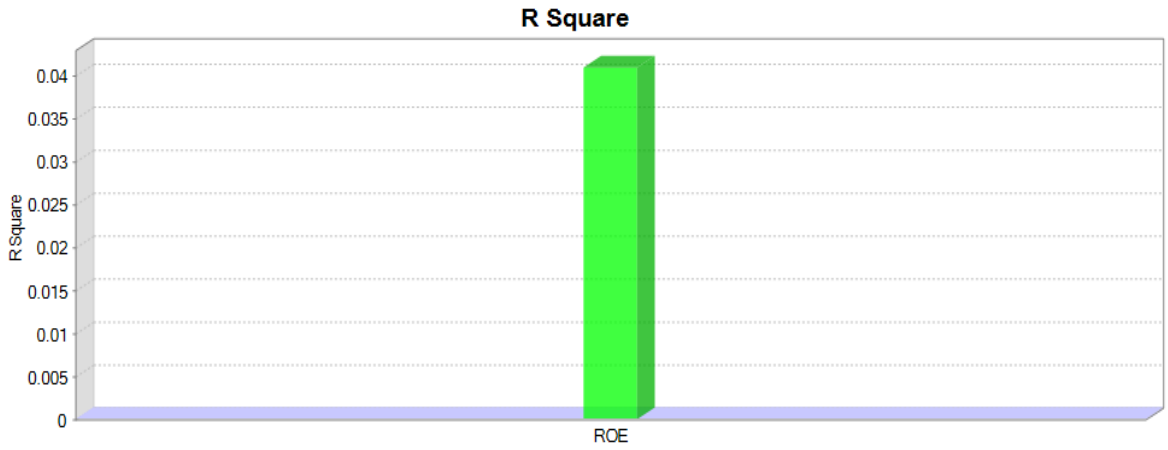
As per the above Figure 2, the path coefficient value between ITO and ROE is 0.056, and P-value is 0.0090, the P-value is more than the significant level of 0.05. Thus the relationship is not significant at a 5 percent level of significance. The path coefficient value and P-value for DTO and ROE are 0.156 (0.008). It shows that the relationship between DTO and ROE is significant at 1 percent level of significance. The path coefficient value for CTO and ROE is 0.106 (0.019). It explains that the relationship between CTO and ROE is significant at 1 percent level of significance.

4.1.2. R-Square

The value of the coefficient of determination or the explanatory power of the model is 0.041, which shows that 4.10 percent of the variation in the dependent variable is due to these independent variables ITO, DTO, and CTO.

Table 4: R-Square

	R-Square	Adjusted R-Square
ROE	0.041	0.037



4.1.3. Summary of Structural Model

In this part of the study, the direct and indirect relationships between independent variables (ITO, DTO, and CTO) and dependent variable (ROE) are tested. Values of loadings and path-coefficient deliberate that accomplish bootstrap with 5000 subsamples (Hair et al., 2013). Table 5 below shows a summary of the structural model. It concludes mean, standard

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deviations, path coefficient, T-statistics (individual significance test), significance value (P-value), and path coefficient confidence interval.

Table 5: Path Analysis Matrix

Hypothesis Path	Mean	S.D	Path Coeff.	T-Value	P-Value	Confidence Interval 2.5% - >97.5%	Result
ITO and ROE	0.107	0.034	0.056	1.698	0.090	-0.011 - >0.122	Insignificant
DTO and ROE	0.154	0.041	0.156	3.620	0.000	0.072 - >0.232	Significant
CTO and ROE	0.055	0.047	0.106	2.345	0.019	0.024 -> 0.207	Significant

As per the results, the inventory turnover ratio (ITO) has a mean of 0.107 with a standard deviation value of 0.034. The T-statistic value is 1.698 and P-value is 0.090. The T-statistic value is lesser than the critical value of 1.96, and the P-value is above 0.05 or 5 percent level of significance which shows an insignificant relationship at a 5 percent level of significance. The debtor turnover ratio (DTO) has a mean value of 0.154 with a standard deviation value of 0.041. The T-statistic value is 3.620, which is higher than the critical value of the two-tailed test 1.96. It shows the significance of the relationship. The P-value is 0.000, which indicates the relationship is significant at 1 percent level of significance.

