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A STUDY ON THE IMPACT OF CASH CONVERSION CYCLE (CCC) ON THE PERFORMANCE OF PAKISTANI MANUFACTURING ORGANIZATIONS

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ABSTRACT

Purpose – The objective of the study is to empirically examine the impact of Cash conversion cycle (CCC) on the performance of Pakistani manufacturing firms.

Design/Methodology/Approach – The study uses the sample of 32 companies selected randomly from three manufacturing sectors i.e. chemical, automobiles and construction & material for the period five years ranging from 2006 to 2010. The correlation and regression analysis are used to examine the relationship of CCC with firm's performance: Return on Assets (ROA), Return on Equity (ROE) and Operating Profit (EBIT).

Findings – The study examines the impact of different variables of cash conversion cycle on firm's performance. The study finds that the average collection period of accounts receivables, inventory conversion period and CCC have negative relationship with firm's performance.

Originality/Value – Most of the studies on working capital management (WCM) are with reference to developed economies like USA but fewer are with reference to developing economies like Pakistan. This study will contribute to the literature by analyzing the impact of working capital management on the performance of manufacturing firms and by validating the results of previous studies.

KEYWORDS: Cash Conversion Cycle, Firm Performance

INTRODUCTION

Traditional approach to corporate finance always had been in the long-term financial decisions like capital budgeting and capital structure, that's why it has increased the interest on WCM over the past two decades (Lyroudi and Lazaridis 2000). It is scrutinized by two dimensions: static view and dynamic view. The static method is based on the liquidity ratios that are commonly used current and quick ratios, based on the data of balance sheet and measures liquidity at some point in time. The dynamic view is related to the operations of the company. CCC is a dynamic measurement of the time between cash payment for raw materials and then receiving it from accounts receivable (Moss and Stine 1993, Lancaster, Stevens and Jennings 1999).As far as the dynamics of ongoing liquidity management, CCC combines both balance sheet and income statement data to measure liquidity with dimension of time (Jose et al., 1996).

The WCM theory is based on the traditional models of the CCC that is initiated by Richards and Laughlin (1980). It is a great measure to know how fine a corporation is organizing its working capital (Nobanee et al. 2011). Gitman (1974) conclude that CCC is a most important aspect in WCM. In fact it tells about the investment and credit decisions in the

customer, inventory and suppliers, which shows average number of days started from the date when the firm start payments to its suppliers and the date when it begins to receive payments from its regulars.

Padachi (2006) analyzed the trends in the WCM and its influence on business performance for small manufacturers of Mauritius. He reported that firm's needs for working capital of change over time depending on the rate of creation of money and high internal investment in inventories and receivables led to reduced profitability.

Nazir and Afza (2008) studied that operating cycle, ROA, leverage and Tobin's q are the features which significantly influence WC requirements in Pakistan, whereas different industries are following different WC requirements. The results are same as concluded by Nazir and Afza (2007).

The main purpose of this study is to look at the relationship between the length of CCC and firm profitability. A sample of 32 firms of 3 different industries are selected covering the period 2006-2010 for Pakistani non-financial firms listed on the Karachi Stock Exchange. Rest of the paper reviews the existing literature and concludes the results.

DESCRIBING CASH CONVERSION CYCLE

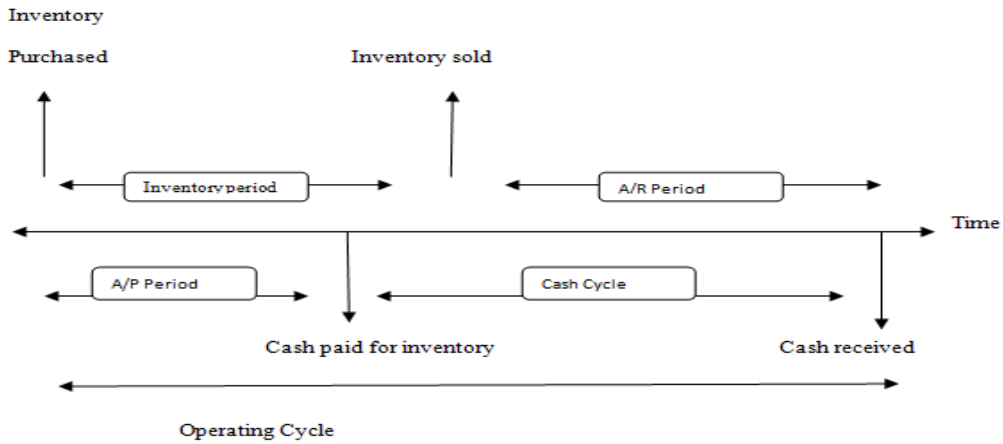
CCC is used as an overall measure of WC, as it shows the gap between expenditure for purchases and collection of sales (Padachi 2006).Jordan (2003) defined cash cycle as "The time between cash disbursement and cash collection".

