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RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND RETURN ON ASSETS: EVIDENCE FROM PAKISTAN

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Abstract

This undertaking study investigated the relationship between working capital management as an independent variable that was operationalized by ITO, DTO, and CTO, and the firms' profitability by measuring Return on Assets (ROA) as the dependent variable. Sample of 69 non-financial sector firms of Pakistan which are listed in the Pakistan Stock Exchange for 11 years (2007-2017) was taken. PLS-SEM was used for the first time to examine the relationship. The relationship was examined by descriptive statistics, correlation, path analysis, including path coefficient, P-value, t-value, and path coefficient confidence interval. The path coefficient shows the existence of the relationship, P-value shows its significance, the t-value shows the level of relationship, and the confidence interval shows the significance of the relationship. The results show that without the moderating effect of firm size, overall working capital management has a positive impact on ROA. Firm size has a significant moderating effect on the relationship between CTO and ROA. While the effect of firm size as a moderator on the relationships between ITO and ROA, DTO and ROA, and CCC and ROA are not significant. This study concluded that to enhance the profitability of the firm, and to get the best results from ROA, the managers should focus on the efficient management of working capital components (ITO, DTO, and CTO). The limitation of the study is that the samples used are only from the non-financial sector firms of one specific country (Pakistan), using only one ratio (in this case, ROA) for measuring profitability. Future studies should consider other ratios such as ROE, ROCE, and EVAM by using the same model of PLS-SEM.

Keywords: *Working Capital Management (WCM), Cash Conversion Cycle (CCC), Return on Assets (ROA), Average Inventory Turnover (ITO), Days Debtors Turnover (DTO), Days Creditor Turnover (CTO)*

1. Introduction

The theory of the firms has not changed which stated that capital must have its most optimized uses and obtains the highest returns for the stakeholders. For every decision-maker of a firm, it is an important responsibility to be able to measure the firm's performance in terms of expenses, financing, and investment. Measuring the firm's performance primarily intended to measure the firm's profitability (Maeenuddin, Bansal, et al., 2020). The results of this measurement are beneficial for the management in deciding the structure of a firm's financial, acquisition value, whether to continue or stop certain projects and setting the proper incentive for all employees(Maeenuddin, Akhtar, & Raza, 2020). There are numbers of tools for finding the best possible measurement tool for measuring the performance of the firms, which become quite a

challenge for the management, such as 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) (Maeenuddin, Bansal, et al., 2020).

Working capital management (WCM) is concerned with managing the current assets and current liabilities with the objective is to maximize the ROA and to minimize the liquidation and bankruptcy risks (Gumber & Kumar, 2012). The main objective of the efficient management of working capital is to ensure that the firm's operational activities are run efficiently and to ensure that the firm has sufficient ability to pay its upcoming operational expenses and short term debt upon maturity. In this case, ROA is the percentage of net income of the firm relative to its total assets. It shows that how much a firm earns for its one dollar investment in fixed assets (Maeenuddin, Bansal, et al., 2020).

Using the working capital management components is significant in providing the differences in the timing of the cash flow cycles related to inventory, accounts payable, and accounts receivable, and for some durable goods producers, advance deposits or progress collections (Boisjoly, Conine, & McDonald, 2020). There has been some critical observation on firms' financial performance which is associated with managing working capital. WCM is the principal for firms in controlling the future likelihood of financial limitations and improves firm liquidity (Maeenuddin, Bansal, et al., 2020). The firms' incapacity to convert working capital to cash will produce liquidity problems for them in the future. It means that having an efficient WCM is having efficient management of the firms' cash conversion cycle (CCC). A good WCM indicates a higher firm value (Dhole, Mishra, & Pal, 2019). It is the fact that when the firm's struggle to effectively manage their working capital will end up in losing important chances to create value. WCM leads to enhancing the firm's performance. Some of the studies featured their approach to measuring the firm's performance from the accounting point of view such as the ratio of returns of assets (ROA). But still, some arguments come up on how WCM in terms of whether average inventory turnover (ITO), debtors' turnover (DTO), and creditor turnover (CTO) affect the profitability of the firm (Maeenuddin, Bansal, et al., 2020).

A study on the firm's profitability by using ROA was conducted by (Khidmat & Rehman, 2014) on a different view. Their study used ROA and ROE as dependent variables to measure the impact of liquidity and solvency on the firm's profitability. This study analyzed 36 companies of Pakistan using data from 2001-2009, with the findings being there is a positive relationship between a firm's liquidity and ROA, wherewith every increase in liquidity, ROA increases too. It also found that the relationships between a firm's solvency and ROA and ROE are significantly negative.

This undertaking study using for the first time statistical tool PLS-SEM as for as author knowledge is concerned to investigate the impact of the overall WCM components, operationalized by ITO, DTO, and CTO on the firm's performance measured by return on asset ratio (ROA) of 69 non-financial sector firms of Pakistan, listed in the Pakistan Stock Exchange (PSE) for 11 years (2007-2017). This study gave some view on how the working capital in non-financial sector firms is managed to increase firms' performance. CCC shows a firm efficiency in terms of its trade debit, trade credit, and inventory policies. Using this measure gives benefits such as the ease in conversion to measurable units i.e., ITO, DTO, and CTO. It is highlighted in this study that a more reliable measure of the firm's performance is significant in providing a better service in terms of the needs of the shareholders, customers, and employees. The result of this study is hoped to be beneficial for the firm managers on how to manage the firm's working capital to increase the firm's profitability.

2. Literature Review

Many studies have been conducted to describe the relationship between (WCM) and firms' performance in various types of industries. (Pirttilä, Virolainen, Lind, & Kärri, 2020) studied the operational WCM in the Russian automotive supply chain. The theory of transaction cost (TCE) perspective was used, and CCC and ROA were used as the measurements. Based on the analysis made in this study, it was found that the long accounts payable payment period is prevalent, inventory levels are high, and CCC is short. It was also noted that firms that are the most profitable are the ones that make the payments to the suppliers promptly. It is concluded that to keep the firms' competitive advantage, firms must successfully finance their supply chains.