From the above table, it is noted that all the variables have a P-value of less than 0.05 and a t-statistic value of more than 1.96. The mean value of CTO is 0.55 with a 4.7 percent deviation around the mean. The individual significance test or T-statistic value is 2.45 which is also higher than the critical value of 1.96 for two-tailed tests, which shows the significance of the relationship. The P-value is 0.019, which explains the significant relationship between CTO and ROE at a 5 percent level of significance. Therefore, this study concluded that independent variables of ITO and DTO have significant impacts on the firms' profitability measured by return on equity (ROE). While the relationship between CTO and ROE is insignificant.

Instead of reporting P-value or T-value, this study also examined the significance of the path coefficient or the relationship from the bootstrap confidence interval. It can be seen if a path coefficient is different significantly from zero or not. It is based on standard error derived from bootstrapping and specifies the range into which the true population parameter will fall assuming a certain level of significance of 5 percent. If the range of confidence interval does not include zero for an estimated path coefficient, the H0 (path is equal to zero) is rejected and is concluded as a significant result.

From Table 5, it is recorded that the confidence interval for the path coefficient of ITO and ROE is -0.011 - >0.122, which means there is zero in the range (the minimum value is less than zero or Mini<0). It shows that the relationship is insignificant. The confidence interval for DTO to ROE is 0.072 - >0.232, which shows there is no zero in the range (the

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smaller value is higher than zero), thus the relationship is significant. The confidence interval for the path coefficient of CTO and ROE is 0.024 - >0.207, which means there is no zero in the range (the minimum value is greater than zero). It is concluded that the H0 is rejected and that the relationship is significant. From all of the above-mentioned tests of path coefficient, T-statistic, P-value, and confidence interval of path coefficient, it is concluded that there are significant relationships between WCM components of ITO & DTO with firms' profitability (ROE). While the relationship between CTO and ROE is Insignificant.

4.2.Examining the Moderating role of firm size

4.2.1. Relationship between ITO and ROE with the moderating effect of firm size

The path coefficient, P-value, and R-square for the relationship between ITO and ROE are displayed in Figure 3 below:

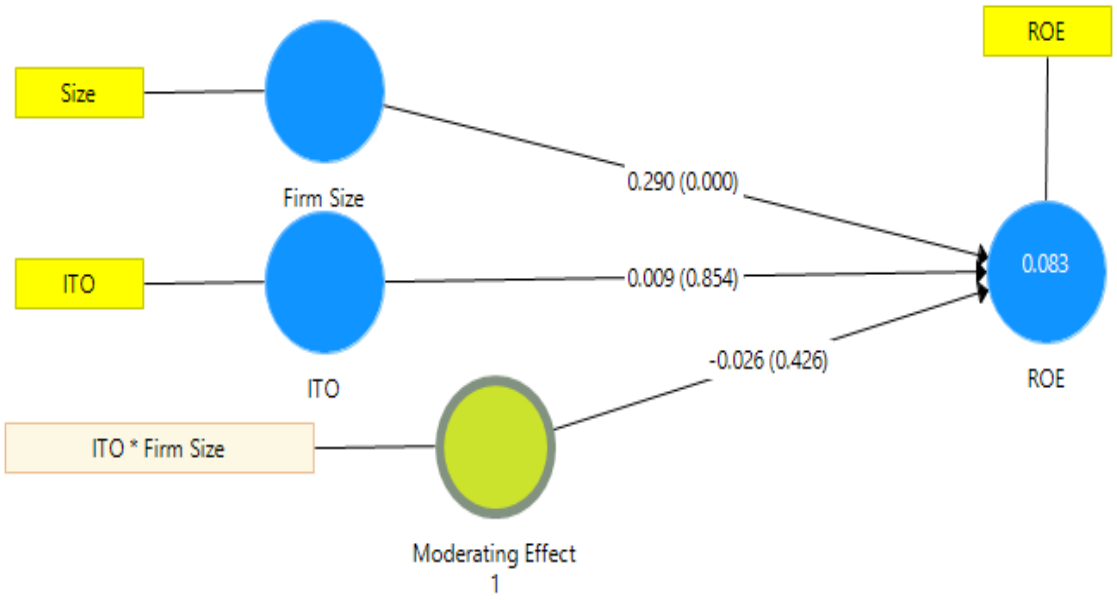

Figure 3: Path Coefficient with P-value

The path coefficient value for the relationship between ITO and ROE = 0.010 (0.854), firm size and ROE = 0.290 (0.000), and moderating effect and ROE is -0.026 (0.426). The moderating effect of firm size on ROE is not significant. It is concluded that firm size has no moderating the effect of ITO on ROE.