The equation is:

Cash cycle = Operating cycle - Accounts payable period

Where:

Operating cycle = Inventory period + Accounts receivable period



Cash conversion cycle (Jordan 2003)

REVIEW OF LITERATURE

The researchers reviewed the relationship between the length of the CCC and corporate profitability and most of the studies examine the empirical relationship between these variables that show a significant and negative relation. Moss and Stine (1993) found that the CCC is associated with small business because small businesses need to better manage their cash availability due to lack of credit. Shortening the CCC enhances profitability because the longer the CCC the greater the need for external borrowing. Deloof (2003)also found a significant negative relationship between gross

operating income and number of days of inventory, accounts receivable and accounts payable of Belgian firms. These results suggest to managers to create value for their shareholders by reducing the number of day accounts receivable and inventories to a reasonable minimum. The negative correlation between accounts payable and profitability are contrary with the vision that the less profit-making firms make late payments of their bills.

A study of all non-financial corporations in the United States by Nobaneee (2006) suggested that CCC is the measure of the effectiveness of WCM that considers all cash flows associated with inventory, accounts receivable and accounts payable. He investigated that to attain optimal levels of inventory, receivables and payables will reduce the cost of handling and opportunity costs of holding inventories, debtors and creditors, and direct to an most favorable length of the cycle cash conversion.

Another study conducted on Spanish small and medium size firms (SMFs) in Span by Teruel & Solano (2007) also confirmed the negative association between the profitability and the number of days accounts receivable and inventory days. He added that SMEs should be worried about the WC management, as it can help by minimizing its CCC at a minimum (Teruel and Solano 2007). Vishnani and Shah (2007) measured the impact of policies of WCM on the firm performance in the Indian electronic industry. They find that stock holding period and debtors' collection period has a negative correlation with firm performance while the average payment has positive correlation.

In Pakistan Raheman and Nasr (2007) have examined the effect of different variables of WCM on the net operating profitability. They have found a significant negative association between net operating profitability and the average collection period, inventory turnover in days, average payment period and CCC. These results recommended that managers can generate value for their shareholders by minimizing the number of days accounts receivable and inventories to a reasonable minimum. The negative link between accounts payable and performance is consistent with the vision that less profitable firms wait longer to pay their bills. At the same time Teruel and Solano (2007) find a strong negative link between the measures of WCM (Liquidity) and financial performance. Thus, managers can generate revenue for their firms by managing the CCC and keeping the accounts of receivables, payables and inventory to an optimal level.

Uyar (2009) examined the impact of CCC with firm size and performance for firms listed at Istanbul Stock. The Results showed that there is a considerable negative association between CCC and the firm performance. Gill et al.(2010) find significant association between the CCC and performance calculated through gross operating profit. They examined a negative correlation between performance and average days of accounts receivable and a positive correlation between CCC and performance.

Raheman et al. (2010) find WCM has a significant negative impact on operating profitability of the firms and plays a vital role to generate value for shareholders. Mohamad and Saad (2010) find significant negative links between WC variables with firm's profitability of Malaysian listed companies. Zubairi (2010) examined that the firm performance and cash cycle can be influenced by firm size in Pakistan. He added that larger firms can be predictable as efficient in collecting receivables due to their power. Since automobile companies are usually capital intensive, we anticipate a direct link of company size with performance. He found that the firm size has a considerable straight effect on performance of automobile firms and liquidity has a positive link with the performance.

