

## **Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions of KSE-30 index**

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### **Abstract**

The purpose of this study is to investigate the impact of working Capital Management on firms' performance for non-financial institutions listed in Karachi Stock Exchange (KSE-30) Index. A panel data has been used in this study for 21 Kse-30 Index listed firms over a period for the year 2001 to 2010. The results are obtained by using Canonical Correlation Analysis for identifying the relationship between working capital management and firms' performance. The findings show that working capital management has significant impact on firms' performance and it is concluded that managers can increase value of share holder and return on asset by reducing their inventory size, cash conversion cycle and net trading cycle. Increase in liquidity and time period to supplier will also lead firms' overall performances.

**Key Words:** Working Capital Management, Firms' Performance, KSE-30 Index.

### **1. Introduction**

Working capital management is considered to be a very important element to analyze the organizations' performance while conducting day to day operations, by which balance can be maintained between liquidity and profitability. Maintaining liquidity on daily base operation to make sure it's running and meets its commitment is a crucial part required in managing working capital. It is a difficult task for mangers to make sure that the business function running in well-organized and advantageous manner. There are chances of inequality of current assets and current liability during this procedure Firm's growth and profitability will be affected if this occurs and firm manger wouldn't be able to manage it efficiently.

According to Harris (2005) Working capital management is a simple and straightforward concept of ensuring the ability of the firm to fund the difference between the short term assets and short term liabilities. Nevertheless, complete mean and approach preferred to

cover all its company's activities related to vendors, customer and product. (Hall, 2002). Now a day working capital management has considered as the main central issues in the firms and financial managers are trying to identify the basic drivers and level of working capital management (Lamberson, 1995).

The purpose of this study is to identify whether the performance of firms are affected by working capital management in Karachi Stock Exchange (KSE-30) Index companies. It has to establish the relationship between liquidity and firm's performance considering Return on Assets (R.O.A) and Return on Equity (R.O.E). This study is very important for the manager non-financial institute of KSE-30 index firms because it will help them to set tradeoff between their liquidity and their performance of firms. They would come to know that at what extend they should increase their liquidity in order make their performance up to the mark. It will also help them to know the optimal level of receivables and inventory level which will be helpful for their receivable control management and their inventory control management.

The remainder of the paper is organized as follows. A review of the relevant literature regarding the working capital management and firm's performance is given in section 2, and section 3 presents the data and methodology to be applied while section 4 contains the empirical results. Lastly, the conclusion will be given in section 5.

## **2. Literature Review**

Dong (2010) reported that the firms' profitability and liquidity are affected by working capital management in his analysis. Pooled data are selected for carrying out the research for the era of 2006-2008 for assessing the companies listed in stock market of Vietnam. He focused on the variables that include profitability, conversion cycle and its related elements and the relationship that exists between them. From his research it was found that the relationships among these variables are strongly negative. This denote that decrease in the profitability occur due to increase in cash conversion cycle. It is also found that if the number of days of account receivable and inventories are diminished then the profitability will increase numbers of days of accounts receivable and inventories.

Mohammad Neab and Noriza BMS (2010) worked on crating the relationship between Working Capital Management (WCM) and performance of firms. For their analysis they

chose the Malaysian listed companies. They administered the perspective of market valuation and profitability. They used total of 172 listed companies from the databases of Bloomberg. They randomly selected five year data (2003-2007). This research likewise the researches quoted before studied the impact of the dimensions of working capital component i.e. C.C.C., current ratio (C.R.), current asset to total asset ratio (C.A.T.A.R.), current liabilities to total asset ratio (C.L.T.A.R.), and debt to asset ratio (D.T.A.R.) in effect to the firm's performance whereby firm's value dimension was taken as Tobin Q (T.Q.) and profitability i.e. return on asset (R.O.A.) and return on invested capital (R.O.I.C). They applied two different techniques for analyzing the data that are multiple regression and correlations. They found that there is a negative relationship between working capital variables and the firm's performance.

Saswata Chatterjee (2010) focused on the importance of the fixed and current assets in the successful running of any organization. It poses direct impacts on the profitability liquidity. There have been a phenomenon observed in the business that most of the companies increase the margin for the profits and losses because this act shrinks the size of working capital relative to sales. But if the companies want to increase or improve its liquidity, then it has to increase its working capital. In the response of this policy the organization has to lower down its sales and hence the profitability will be affected due to this action. For this purpose 30 United Kingdom based companies were selected which were listed in the London Stock exchange. The data were taken of three years 2006-2008. It analyzed the impact of the working capital on the profitability. The dimensions of working capital management included in this research which is quick ratios, current ratios C.C.C, average days of payment, Inventory turnover, and A.C.P (average collection period. on the net operating profitability of the UK companies.

Mathuva (2009) studied the impact of working capital management on the performance. He took almost 30 listed firms as a sample and all these companies were listed in Nairobi stock exchange and the data was taken from 1993 to 2008. There were certain findings of his research by analyzing the fixed effects regression models. Firstly, there is a negative relationship between the time when the cash is collected from the customers and the firm's productivity. This depicts, firms that are more profitable enjoys less time period for the collection of cash from the customers as compare to ones which are less profitable.