4.2.2. Summary of Structural Model

Table 6 shows the complete path analysis including mean, standard deviations, path coefficient, t-statistics (individual significance test), significant value (P-value), and path coefficient confidence interval.

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Table 6: Path Analysis Matrix

Hypothesis Path	Mean	S.D	Path coeff.	T-value	P-value	Confidence interval 2.5% -> 97.5%	Result
ITO and ROE	0.009	0.049	0.009	0.184	0.854	-0.089 -> 0.101	Insignificant
Firm size and ROE	0.292	0.040	0.290	7.174	0.000	0.214 -> 0.371	Significant
Moderating effect	-0.026	0.033	-0.026	0.796	0.426	-0.085 -> 0.043	Insignificant

It is noted that the confidence interval for ITO and ROE is -0.089 - >0.101, zero is included in the range (the minimum value is less than zero), which means that the relationship is insignificant. The confidence interval for Firm Size and ROE is 0.214 - >0.371 which means no zero is included in the range (the minimum value is higher than zero), and it means that the relationship is not significant. The moderating effect also has a confidence interval of -0.085 ->0.043, which means that the relationship is not significant (the minimum value is less than zero). The T-value for ITO and ROE relationship is 0.184 with a P-value of (0.854). The T-value for firm size and ROE relationship is 7.174 (0.0000) and for moderating effect and ROE is 0.796 (0.426). R-square is 8.30 percent. From the result, it is noted that the T-value of moderating effect and ROE relationship is less than the critical value of two-tailed test 1.96, which explains that the relationship is not significant. Thus, from the overall test results of path coefficient, T-statistic, P-value, and path coefficient confidence interval, it is concluded that the moderating effect of firm size on the relationship of ITO and ROE is not significant.

4.2.3. Relationship between DTO and ROE with the moderating effect of firm size

1) Path coefficient and P-value

The following Figure 4 shows the path coefficient and P-value for the relationship between DTO and ROE with the firm size as the moderating variable.

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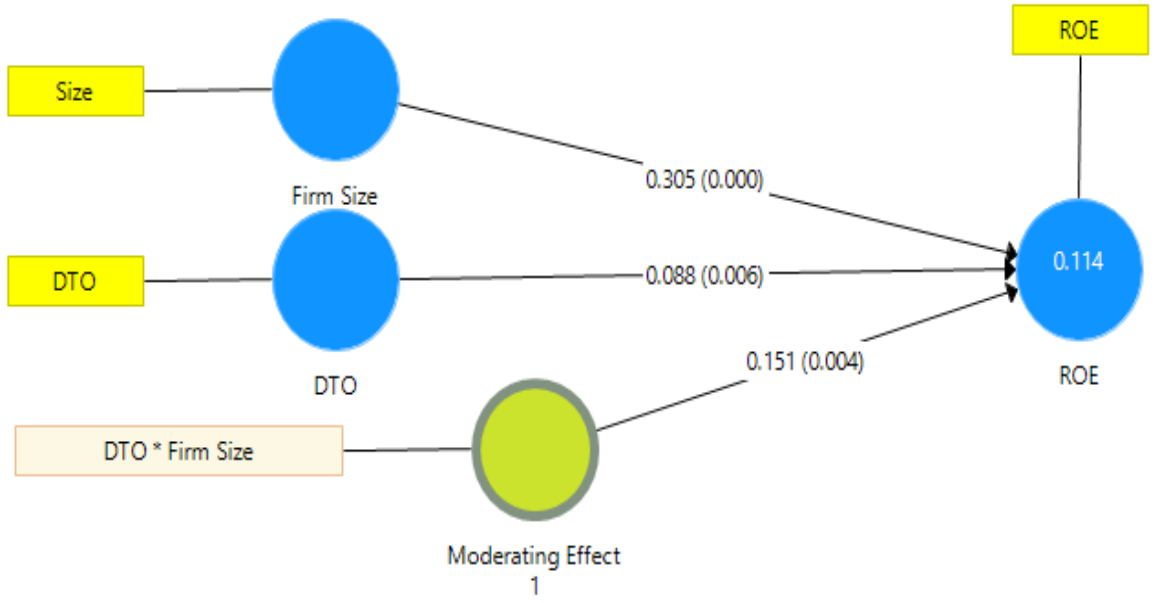

Figure 4: Path Coefficient with P-value

Figure 4 shows the path coefficient value for the relationship between DTO and ROE = 0.0088 (0.006), Firm size and ROE = 0.305 (0.000), and moderating effect and ROE is 0.151 (0.004). The P-value of the moderating effect of firm size on ROE is less than 0.05, which means that the impact is significant. It is concluded that firm size has a significant moderating effect on the relationship between DTO and ROE.