Dong and Su (2010) found negative relationship between CCC and corporate performance in Vietnam and a positive link between number of days accounts payable and performance. So we claim that managers can enhance profits

by minimizing the number of days accounts receivable and inventories and more profitable firms wait longer for payment of their bills.

Nobanee et al. (2011) finds a strong negative link between the CCC and ROA for all industries except for consumer goods and services in Japan. Karaduman et al. (2011) in Turkey finds CCC indisputably influences the performance of the firms measured in terms of ROA, listed in the ISE (Istanbul Stock Exchange). The results advocate that it may be possible to enhance performance by improving efficiency of WC. Hayajneh and Ait Yassine (2011) conformed the link between the WC efficiency and performance of Jordanian manufacturing firms and found strong negative correlation between average receivables collection period, average conversion inventory period, average payment period and the performance measures. Gill (2011) finds the negative link between firm size and WC requirements as bigger firms have lower WC requirements than the smaller firms in Canada and efficient WCM is vital to create the higher profits.

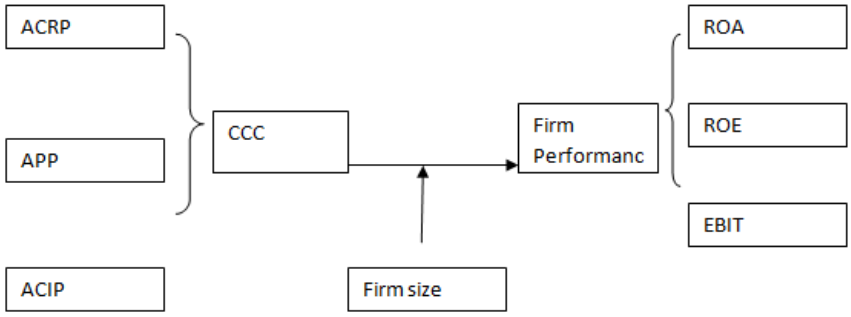
Vijayakumar (2011) observed link between liquidity and performance is one of the areas of performance of corporate enterprise. Empirical outcomes of the studies found a strong but negative correlation between performance and Accounts Receivable Period (ARP), Inventory Conversion Period (ICP) and Cash Cycle (CCC) for a sample of Indian automobile industry. These results recommend that managers can generate value for their shareholders by minimizing the number of days of accounts receivable and inventories to a reasonable minimum. Additionally, firms are capable of attaining sustainable competitive advantage by means of effective and efficient utilization of the resources of the organization through a careful decline of the CCC to its minimum. In doing so, the performance of the firm is anticipated to enhance. The study also observed that positive link between accounts payable period and profitability. This finding holds that more profitable firms wait longer to pay their bills. These conclusions are in affirmation with Shin and Soenen (1998), Eljelly (2004), Lazaridis and Try fonidis (2006) and Garcia et al.(2007).

RESEARCH OBJECTIVE

The more specific objective is:

- To analyze the effect of CCC on the firm profitability

THEORETICAL FRAMEWORK



RESEARCH DESIGN/METHODOLOGY

The data used in this study was obtained from financial statements that are downloaded from the official web site of the KSE and companies for the year 2006-2010. The sample of 32 corporations comprises manufacturing companies from three industries (i.e. Construction & Material, Automobiles & parts and chemicals).Service companies are not within the scope of this study due to non-availability of inventory, therefore they are not included.

Variables

A variety of variables that can be responsible for the WCM can be found in the literature. The set of variables that are included in this study are CCC, ROA, ROE, EBIT and firm size. The ROE is a suitable measure of the profitability since it relates it to the asset base (Padachi 2006). The variables of the study are as following:

Variables	Symbol	Variable	Measurements
Dependent variable			
Return on Assets	ROA	Y_1	Net income/Total Assets
Return on Equity	ROE	Y_2	Net income/Shareholder Equity
Operating Profit	EBIT	Y_3	Earnings before interest and tax
Independent variables			
Average receivable collections period	ARCP	X_1	Account receivables *365/Sales
Average conversion inventory period	ACIP	X_2	Inventory *365/Cost of Sales
Average payment period	APP	X_3	Accounts Payables *365/Cost of Sales
Cash conversion cycle	CCC	X_4	CCC=ARCP+ACIP-APP
Control variable			
Size of the company	LOS	X_5	Natural of logarithm of sales

Regression Model Equation

The regression equation gives an estimation of the linear relationship between a dependent and one or more independent variables.