Another research on the importance of an efficient WCM which will improve the firm's financial performance was conducted by examining the relationship between efficient WCM and financial constraints (Dhole et al., 2019). This study took samples of Australian firms and used a text-based measure of financial constraints which made it the first study with the measurement of text-based financial constraints for Australian firms. It was found efficient WCM of the firms is related to lower financial constraints in the next two to three years. From this study, it was also shown that with efficient WCM there is a negative significant relationship between financial constraints and future share price. (Boisjoly et al., 2020) studied the longitudinal impact of continuous improvement programs and aggressive working capital practices from 1990 to 2017 on accounts receivable turnover, inventory turnover, days payables outstanding, and cash conversion cycle. The result of the study showed that there are significant changes significantly in the means and for these variables, which are consistent with stricter financial management and less risk-taking in trade credit. These metrics are related to the impacts of equity valuation, and with increased profitability, as captured by return on invested capital. The results show that the relationship is the strongest in the industry of transportation and communications but in terms of financial services, it is the weakest.

(Maeenuddin, Bansal, et al., 2020) used CCC as the comprehensive measure of WCM in the study. CCC shows a firm efficiency in terms of its trade debit, trade credit, and inventory policies. It is said that further benefit of using this measure is the ease in conversion to measurable units i.e., days debtor's turnover (DTO), days inventory turnover (ITO), and days creditor turnover (CTO). This study selected these variables for a specific reason as they can represent a unique aspect of WCM. It is shown on the results which were based on descriptive statistics and univariate as well as multivariate regression analysis, that firms with relatively high DTO and ITO have high CCC while firms with more efficient management of DTO and ITO result in lower mean values for CCC. The relationship between working capital and the firm's performance was also examined in Japan (Tsuruta, 2019). The study was conducted to know how fast the firms can adjust the firms' working capital when the global financial crisis was happening. Data used for this study was quarterly firm-level data. Based on the analysis, this study found that during the crisis the adaptation of working capital was weaker. Furthermore, it was found out that during the crisis, for larger firms specifically, the association between excess working capital and firm performance was significantly negative. It was stated that during and outside periods of crisis the firms borrowed from banks to fund their excess working capital and reduce their internal cash. Thus, the effect of working capital and firm performance related to the crisis period did not last long.

Studies on effective WCM which affect firms' profitability have also been conducted in the sector of health care firms or this case in hospitals. The managers and policymakers of the hospitals need to pay attention to the level of debt in managing working capital. (Dalci & Ozyapici, 2018) examined the association between working capital and hospital's profitability with the financial leverage as the moderating variable. The samples were 52 hospitals with 468 observations taken from the data set from the ORBIS. The result which was derived from regression analysis revealed that when the length of CCC for hospitals with high financial support is increased, their profitability decreases. On the other hand, for hospitals with low financial support, increasing the length of CCC turned out can increase profitability. This finding shows that leverage affected the relationship between CCC and hospitals' profitability. This result also helps managers and policymakers of hospitals to apply an effective working capital with the degree of financial leverage that is taken into consideration. Also the decision on whether to increase or decrease the CCC to improve profitability.

The working capital components (credit receivable, inventory, and trade payable) are often associated with the short term turn over cycles. (Chauhan, 2019) studied the extent of short-term flexibility in the decisions of the firms' WCM. This study contradicted the findings of the previous literature which suggested that working capital allotments are driven by firms' concern on developing their inter-temporal cash flows and sales. The result of this study revealed that it is the firm-specific time-invariant factors that are the driving force. The research on using a traditional measure such as return on assets (ROA) to investigate firms' performance was conducted by (Maeenuddin, Akhtar, & Raza, 2020). This study used several statistical tools such as regression for the analysis, F-statistics, T-statistics, and Beta coefficients for measuring the economic value-added momentum (EVAM). The result of this study stated that firm managers can create value by reducing their firms' CCC.

Regarding EVAM, this study found that the relationship between WCM and the firms' EVAM is significant.

From several previous studies mentioned above, it is obvious that research on the relationship between WCM and the firms' profitability has been done in various countries, in different sectors, and numerous business conditions. Related to this topic of research respectively, the researchers mentioned above explored the impact of the components of WCM on the firms' profitability, using various tools to measure the firms' performance measurement. This undertaken study, however, tried to widen the scope of the study by using PLS-SEM for the first time for the investigating of the relationship between WCM and ROA in the different environments, in the non-financial sector firms of Pakistan.

3. Methodology

3.1. Research Framework

This study examined the relationship between WCM (as the independent variable) and the firm's profitability by measuring ROA (as the dependent variable). The prediction of the relationship is illustrated in the following Figure 1.

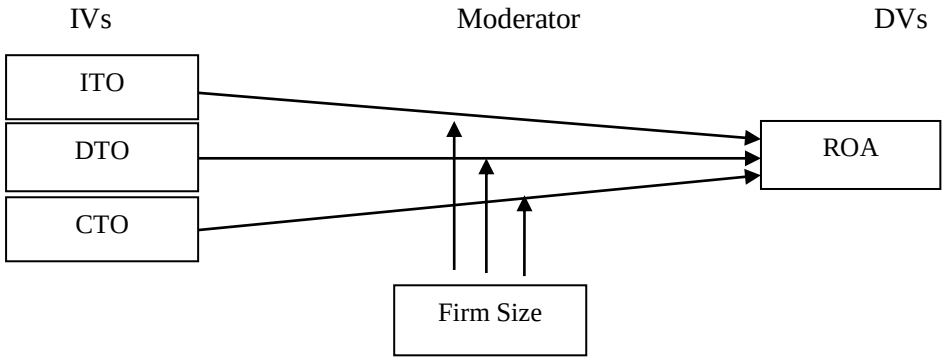

Figure 1: Research Framework

3.2. Data Collection and Sample

This undertaking study took samples of 69 firms of the non-financial sector listed in the Pakistan Stock Exchange (PSE). To get the samples, a purposive stratified random sampling technique was used. Data sources came from secondary data sources from the internet and websites of the sample firms, State Bank of Pakistan, and PSE. Data collected for the study includes Sales, EBIT, taxes paid, interest paid, interest-bearing long term and short-term debts, and equity. Purposive stratified random sampling was used for the study as there is a total of 26 non-financial sectors listed in the PSE. For sample selection and screening, the procedure of the previous study (Maeenuddin, Akhtar, et al., 2020) was followed. From each industrial sector, 30 percent of firms were selected for the sample-based on the available data. Condition applied for the sample selection was, the selected firms should be listed for the entire period and should not be delisted even a single time from PSE during the entire period.