Table 7: Path Coefficient Matrix

Relationships	**Mean**	**S.D**	**Path Coeff.**	**T-Value**	**P-Value**	**Confidence Interval 2.5% -> 97.5%**	**Result**
DTO and ROE	0.087	0.033	0.088	2.739	0.006	0.020 -> 0.150	Significant
Firm size and ROE	0.308	0.039	0.305	7.819	0.000	0.230 -> 0.384	Significant
Moderating Effect	0.152	0.005	0.151	2.863	0.004	0.046 -> 0.260	Significant

From Table 7 above, it is noted that the confidence interval for DTO and ROE is 0.020 - >0.150, firm size and ROE is 0.230 - >0.384, and the moderating effect is 0.046 - >0.260. Zero is not included in the range (the minimum value is more than zero), which means that the relationships are significant. The T-value for DTO and ROE relationship is 2.739 with P-value of (0.006). The T-value for firm size and ROE relationship is 7.819 (0.000), and for moderating effect and ROE is 2.863 (0.004). R-square is 8.30 percent. From the result, it is noted that the T-value of moderating effect and ROE relationship is more than the critical value of two-tailed test 1.96, which explains that the relationship is significant. From this

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presentation, it is concluded that firm size has a significant moderating impact on the relationship between DTO and ROE.

4.2.4. Relationship between CTO with ROE with the moderating effect of firm size

1) Path coefficient and P-value

The following Figure 8 shows the path coefficient, P-value, and R-square value for the relationship between CTO and ROE along with the firm size as the moderating variable.

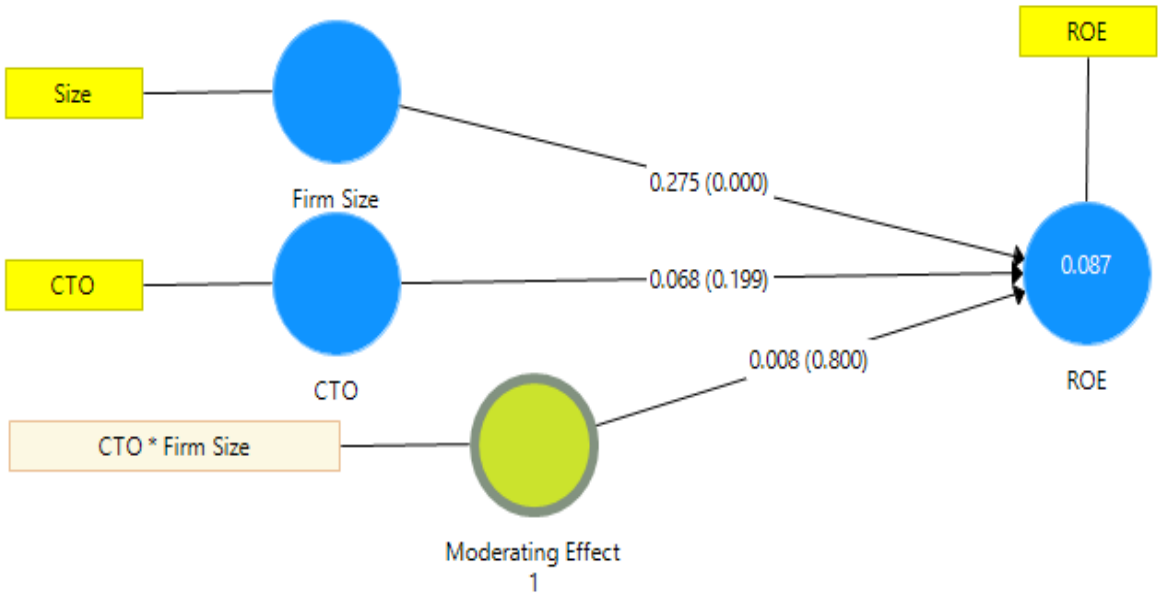

Figure 8: Path Coefficient with P-value

The path coefficient value for the relationship between CTO and ROE is 0.0068 with P-value (0.006), between firm size and ROE is 0.275 (0.000), and between moderating effect and ROE is 0.008 (0.800). The P-value of the moderating effect of firm size on ROE is more than 0.05, which means that the impact is not significant. It is concluded that firm size has no significant moderating effect on the relationship between DTO and ROE.