General syntax for regression equation is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots\ldots\ldots\ldots + \beta_n X_n + \varepsilon$$

Left side (Y) of the equation contains the outcome variable while right side contains the coefficients of independent variables X1, X2……so on and βn specifies the coefficient of nth independent variable (Xn).

Models

$$Y_{ROA} = \beta 0 + \beta 1(ARCP) + \beta 2(LOS) + \varepsilon \quad \ldots\ldots\ldots \text{Model 1}$$

$$Y_{ROA} = \beta 0 + \beta 1(ACIP) + \beta 2(LOS) + \varepsilon \ldots\ldots\ldots \text{Model 2}$$

$$Y_{ROA} = \beta 0 + \beta 1(APP) + \beta 2(LOS) + \varepsilon \ldots\ldots\ldots \text{Model 3}$$

$$Y_{ROA} = \beta 0 + \beta 1(CCC) + \beta 2(LOS) + \varepsilon \ldots\ldots\ldots \text{Model 4}$$

$$Y_{ROE} = \beta 0 + \beta 1(ARCP) + \beta 2(LOS) + \varepsilon \quad \ldots\ldots\ldots \text{Model 5}$$

$$Y_{ROE} = \beta 0 + \beta 1(ACIP) + \beta 2(LOS) + \varepsilon \ldots\ldots\ldots \text{Model 6}$$

$$Y_{ROE} = \beta 0 + \beta 1(APP) + \beta 2(LOS) + \varepsilon \ldots\ldots\ldots \text{Model 7}$$

$Y_{ROE} = \beta 0 + \beta 1(CCC) + \beta 2(LOS) + \varepsilon$……..Model 8

$Y_{EBIT} = \beta 0 + \beta 1(ARCP) + \beta 2(LOS) + \varepsilon$ ……..Model 9

$Y_{EBIT} = \beta 0 + \beta 1(ACIP) + \beta 2(LOS) + \varepsilon$……..Model 10

$Y_{EBIT} = \beta 0 + \beta 1(APP) + \beta 2(LOS) + \varepsilon$……..Model 11

$Y_{EBIT} = \beta 0 + \beta 1(CCC) + \beta 2(LOS) + \varepsilon$……..Model 12

Hypothesis

Hypothesis	Description
H_1	The companies with low ARCP tend to have high return on assets.
H_2	The companies with low ACIP tend to have high return on assets.
H_3	The companies with high APP tend to have high return on assets.
H_4	The companies with low CCC tend to have high return on assets.
H_5	The companies with less ARCP tend to have higher return on equity.
H_6	The companies with less ACIP tend to have higher return on equity.
H_7	The companies with high APP tend to have higher return on equity.
H_8	The companies with less CCC tend to have higher return on equity.
H_9	The companies with less ARCP tend to have higher Operating Profit.
H_{10}	The companies with less ACIP tend to have higher Operating Profit.
H_{11}	The companies with high APP tend to have higher Operating Profit
H_{12}	The companies with less CCC tend to have higher Operating Profit.

DATA ANALYSIS AND RESULTS

Descriptive Statistics

The descriptive analysis represents the minimum, maximum, average and standard deviation of the variables used in the study. In descriptive analysis those years are excluded in which values of the variables are missing. The minimum average collection period is 0.0890 days and maximum average collection period are 231.9760 days. The mean of the average collection period is 25.08891 days with the standard deviation of 36.8438565 days. The minimum average payment period is -576.442 days and maximum average payment period are 331.8080 days. The mean value of average payment period is 22.33650 days with standard deviation of 72.4285394 days. The average inventory conversion period of the firms is 58.36866 days with 60.8752 days of standard deviation. The CCC used to check the efficiency of WC management has minimum value of -203.63 days and maximum of 333.281 days. The average CCC is 61.12115 days with 76.3397809 days of standard deviation. The mean value of operating profit is 2034.091832 million with standard deviation of 3443.989743 million. The mean value of return on assets is .071086 with standard deviation of 0.0862907. The mean value of return on equity is .154762 with standard deviation of 0.2181693. In the study firm size is calculated as log natural of total assets. The average value of log of total assets is 9.663868 with standard deviation of 0.8577897.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EBIT	151	-9.6E+08	1.7E+10	####	3.4E+09
ROA	151	-0.273	0.347	0.07	0.08629
ROE	151	-0.625	0.714	0.15	0.21817
ACRP	151	0.089	231.976	25.1	36.8439
APP	151	-576.442	331.808	22.3	72.4285