A further study regarding the relationship examined in this study is needed to help the firms' decision-makers decide which tools can assist the requirements of the shareholders, customers & employees better. This study also helps to encourage the firm managers' hard work to improve the performance of the firm through managing the WCM components efficiently and effectively.

3.3. Measurement of Variables

3.3.1. Return on Assets (ROA)

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;

$$ROA = EBIT / Total\ assets$$

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) x 365
Inventory turnover = (Inventory / Cost of goods sold) x 365
Payable Turnover = (Accounts payable / Purchase or CGS) x 365

4. Empirical Results and Discussion

For the data analysis and examining the relationship between variables, statistical tool PLS-SEM was used. The main reason behind the use of PLS-SEM is, it does not require the assumption of data normality. This study used the path coefficient to examine the existence of the relationship between the variables. T-statistic was used to examining the level of impact of independent variables on the dependent variable. To examine the significance of the relationships, P-value was used as well as the confidence interval of the path coefficient. The significance of the relationships was also examined from the t-statistic or t-value. For the first step, this study examined the descriptive statistic, which shows the measures of central tendencies (mean, median, standard deviation, minimum and maximum value). Then the correlations between the indicators were examined to investigate the overall relationships between the different indicators with each other to examine the existence of multicollinearity. This study used overall analysis by regressing WCM components (ITO, DTO, CTO) at the same time on ROA to examine the relation between WCM and ROA without any moderating effect. Finally, this study tested the hypothesis by examining the relationships between each independent variable (ITO, DTO, CTO) and dependent variable (ROA) individually with the moderating effect of firm size (see Table 1).

Table 1: Overall Descriptive Statistics

Indicators	Missing	Mean	Median	Min	Max	SD	Excess kurtosis	Skewness
ROA	0	0.139	0.119	-0.784	0.611	0.122	5.183	-0.132
ITO	0	0.056	0.017	0.002	0.996	0.122	20.00	4.265
DTO	0	0.108	0.045	0.003	0.970	0.154	7.693	2.615
CTO	0	0.081	0.032	0.001	0.927	0.130	11.401	3.161
CCC	0	0.083	0.037	-0.815	0.935	0.205	3.533	0.628
Firm size	0	23.06	23.13	16.95	27.80	1.651	0.745	-0.275

Table 1 includes missing value, mean value, median value, minimum value, maximum value, kurtosis, and skewness for each of the variables. From the results, it was found that there is no missing value in the data set. The mean values for ROA, ITO, DTO, CTO, CCC and firm size are 0.139, 0.056, 0.108, 0.081, 0.083 and 23.056 respectively. Similarly, the median values are 0.119, 0.017, 0.045, 0.032, 0.037, and 23.134. The standard deviations for each of the variables of ROA, ITO, DTO, CTO, CCC, and firm size are 0.122, 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 2: Overall Indicator Correlations

Indicators	ROA	ITO	DTO	CTO	CCC	Firm Size
ROA	1.000					
ITO	0.115	1.000				
DTO	0.104	-0.117	1.000			

CTO	0.153	0.205	0.058	1.000		
CCC	0.049	0.377	0.642	-0.467	1.000	
Firm size	0.271	0.247	0.135	0.199	0.122	1.000

Table 2 shows the correlation between the indicators/variables. As per the results mentioned above, the correlation between ITO and ROA is 0.115, which means they are 11.50 percent correlated. The correlations between DTO with ROA and ITO are 0.104 and -0.117, show that both DTO and ROA have a positive correlation of 10.40 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 ROA, DTO, and CTO are 0.153, 0.205, and 0.058 respectively. These show that there is a positive relationship of 15.30 percent between CTO and ROA, 20.50 percent with ITO, and 5.80 percent with CTO. The correlation of firm size (as the moderating variable) with ROA is 0.271 (27.10 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 and ROA

4.1.1. Path coefficient and P-value

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

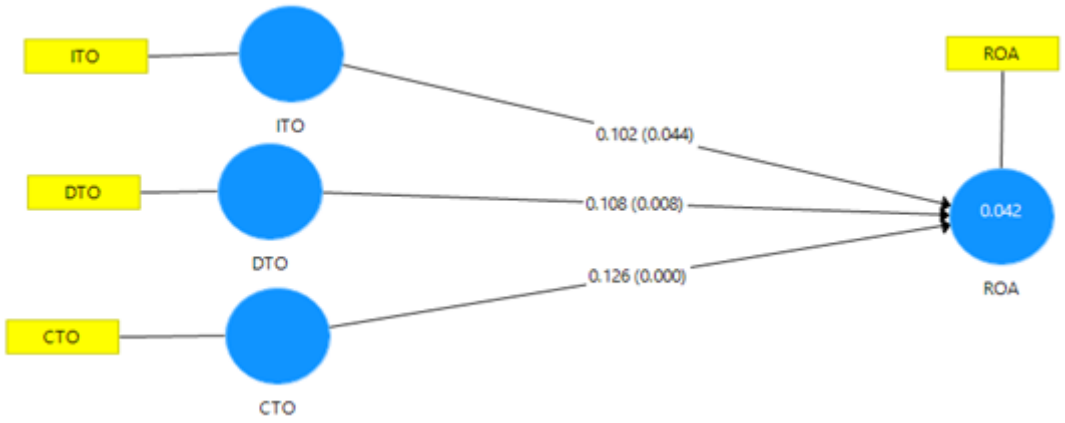

Figure 2: Path Coefficient with P-value

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), while 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 diagram, the path coefficient value between ITO and ROA is 0.102, and P-value is 0.044, which shows that the relationship is significant at a 5 percent level of significance. The path coefficient value and P-value for DTO and ROA are 0.108 and 0.008 respectively. It shows that the relationship between DTO and ROA is also significant at 1 percent level of significance. The path coefficient value for CTO and ROA is 0.125 and P-value is 0.000. It explains that the relationship between CTO and ROA is significant at 1 percent level of significance. The value of the coefficient of determination or the explanatory power of the model is 0.042, which shows that 4.20 percent of the variation in the dependent variable is due to these independent variables ITO, DTO, and CTO.

The relationship between independent variables and the dependent variable is displayed in the following Figure 3.