2) Summary of Structural Model

The following Table 6 shows the path coefficient matrix for the relationship of CTO and ROE with the moderating effect of firm size.

Table 8: Path Coefficient Matrix

Relationships	Mean	S.D	Path coeff.	t-value	P-value	Confidence interval 2.5% -> 97.5%	Results
CTO and ROE	0.067	0.053	0.068	1.286	0.199	-0.015 -> 0.186	Insignificant
Firm size and ROE	0.276	0.040	0.275	6.777	0.000	0.195 -> 0.354	Significant
Moderating Effect	0.010	0.034	0.008	0.253	0.800	-0.056 -> 0.076	Insignificant

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Table 8 shows that the confidence interval for CTO and ROE is -0.015 - >0.186, firm size and ROE is 0.195 - >0.354, and moderating effect is -0.056 -> 0.076. Zero is not included in the range for the relationship of Firm size->ROE (the minimum value is more than zero), while zero is included in the interval range for the relationships between CTO and ROE, and between moderating effect and ROE, which shows that the relationship between moderating variable and ROE is not significant. The T-value for CTO and ROE relationship is 1.286 with a P-value of 0.199. The t-value for firm size and ROE relationship is 6.777 (0.000) and between moderating effect and ROE is 0.253 (0.800) with R-square of 8.70 percent. From the result, it is noted that the T-value of moderating effect and ROE's relationship is less than the critical value of two-tailed test 1.96 which shows that the relationship is not significant. From this presentation, it is concluded that firm size is not moderating the relationship between CTO and ROE.

4.2.5. Relationship between CCC and ROE with the moderating effect of firm size

1) Path coefficient and P-value

The relationships between CCC and ROE, firm size and ROE, and moderating effect of firm size on ROE are presented in the following Figure 5.

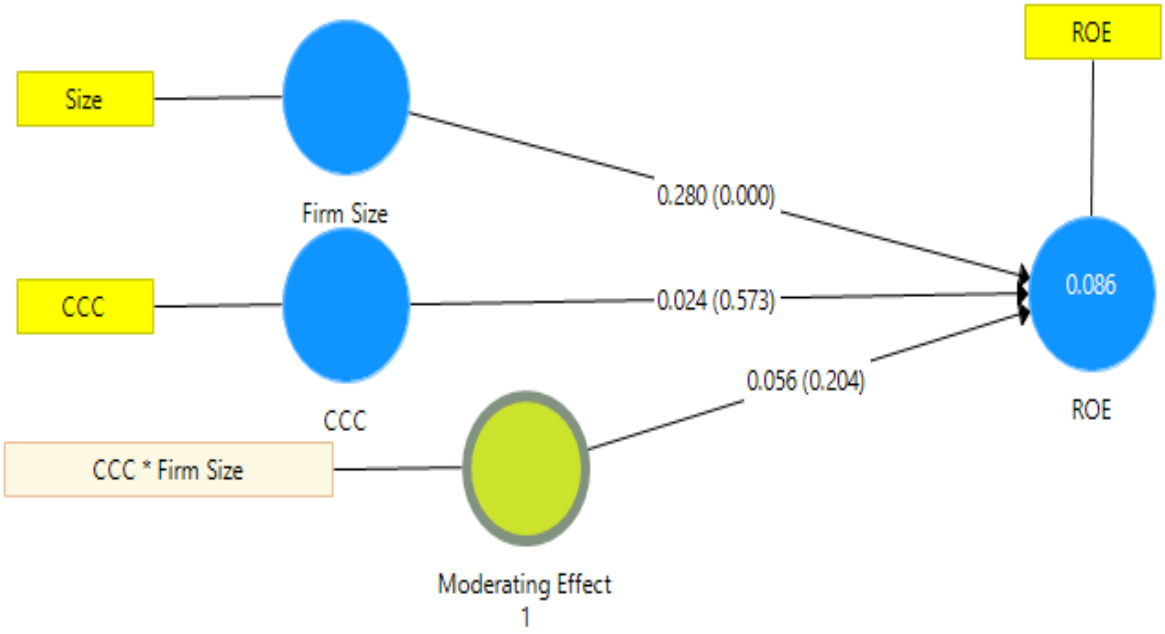

Figure 5: Path coefficient with P-value

Figure 5 shows the path coefficient value for the relationship between CCC and ROE is 0.024 with P-value is 0.573, between firm size and ROE is 0.280 (0.000), and between moderating variable and ROE is 0.056 (0.204). The P-value of the moderating effect of firm size on ROE is more than 0.05, which means that the impact is not significant. It is concluded that there is firm size has no significant moderating effect on the relationship between CTO and ROE.