ACIP	151	-318.709	286.161	58.4	60.8752
CCC	151	-203.63	333.281	61.1	76.3398
LOS	151	6.63	10.869	9.66	0.85779
Valid N	151				

Reliability Test

Multiple regression tables show the values of Tolerance and variance Inflationary Factor (VIF). The Co linearity test is applied through SPSS. The values of Tolerance and VIF are calculated for each indicator. The values of Tolerance range from 0 to 1.00and the values closer to1.00 in the regression tables' show less multi colinearity in variables. Variance Inflationary Factor (VIF) should be less than 5.00.Results of this study proves that VIF score remains below 5 in all years 2006-2010 which point out that none of the CCC indicators is considerably explained by other CCC indicator.

Durbin Watson (DW) test is applied to diagnose first order autocorrelation problem. The DW of all the models here is closer to 2, so regression model is the appropriate method (Neter, et al. 1996). Problems of high correlation among independent variables are captured through correlation matrix, which remain below the limits in all regression models.

Correlation and Regression Results

The study uses Pearson's correlation analysis to check the association between CCC components and firms performance. The table 2 shows the results of correlation coefficient between the variables.

Table 2: Correlation Matrix

		ROA	ROE	EBIT	ACRP	APP	ACIP	CCC	LOS
ROA	Pearson Correlation	1							
	Sig. (2-tailed)								
ROE	Pearson Correlation	.826*	1						
	Sig. (2-tailed)	0							
EBIT	Pearson Correlation	.442**	.665**	1					
	Sig. (2-tailed)	0	0						
ACRP	Pearson Correlation	-.229**	-.258**	-.260**	1				
	Sig. (2-tailed)	0.005	0.001	0					
APP	Pearson Correlation	-0.054	-0.022	0.04	.170*	1			
	Sig. (2-tailed)	0.514	0.791	0.64	0.037				
ACIP	Pearson Correlation	-0.157	-.175*	-.245**	.260**	.537**	1		
	Sig. (2-tailed)	0.054	0.032	0	. 001	0			
CCC	Pearson Correlation	-.185*	-.243**	-.357**	.528**	-.438**	.413**	1	
	Sig. (2-tailed)	0.023	0.003	0	0	. 000	. 000		
LOS	Pearson Correlation	.192*	.274**	.543**	-.394**	-0	-.367**	-.361**	1
	Sig. (2-tailed)	0.018	0.001	0	0	0.1	0	0	

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

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

The correlation coefficient between ROA & ACRP is -.229 and ROA & APP is -.054 at 5% level of significance. That shows the firms with higher collection period will tend to exhibit low profitability. The correlation coefficient between ROA & ACIP is -.157 that is insignificant but it is significant with ROE and -.185 between ROA and CCC at significance level of 5%. It indicates that the firms whose inventory conversion period is low will enjoy high profitability. The correlation coefficient is insignificant between the average payment period and firms performance measured through ROA and ROE and EBIT. The CCC also shows negative coefficient of -.243 and -.357 with ROE and EBIT respectively at

1% level of significance. That indicates the firms can increase the profitability by reducing the CCC. The correlation coefficient is -.260 between ACRP and EBIT at 1% level of significant. It means as the ACRP increases the firms profitability increases. The correlation coefficient is -.245 between ACIP and EBIT at 1% level of significant. The correlation coefficients are .192, .274 and .543 at 5% level of significant between SIZE and firms performance as measured through ROA, ROE and EBIT respectively. It means larger firms enjoy more profitability as compared to smaller firms. More over the coefficient results also shows that SIZE has negative and significant relationship with ACRP, APP, ACIP and CCC. It means that firms with larger size have low collection period, low ACIP and low CCC. So from above results it can be concluded that a firm can increase its profitability by reducing the time period of accounts receivables, inventory and CCC.