Figure 3: Representation of Path Coefficient

Figure 3 displays the path coefficient. Each bar shows the strength of the relationship. The stronger the relationship is, the higher the bar is. The relationship between CTO and ROA has the highest path coefficient value, and between ITO and ROA has the lowest path coefficient value. But the important thing here is that all three independent variables affect the dependent variable ROA.

4.1.2. Individual Significance Test (t- statistic)

The T-statistic value for the relationship between WCM components and firm profitability is presented in Figure 4 as follows.

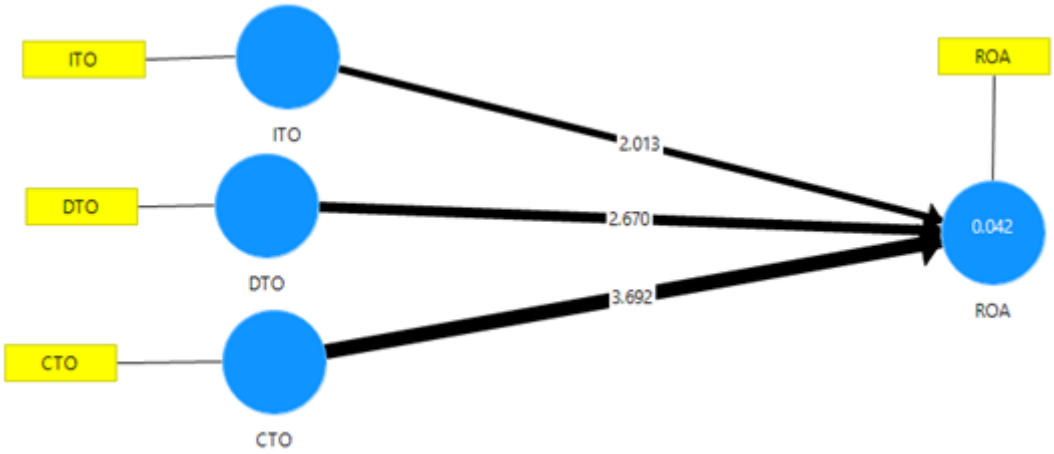

Figure 4: Individual Significance Test (T- statistic)

Figure 4 shows the t-statistic or t-value for the relationships between WCM components and the firm's profitability. The boldness of the arrows shows the strength of the relationships. The bolder the arrow is, the stronger relationship between two variables is. From the diagram, it is noted that the T- value for ITO and ROA relationship is 2.013, for DTO and ROA is 2.670 and for the relationship between CTO and ROA is 3.692, which is the highest in the group and also has the boldest arrow for the relationship. The value of R-square is also shown above as it is 0.042 which shows that 4.20 percent of the variation in ROA is caused by WCM components.

4.2. Path Analysis

Table 3 below shows the summarized results of complete path analysis including mean, standard deviations, Path Coefficient, T-statistics (individual significance test), significance value (P-value), and Path Coefficient confidence interval.

Table 3: Path Analysis Matrix

Relationships	Mean	S.D	Path Coeff.	T-Value	P-Value	Confidence Interval 2.5% -> 97.5%

ITO and ROA	0.101	0.051	0.102	2.013	0.044	0.004 -> 0.200
DTO and ROA	0.110	0.041	0.108	0.670	0.008	0.129 - > 0.187
CTO and ROA	0.125	0.034	0.126	3.692	0.000	0.058 -> 0.192

As per the results, the inventory turnover ratio (ITO) has a mean of 0.101 with a standard deviation value of 0.051. The t-statistic value is 2.013 and P-value is 0.044. The t-statistic value is higher than the critical value of 1.96, and the P-value is less than 5 percent level of significance which shows significant relationship at a 5 percent level of significance. The debtor turnover ratio (DTO) has a mean value of 0.110 with a standard deviation value of 0.041, which means the observation deviating 4.10 percent around the mean. The t-statistic value is 2.670, 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 0.008, 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 0.125 with a 3.4 percent deviation around the mean. The individual significance test or t-statistic value is 3.692 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 0.000, which explains the significant relationship between CTO and ROA at a one percent level of significance. Therefore, this study concluded that each variable (ITO, DTO, and CTO) has a significant impact on the firms' profitability measured by return on assets (ROA).

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 3, it is recorded that the confidence interval for the path coefficient of ITO and ROA is 0.004 to 0.20, which means there is no zero in the range (the minimum value is higher than zero Mini>0). It shows that the relationship is significant. The confidence interval for DTO to ROA is 0.029 to 0.189, which shows there is no zero in the range (the smaller value is higher than zero), which means the relationship is significant. The confidence interval for the path coefficient of CTO and ROA is 0.058 to 0.192 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 concluded that the relationship is significant. From all of the above-mentioned tests of path coefficient, t-statistic, P-value, confidence interval of path coefficient, it is concluded that there are significant relationships between WCM components (ITO, DTO, and CTO) and firms' profitability (ROA).

4.3. Examining the Moderating role of firm size

4.3.1. Relationship between ITO and ROA with the moderating effect of firm size

1) Path coefficient and P-value

The path coefficient, P-value, and R-square for the relationship between ITO and ROA are displayed in Figure 5 below:

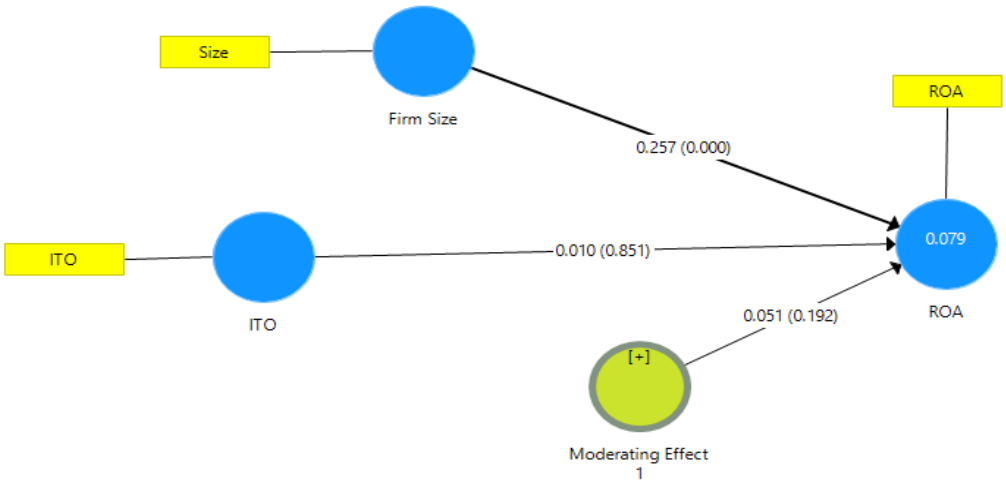

Figure 5: Path Coefficient with P-value

As per the above diagram, the path coefficient for the relationship between ITO and ROA is 0.010, firm size and ROA is 0.257, and the moderating effect of firm size on ROA is 0.051. All values are non zero value, which means that there are relationships between the indicators. The P-value of ITO and ROA is 0.851 or 85.10 percent, and the moderating effect is 0.192 or 19.20 percent which is more than the level significance of 0.05 or 5 percent. The moderating effect of firm size on ROA is also not significant. It is concluded that the moderating effect of firm size on the relationship between ITO and ROA is not significant.

2) T-statistic or t-value

The following Figure 6 shows the t-value of an individual significance test. The boldness of the arrow explains the strength of the relationship. The bolder the arrow is, it means the relationship is stronger.

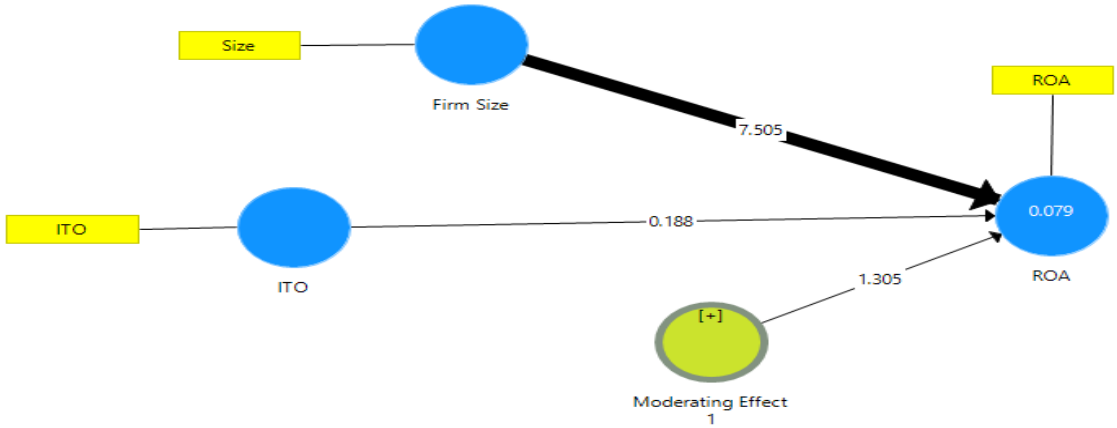

Figure 6: Individual Significance Test (t-statistics)

As per Figure 6, the t-value for ITO and ROA relationship is 0.188. It means with one unit of change in ITO, there will be 0.188 units of change in ROA. The t-value for firm size and ROA relationship is 7.505 and for moderating effect and ROA is 1.305, while R-square is 7.90 percent. From the result, it is noted that the t-value of moderating effect and ROA relationship is less than the critical value of two-tailed test 1.96 which explains that the relationship is not significant. From this presentation, it is concluded that the moderating effect of firm size on the relationship between ITO and ROA is not significant.

3) Path analysis

Table 4 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.

Table 4: Path Coefficient Matrix

Relationships	Mean	S.D	Path coeff.	t-value	P-value	Confidence interval 2.5% -> 97.5%
ITO and ROA	0.009	0.056	0.010	0.188	0.851	-0.098 -> 0.122
Firm size and ROA	0.259	0.034	0.257	7.505	0.000	0.190 -> 0.325
Moderating Effect	0.049	0.039	0.051	1.305	0.192	-0.026 -> 0.129

From Table 4 above, it is noted that the confidence interval for firm size and ROA is 0.190 to 0.325, no zero is included in the range (the minimum value is more than zero), which means the relationship is significant. The confidence interval for ITO and ROA is -0.098 to 0.122 which means zero is included in the range (the minimum value is less than zero), and it means that the relationship is not significant. The moderating effect also has a confidence interval of -0.026 to 0.129 which means the relationship is not significant (the minimum value is less than zero). 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 ROA is not significant.

4.3.2. Relationship between DTO and ROA with the moderating effect of firm size

1) Path coefficient and P-value

The following Figure 7 shows the path coefficient and P-value for the relationship between DTO and ROA with the firm size as the moderating variable.

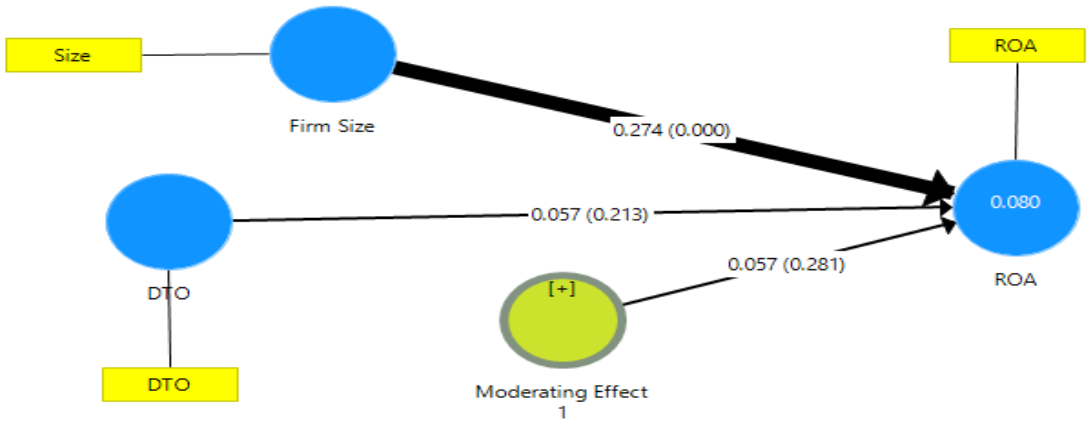

Figure 7: Path Coefficient with P-value

Figure 7 shows the path coefficient for the relationship between DTO and ROA (0.057), firm size, and ROA(0.274), and moderating effect of firm size on ROA (0.057). These are all non zero values (no zero is included in the range of smaller to higher value), which means that there are relationships between the indicators. The P-values of DTO and ROA (0.213 or 21.30 percent) and moderating effect (0.281 or 28.10 percent) are more than the level significance of 0.05 or 5 percent. The moderating effect of firm size on ROA is also not significant. The relationship between firm size and ROA has a P-value of 0.000 or 0 percent which means the relationship is significant at a 1 percent level of significance. The R-square value is 0.080 or 8 percent, which shows that 8 percent of the variation in ROA is due to the change in debtors turnover (DTO). From this, it is concluded that the moderating effect of firm size on the relationship between DTO and ROA is not significant.