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2) Summary of Structural Model

The following Table 7 shows the path coefficient matrix for the relationship of the cash conversion cycle with ROE along with the moderating effect of firm size.

Table 9: Path Coefficient Matrix

Relationships	Mean	S.D	Path coeff.	t-value	P-value	Confidence interval 2.5% - >97.5%	Results
CCC and ROE	0.024	0.044	0.024	0.563	0.573	-0.066 - >0.103	Insignificant
Firm size and ROE	0.282	0.038	0.280	7.144	0.000	0.209- >0.359	Significant
Moderating Effect	0.056	0.045	0.056	1.271	0.204	-0.034 - >0.144	Insignificant

The confidence interval for CCC and ROE is -0.066 - >0.103, firm size and ROE is 0.209 - >0.359, and moderating effect is - 0.034 - >0.144. Zero is not included in the range for the relationship between firm size and ROE (the minimum value is more than zero). While zero is included in the interval range for the relationships between CCC and ROE, and between moderating variable and ROE, which shows that the relationship between the moderating variable and ROE is not significant. The T-value for CCC and ROE's relationship is 0.563 with a P-value of 0.573. The T-value for firm size and ROE's relationship is 7.144 (0.000) and for moderating effect and ROE is 1.271 (0.204). R-square is 8.60 percent. From the result, it is noted that the T-value of moderating effect and ROE relationship is less than the critical value of two-tailed test 1.96, which shows that the relationship is not significant. From this presentation, it is concluded that firm size is not moderating the relationship between CTO and ROE.

5. Conclusion, Limitations, and Future Recommendations

This study aims to examine the relationships between working capital management (WCM) components and the firm's financial performance measured by return on equity (ROE). This undertaking study used PLS-SEM as the tool for investigating the relationships which make it a contribution to the literature. It is because as per the researchers' knowledge, this paper is the first study to use PLS-SEM to examine the relationships between WCM components and ROE. The samples for this study were secondary data obtained from the company's consolidated annual report, State Bank of Pakistan, and Pakistan Stock Exchange (PSE). These firms are of 69 non-financial sector firms listed in PSE for 11 years, from 2007-2017.

To get the best possible results, the relationships between WCM components and ROE were investigated using different techniques. Path analysis was used, consisting of path coefficient, T-value, P-value, and confidence interval. WCM components on ROE, without the effect of the moderating variables, were regressed. This resulted in a significantly positive

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for all relationships. The relationships between WCM components (ITO, DTO, and CTO) and the firm's profitability (ROE) were significantly positive. Then, to investigate the effect of firm size as a moderating variable, the same test procedure was repeated. The tests presented that the significance value or P-value for moderating effect on the relationship between ITO and ROE is 0.426, between DTO and ROE is 0.004, between CTO and ROE is 0.800, and between CCC and ROE is 0.204. The P-value for the moderating effect on the relationship between DTO and ROE is less than 0.05, while the other two are more than 0.05. It shows that a firm's size has a significant moderating effect on the relationship between DTO and ROE, while it has no significant moderating effect on the relationship between ITO and ROE, between CTO and ROE, and between CCC and ROE.

Based on the findings of this study, it is suggested that management has to pay attention to every component of the WCM altogether, to increase the profitability of the firm. The firm's managers must seriously consider the efficient management of all of the components of working capital such as inventory, receivable, and payable.

Some limitations can still be found in this study. As far as our knowledge, the PLS-SEM was applied for the first time, but this study only used one ratio (ROE) to measure the profitability of the firm. The sample used in this study was also limited as from non-financial sector firms and one specific country only (Pakistan). It is recommended that in the future, the same PLS-SEM model could still be applied with different profitability measurement tools such as return on capital employed (ROCE). It is also suggested that a study should be conducted using a newly developed ratio economic value-added momentum for different industrial sectors, and in different geographical locations. This study also helps the firm's managers to enhance the firm's performance by managing the WCM components efficiently and effectively.

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