To examine the impact of WCM on firm's performance, the study uses regression analysis. The regression is conducted on 151 firm's-years. The results of regression models are shown in table 3 and 4 and 5.

Table: 3. Results of the regression models 1-4 Dependent variable ROA

	Model 1	Model 2	Model 3	Model 4
Constant	-0.03522	-0.07168	-0.1112	-0.06
ACRP(β)	-0.00042*	-	-	-
ACIP(β)	-	-0.00014	-	-
APP(β)	-	-	-3E-05	-
CCC(β)	-	-	-	-0
LOS(β)	0.0121	0.01563	0.01894	0.01
R	0.25472	0.21353	0.19432	0.23
R^2	0.06488	0.04559	0.03776	0.05
Adjusted R^2	0.05224	0.0327	0.02475	0.04
Durbin Watson	1.29171	1.34457	1.36396	1.29
ANOVA Sig	0.0069	0.03163	0.05792	0.02
Tolerance	0.8444	0.86537	0.98344	0.87
VIF	1.18423	1.15556	1.01683	1.15

$Y_{ROA} = -0.03522 - 0.00042(ARCP) + 0.01210(LOS) + \varepsilon$ ……..Model 1

$Y_{ROA} = -0.07168 - 0.00014(ACIP) + .01563(LOS) + \varepsilon$……..Model 2

$Y_{ROA} = -0.11124 - 0.00003(APP) + 0.01894(LOS) + \varepsilon$……..Model 3

$Y_{ROA} = -0.05973 - 0.00015(CCC) + 0.01449(LOS) + \varepsilon$……..Model 4

The R2 of regression models 1-4 are .06488, .04559, .03776 and .05236 respectively. ROA is reduced by lengthening the ACRP, APP, ACIP and CCC. In the 1st regression model the co-efficient on the ACRP is negative and significant which is consistent with the results found by Karaduman et al. (2011), Vijayakumar (2011), Luo et al. (2009), Samiloglu and Demirgunes (2008) , Garcia-Teruel& Martinez-Solano (2007), Padachi (2006)and Deloof (2003) underlines the importance of WCM for firms so H1 is accepted. Lengthening the deadlines for payments to clients negatively affects profitability. Thus if a more restrictive credit policy is given to customers to give them less time to make their payments improves the performance. Corporate profitability is positively associated with size, so that large size seems in favor for the generation of profitability.

In the 2nd regression model, the Inventory Conversion Period (AICP) is used as an independent variable. The co-efficient on the average payment period is negative and insignificant. This suggests that decrease in the number of day accounts payable is associated with an increase in profitability. The negative relationship is consistent to Padachi (2006) and Azam & Haider (2011) study that also reveals the negative but significant relationship of ACIP and ROA findings. It means that withholding the payments to suppliers to take advantage of the cash available for working capital needs. As in this model the p value is insignificant at 95% confidence level so H2 is rejected.

In Model 3 Average Payment Period (APP) in days is an independent variable. The other variables are the same as they have been in the first regression. It is evident from the table that the co-efficient of inventory conversion period in days is negative in Pakistan industry. Consistent with Vijayakumar (2011), Raheman and Nasr (2007), Padachi (2006) and Lazaridis and Try fonidis (2006) a negative relationship exists between Inventory Conversion Period (ICP) and profitability. This result suggests that the increase or decrease in the ICP in days affects profitability of the firm. It can be interpreted that if the inventory takes more time to sell, it will adversely affect profitability. The coefficients on the other control variables are insignificant as in this regression model so H3 is rejected. The firm size is positively related to profitability and this is significant at 5 per cent level.

The results of the fourth regression model are negative but insignificant. It is consistent with Vijayakumar (2011) and Samiloglu and Demirgunes (2008). This result is also in accordance with the findings of Uyar (2009) and Azam & Haider (2011) who also found a negative but significant relationship between the length of CCC and Firms' profitability ROA. So H4 is rejected. It is concluded that firms having more profitable operations tend to have shorter CCC to maintain their profit levels. The negative relationship between the firm's CCC and ROA can be explained by the fact that if the investment in current assets is low, it can help in boosting profits.