2) T-statistic or t-value

The following Figure 8 shows the t-value of an individual significance test. The boldness of the arrow explains the strength of the relationship. The bolder the arrow means the relationship is stronger.

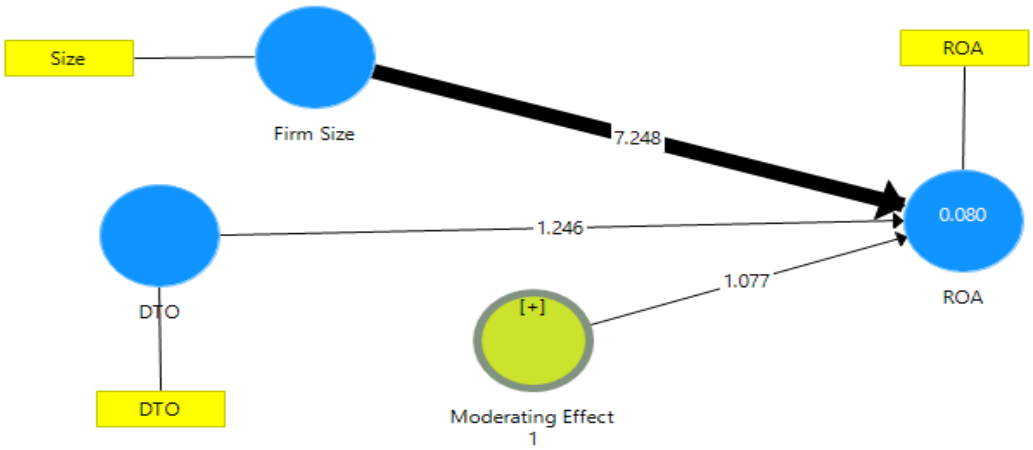

Figure 8: t-value

As per Figure 8, the t-value for DTO and ROA relationship is 1.246. The t-value for firm size and ROA relationship is 7.248, and for moderating effect and ROA is 1.077. The R-square value is 8.0 percent. From the results, it is noted that the t-value of the moderating effect and ROA relationship is 1.077, less than the critical value of two-tailed test 1.96. This explains the relationship is non-significant. From this, it is concluded that the moderating effect of firm size on the relationship between DTO and ROA is not significant.

3) Path analysis

Table 5: Path Coefficient Matrix

Relationships	Mean	S.D	Path Coeff.	T-Value	P-Value	Confidence Interval 2.5% -> 97.5%
DTO and ROA	0.057	0.046	0.057	1.246	0.213	-0.03 -> 0.146
Firm size and ROA	0.275	0.038	0.274	7.248	0.000	0.200 -> 0.350
Moderating Effect	0.058	0.053	0.057	1.077	0.281	-0.039 -> 0.168

From the above Table 5 of the path coefficient matrix, it is noted that the P-value of firm size and ROA is green and is 0.000 which is less than 0.05. The other two P-values for the relationships of DTO with ROA and moderating effect of firm size are more than 0.05. It shows that both relationships are not significant. The value of the path coefficient confidence interval for the relationship between DTO and ROA is -0.034 to 0.146, which means zero is included in the range (the minimum value is less than zero). This means that the relationship is not significant. The confidence interval for firm size and ROA is 0.200 to 0.350, no zero is included (the minimum value is more than zero), which means the relationship is significant. The moderating effect also has a confidence interval of -0.039 to 0.168, which means the relationship is not significant (the minimum value is less than zero). Thus, from the results of the overall tests 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 DTO and ROA is not significant.

4.3.3. Relationship between CTO with ROA with the moderating effect of firm size

1) Path coefficient and P-value

The following Figure 9 shows the path coefficient for the relationship between CTO and ROA along with the firm size as the moderating variable.

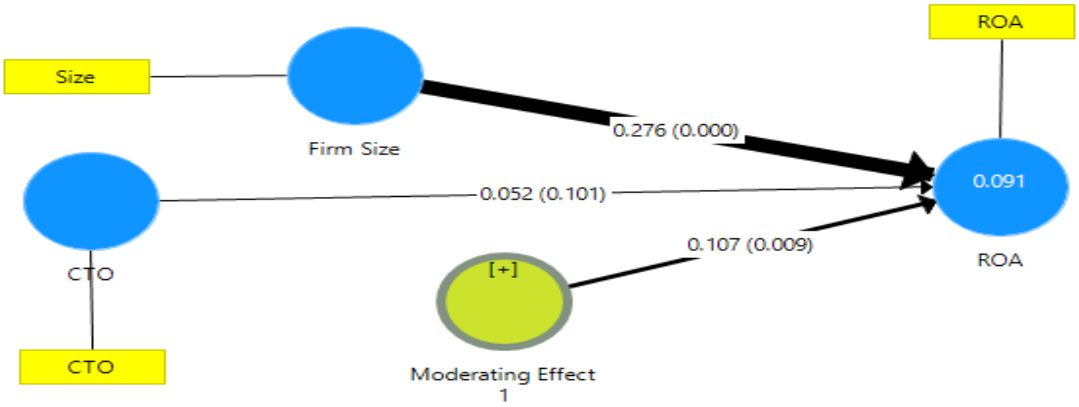

Figure 9: Path Coefficient with P-value

The above Figure 9 presents the path coefficient for the relationships between CTO and ROA (0.052), firm size, and ROA(0.276), and moderating effect of firm size on ROA (0.107). They are all non zero values, which shows the existence of relationships between the indicators. The R-square value is 0.091 or 9.10 percent, which shows that 9.10 percent of the variation in ROA is due to the change in creditors turnover (CTO). The P-value of CTO and ROA relationship is (0.101 or 10.10 percent), which is more than the level significance of 0.05 or 5 percent. The relationship between firm size and ROA has a P-value of 0.000 or 0 percent and moderating effect (0.009 or 0.09 percent), which means that at a 1 percent level of significance the relationship is significant. It is concluded that the moderating effect of firm size on the relationship between CTO and ROA is significant.