Table: 4. Results of the regression models 5-8 Dependent variable ROE

	Model 5	Model 6	Model 7	Model 8
Constant	-0.32099	-0.42485	-0.525	-0.34
ACRP(β)	-0.00105*	-	-	-
ACIP(β)	-	-0.0003	-	-
APP(β)	-	-	0.00004	-
CCC(β)	-	-	-	-0.00047*
LOS(β)	0.05196*	0.06182*	0.07024*	0.05457*
R	0.31933	0.28566	0.27474	0.31
R^2	0.10197	0.0816	0.07548	0.1
Adjusted R^2	0.08983	0.06919	0.06299	0.09
Durbin Watson	1.27796	1.34075	1.3428	1.25
ANOVA sig	0.00034	0.00183	0.003	0
Tolerance	0.84442	0.86537	0.98344	0.87
VIF	1.18423	1.15556	1.01683	1.15

$Y_{ROE} = -0.32099 - 0.00105(ARCP) + .05196(LOS) + \varepsilon$ ……..Model 5

$Y_{ROE} = -0.42485 - 0.00030(ACIP) + 0.06182(LOS) + \varepsilon$……..Model 6

$Y_{ROE} = -0.52496 + 0.00004(APP) + 0.07024(LOS) + \varepsilon$……..Model 7

$Y_{ROE} = -0.34372 - 0.00047(CCC) + 0.05457(LOS) + \varepsilon$……..Model 8

The R2 of regression models 5-8 are .10197, .08160, .07548 and .09919 which indicates that 10%, 8.1%, 7.5 % and 9.9% variation in dependent variable is explained by independent variables.

The 5th regression model ACRP is independent variable. The co-efficient on the average payment period is negative and significant so H5 is accepted. This suggests that decreases in the number of days accounts receivable is associated with an increase in profitability.

The 6th regression model the ACIP in days is an independent variable. The co-efficient on the average payment period is negative and insignificant. This is consistent with Azam & Haider (2011) study that also reveals the negative but significant relationship of ACIP and ROE. This suggests that decrease in the number of day accounts payable is associated with an increase in profitability. As in this model the p value is insignificant at 95% confidence level so H6 is rejected.

In 7th Model of regression Average Payment Period (APP) is an independent variable. It is evident from the table that the co-efficient of inventory conversion period in days is negative but insignificant in Pakistan industry so H7 is rejected. Azam & Haider (2011) study also reveals the positive but significant relationship of APP and ROE. This result suggests that any change in the ACIP affects profitability of the firm. It is interpreted that if the inventory takes more time to sell, it affects profitability. The firm size is positively related to ROE and this is significant at 5 per cent level of significance.

The results of the 8th regression model are negative and significant at 95% confidence level between the CCC and ROE so H8 is accepted. This is consistent with the study of Azam & Haider (2011) who also found a significant and negative relationship between the length of CCC and ROE.

Table: 5.Results of the regression models 9-12Dependent variable EBIT

	Model 9	Model 10	Model 11	Model 12
Constant	-1.8E+10	-1.8E+10	-2E+10	####
ACRP(β)	-5125077	-	-	-
ACIP(β)	-	-2973426	-	-
APP(β)	-	-	5247005	-
CCC(β)	-	-	-	-8380663.00376*
LOS(β)	2092368767.33682*	2101769822.40951*	2236196375.21626*	1910037016.39532*
R	0.5451	0.54496	0.55369	0.57
R^2	0.29713	0.29698	0.30657	0.32
Adjusted R^2	0.28763	0.28748	0.2972	0.32
Durbin Watson	1.18747	1.22481	1.23287	1.21
ANOVA sig	0	0	0	0
Tolerance	0.84442	0.86537	0.98344	0.87
VIF	1.18423	1.15556	1.01683	1.15

The R2 of regression models 9-12 are .29713, .29698, .30657 and .32461which indicates that 29%, 29%, 29% and 32% variation in dependent variable is explained by independent variables.