2) T-statistics or t-value

The following Figure 10 shows the t-value of an individual significance test. The boldness of the arrow explains the strength of the relationship.

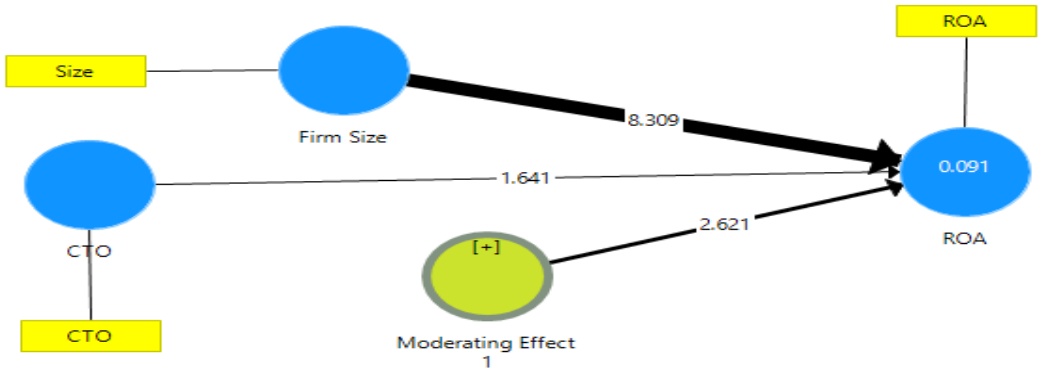

Figure 10: t-value

As per Figure 10, the t-value for CTO and ROA relationship is 1.641. The R-square value is 9.10 percent. From the result, it is noted that the t-value of CTO and ROA relationship is 1.641 which is less than the critical value of two-tailed test 1.96. It shows that the relationship is not significant, means the relationship status changed as earlier it was significant in multivariate analysis and now it is not significant. It shows that there is the impact of moderating variable firm size. The t-value for firm size and ROA relationship is 8.309 and for moderating effect and ROA is 2.621. This is more than the critical value of two-tailed tests 1.96. It shows the significance of the relationship. From this diagram, it is concluded that the moderating effect of firm size on the relationship between CTO and ROA is significant.

3) Path Analysis

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

Table 6: Path Coefficient Matrix

Relationships	Mean	S.D	Path coeff.	t-value	P-value	Confidence interval 2.5% -> 97.5%
CTO and ROA	0.053	0.031	0.052	1.641	0.101	-0.006 -> 0.117
Firm size and ROA	0.274	0.033	0.276	8.309	0.000	0.209 -> 0.340
Moderating Effect	0.107	0.041	0.107	2.621	0.009	0.030 -> 0.189

Table 6 shows the P-value for the relationship of CTO with ROA is 0.101 or 10.10 percent, which is more than 0.05. This means the relationship is not significant. The P-values of firm size with ROA and moderating effect with ROA are green and are 0.000 and 0.009 respectively which are less than 0.05. The path coefficient confidence interval for CTO and ROA is -0.006 to 0.117, which means zero is included in the range (the minimum value is less than zero), so the relationship is not significant. The confidence interval for firm size and ROA is 0.209 to 0.340, and for moderating effect is 0.030 to 0.189. It means there is no zero is included (the minimum value is more than zero), thus the relationship is significant. From the results of the overall tests 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 CTO and ROA is significant.

4.3.4. Relationship between CCC and ROA with the moderating effect of firm size

1) Path coefficient and P-value

The relationships between CCC and ROA, firm size and ROA, and moderating effect of firm size on ROA are presented in the following Figure 11.

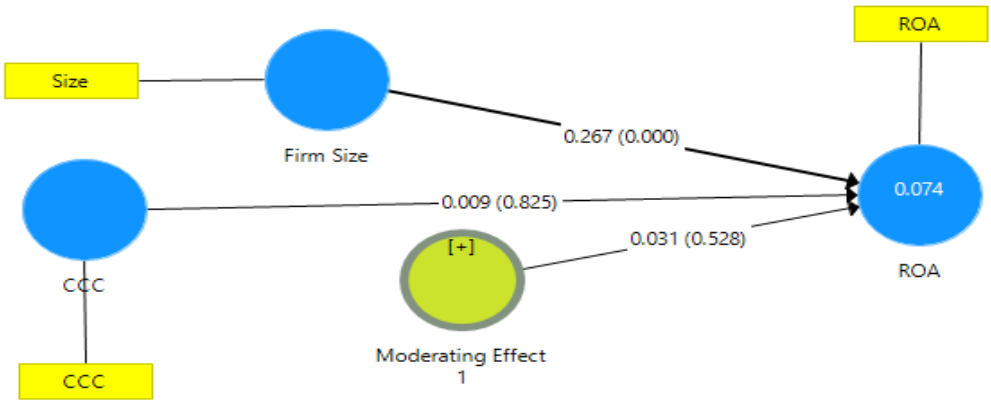

Figure 11: Path coefficient with P-value

Figure 11 shows the path coefficient for the relationships between CCC and ROA (0.009), firm size, and ROA (0.267), and moderating effect of firm size on ROA (0.031). All are non zero values, which means that there are relationships between the indicators. The R-square value is 0.074 or 7.40 percent, which shows that 7.40 percent of the variation in ROA is due to the change in the cash conversion cycle (CCC). The P-value of CCC and ROA (0.825 or 82.5 percent) is more than the level significance of 0.05 or 5 percent, therefore the relationship between CCC and ROA is not significant. The relationship between firm size and ROA has a P-value of 0.000 or 0 percent, which means that the relationship is significant at a 1 percent level of significance. The P-value of the moderating effect is 0.528 or 52.80 percent which is more than the 5 percent level of significance. From the diagram, it is concluded that the moderating effect of firm size on the relationship between CCC and ROA is not significant.