$$Y_{EBIT} = -18057700190.1192 - 5125076.76793(ARCP) + 2092368767.33682(LOS) + \varepsilon$$.....Model 09

$$Y_{EBIT} = -18103578445.4399 - 2973425.79290(ACIP) + 2101769822.40951(LOS) + \varepsilon$$……Model 10

$$Y_{EBIT} = -19693413524.9103 + 5247004.69352(APP) + 2236196375.21626(LOS) + \varepsilon$$.....Model 11

$$Y_{EBIT} = -15912017128.7424 - 8380663.00376 + 1910037016.39532(LOS) + \varepsilon$$……Model 12

The results of the regression model 9 shows negative coefficient for ACRP at 95% level of confidence. It shows that average collection period have insignificant negative impact on operating profit so H9 is rejected. It implies that companies can improve their profitability by decreasing their collection period. Based on the regression results H9 is rejected. Our results are aligned with Deloof (2003), Raheman and Nasr (2007), Gill et al. (2010) and Hayajneh and Yassin(2011) who also reported inverse relationship between firms profitability and average collection period.

The results of the regression model 10 shows negative coefficient for ACIP at 95% level of confidence. It means inventory conversion period has negative and significant impact on EBIT. It implies that companies can improve their profitability by shortening the inventory conversion period so H10 is rejected. The study results confirms the findings of Garcia-Teruel and Martinez-Solano (2007), Raheman and Nasr (2007) and Hayajneh and Yassin (2011).

In regression model 11 the ACIP is replaced by APP and other variables remained same. The coefficient of APP is positive but it is insignificant. So the study sample represents no significant association between firm performance and average payment period so H11 is rejected. The current study findings are constant with the finding of Siegler et al., (2011) who also reported positive and insignificant relationship with firm's performance.

In 12th regression model the coefficient of CCC is negative and significant at 95% level of confidence so H12 is accepted. It implies that companies can improve their performance through shortening their CCC. The results of the study confirms the findings of Lancaster and Stevens (1996), Shine and Soenen, 1998, Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007), Nasr (2007) Raheman and Nasr (2007), Mohamad and Saad, (2010), Gill et al, (2010), Hayajneh and Yassin, (2011) and Nobanee et al., (2011).

CONCLUSIONS

This study investigates the impact of WCM on firms' performance for non-financial institutes listed in Karachi Stock Exchange (KSE-100 Index). Panel data have been analyzed by applying Pearson correlation for the time period of 2006 to 2010 that represents the mean values of CCC.

Previous research predicts negative relationship between collection period and corporate profitability. The finding indicates that slow collection of receivables is correlated with low profitability. The results are in line with these findings such as Deloof (2003), Lazaridis and Try fonidis (2006), Raheman and Nasr (2007) who found negative relationship between accounts receivables days and profitability. These results suggest that managers can create value for their shareholders by reducing the number of days for accounts receivables. In addition, the negative relationship suggests that less profitable firms will pursue a decrease of their accounts receivables in an attempt to reduce their cash gap in the CCC. Managers can improve profitability by reducing the credit period granted to their customers.

Examining the relationship between the average number of days the inventory is held and the profitability, there is negative but insignificant relationship in this study. Azam & Haider (2011) and Raheman et al. (2010), Zubairi (2010), Raheman and Nasr (2007) and Lazaridis and Try fonidis (2006) also found the negative relationship. Regarding the average days of accounts payable previous studies reported negative correlation of this variable and the profitability of the firm. It is found that there is no statistically significant relationship between these variables.

A negative relationship between CCC and profitability is observed that is consistent with the previous theoretical researches such as Azam & Haider (2011) and Gill et al, (2010), Raheman et al. (2010), Uyar (2009) , Raheman and Nasr

(2007). The message to the firms is that the longer CCC, the less profitable you are. The probable reasons are keeping inventory for a long time, being slow in collecting receivables, and paying debts quickly.

This paper contributes to the literature in several ways. First, successful management of WCManagement is value enhancing to shareholders. Secondly, this evidence suggests that investors do care about firms' daily operations and understand how working capital efficiency is translated into future earnings and profitability.

The study is limited to the Pakistani manufacturing firms. In addition, the sample size is small. Future research should investigate generalization of the findings beyond the Pakistani manufacturing sector. The contribution of this research is important for both academic researchers and business managers. There is still need in the future to identify the sector wise relationship between WCM and firms' performance in Pakistan.

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