2) T-statistic or t-value

The following Figure 12 shows the t-value of an individual significance test. The boldness of the arrow explains the strength of the relationship.

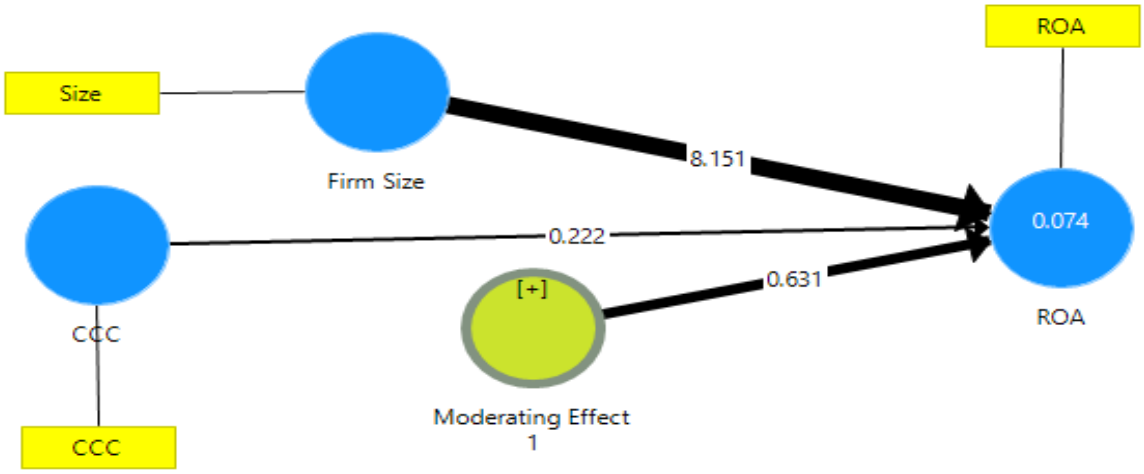

Figure 12: t-value

As per Figure 12 above, the t-value for CCC and ROA relationship is 0.222. The t-value for firm size and ROA relationship is 8.151, and for moderating effect and ROA is 0.631. R-square is 7.40 percent. From the results, it is noted that the t-value of the moderating effect and ROA relationship is 0.631, which is less than the critical value of the two-tailed test 1.96. It explains a non-significant relationship. From this, it is concluded that the moderating effect of firm size on the relationship between CCC and ROA is not significant.

3) Path analysis

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

Table 7: Path Coefficient Matrix

Relationships	Mean	S.D	Path coeff.	t-value	P-value	Confidence interval 2.5% -> 97.5%
CCC and ROA	0.010	0.042	0.009	0.222	0.825	-0.073 -> 0.093
Firm size and ROA	0.266	0.033	0.267	8.151	0.000	0.200 -> 0.330
Moderating Effect	0.030	0.049	0.031	0.631	0.528	-0.065 -> 0.125

From the above Table 7, it is noted that the P-value for the relationship of CCC with ROA is 0.825 or 82.5 percent, and the moderating effect with ROA is 0.528 or 52.80 percent which is more than 0.05. This shows that relationships are not significant. The P-value for the relationship of firm size with ROA is 0.000 which is less 0.05, also green in color. It shows the significance of the relationship. The confidence interval for firm size and ROA is 0.200 to 0.330, which means there is no zero is included (the minimum value is more than zero), thus the relationship is significant. The path coefficient confidence interval for the relationship of CCC and ROA is -0.073 to 0.093 and for moderating effect is -0.065 to 0.125, which means zero is included in the range (the minimum value is less than zero), and hence the relationship is not significant. From the overall test results of path coefficient, t-statistic, P-value, and confidence interval, it is concluded that the moderating effect of firm size on the relationship between CCC and ROA is not significant.

5. Conclusion, Limitations, and Future Recommendations

The objective of this study was to examine the relationship between working capital management (WCM) components and firm financial performance measured by return on assets (ROA). The main contribution of the study is using PLS-SEM as the tool for investigating the relationships. Secondary data of 11 years from 2007-2017 was collected from 69 non-financial sector firms listed in Pakistan Stock Exchange (PSE). The data was collected from the company's

consolidated annual report, State Bank of Pakistan, and PSE. PLS-SEM was used for data analysis. As per our knowledge, this is the first study where PLS-SEM was used for the investigation of the relationships between WCM components and ROA.

The relationships between WCM components and ROA were examined by different techniques to get the best possible results. Path analysis including path coefficient, t-value, P-value, and confidence interval was used to investigate the relationships. Firstly, overall WCM components were regressed on ROA without the impact of the moderating variable. All the relationships were significant and positive. There was a significant positive relationship between WCM components (ITO, DTO, and CTO) with the firm's profitability (ROA). The same test was repeated to examine the impact of moderating variable firm size. From the individual path analysis, we noted that the significance value or P-value for the relationship of ITO and ROA is 85.10 percent, P-value for the relationship of DTO and ROA is 21.30 percent, for CTO and ROA is 10.10 percent, and for CCC the P-value is 82.50. These mean that all the P-values are more than the 5 percent level of significance. While in this study's multivariate analysis all the relationships were significant.

The changes occurred in the relationship status of the independent variables and dependent variable show the existence of a moderating effect. To investigate the significance of the moderating effect of the firm size, the P-value for the relationship of moderating effect with ROA was examined. The moderating effect of firm size was also not significant except for CTO and ROA relationship. The moderating effect of firm size was significant only on the relationship between CTO and ROA. While on relationships between ITO and ROA, DTO, and ROA, the moderating effect of firm size was not-significant. From the overall result, we concluded that management should focus on each component of the WCM at the same time, to enhance the profitability of the firm. To increase the profitability of the firm the managers must consider seriously the efficient management of all of the components of working capital such as inventory, receivable, and payable.

Like every other study, this undertaking study also has some limitations. The PLS-SEM was applied for the first time as our knowledge is concerned, but only one ratio (ROA) was used to measure the profitability of the firm. The sample was only non-financial sector firms and from one specific country (Pakistan). For future studies, the same PLS-SEM model should be applied with different profitability measurement tools such as return on equity (ROE), return on capital employed (ROCE), and newly developed ratio economic value-added momentum in different industrial sectors in different geographical location.

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