Secondly, there is a positive relationship between the inventories when they were brought in and the period to which they are sold and the firm's profitability. The interpretation comes out as that the firms or the organizations which take more time to keep the inventories it reduces the costs of the disruption in the process of production and usually the business losses as there is the insufficiency in the goods. This situation decreases the operating cost of the firm. The third assumption of the research was the association between the average payment period and profitability and found out to be positive ( $p < 0.01$ ). The more the time taken to disburse the creditors, the profitability will increase

Sen. M (2009) examined the ISE (Istanbul Stock Exchange) listed firms and checked out the relationship with the working capital. According to them there is negative relationship among variables. His research uncovered the importance of the finance directors who act as moderators or catalysts to increase the productivity of the firm in other words they positively affect the firm's performance

Terual and Martinez-Solano (2007) also provided the empirical relationship between both the variables. They chose the small and medium sized Spanish firms, a sample of about 8872 small to medium sized enterprises for 1996 to 2002. After the in depth view it was found out that the negative relationship between the profitability of SME's and the number of days account receivable and days of Inventory. But it did not provide the exact impact of no. of days account payable affect and SME's return on Assets.

Ganesan (2007) selected telecommunication equipment industry to study the effectiveness of working capital management. The sample included for his research paper included 443 annual financial statements of 349 telecommunication equipment companies covering the period 2001 to 2007. The statistical tests used included correlation, regression analyses and Analysis of variance (ANOVA). The results showed that days of the working capital negatively affects the profitability of these firms but in reality it does not affect the transportability of firms in telecommunication equipment industry.

Sayaduzzaman MD. (2006), examined that the management of British American Tobacco is highly reasonable due to the constructive cash inflows, designed approach in running the major components of working capital by evaluating five years data from 1999-2000 to

2002-2003. Appliance of multi-dimensional modal of existing assets mix may have optimistic impact on the nonstop expansion & extension of this multinational enterprise. This also depends on collaboration of the stakeholders and business environment in the framework of globalization.

Filbeck G. et al. (2005) investigated the data of 26 industries by taking the data of 970 companies during 1996 to 1999. They found out that firms are able to decrease financing cost and/or augment the funds obtainable for development by reduce the amount of funds attached to the current assets. They revealed that significant difference exist between industries in working capital measures across time. In addition, we determine that these measures for working capital vary extensively with in industry with the passage of time.

It is concluded that negative relationship was also found out between profitability and liquidity of companies of United Kingdom. Conversely a positive relationship was seen between debt and firm's profitability. The researchers propose that profitability can be increase by managers if reduction in the day's of accounts receivable and inventories occurred. Therefore the companies whose profitability is less opt to take much longer time to pay their bills. The aim of this heading is to discuss the work being done by the researchers and scholars in different industries and firms so as to reveal the contents or the variables and in their dimensions in depth.

### **3. Data and Methodology**

The current research is aimed to find out the impact of working capital over the firm's profitability. The quantitative method has been followed in order to find better results and outcomes that can be implemented in the future. Panel Data have been taken from the annual financial statements of the firms; these reports are collected from reliable sources including Federal Bureau of Statistic, State bank of Pakistan and Karachi stock exchange. The data contain all non financial firms listed in KSE-30 index of Karachi Stock Exchange. The analysis will be conducted for the period 2001 to 2010.

Multivariate correlational strategy has been applied on the pooled data. Collection of the data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables. Degree of relationship is expressed as a correlation coefficient.

The statistical technique used in this research is Canonical correlation. This technique is preferable because research is focused on the effect of two metric dependent variables on number of metric independent variables. Canonical regression is an extension of multiple regression analysis the only difference is that number of metric dependent variables is more than one in canonical regression. This technique is more appropriate for our research because it measures the strength of the overall relationships between the linear composites (canonical variates) for the independent and dependent variables. In effect, it represents the bivariate correlation between the two canonical variates. The results have been got by applying the statistical tools namely Statistical Package for Social Science (SPSS) and Statistical Analysis System (SAS). The Table 3.1 reports the variables description and tells us how to measure them? The hypothesis of this study is written as;

**3.1. Research Hypothesis:**

H<sub>0</sub>: Working Capital Management has insignificant impact on Firms’ Performance.

H<sub>1</sub>: Working Capital Management has significant impact on Firms’ Performance.

**3.2 Measurement of Variables:**

**Table 3.1: Measurement of Variables**

Variables	How to Measure	Abbreviation	Types of Variables
Average Collection Period	Account Receivable/Net Sales*365	ACP	Independent
Inventory Turnover (in Days)	Inventory/ Cost of Goods Sold * 365	ITD	Independent
Average Payment Period (in days)	Accounts Payable/ Purchases* 365	APP	Independent
Cash Conversion Cycle	ACP + ITD - APP	CCC	Independent
Net Trading Cycle	ACP + (Inventory/ Net Sales*365) - (Accounts Payables / Purchases * 365)	NTC	Independent
Gross Working Capital Turnover Ratio	Net Sales/ Current Assets	GTA	Independent
Current Assets to Total Assets Ratio	Current Assets/ Total Assets	CTR	Independent
Current Liabilities to Total Asset Ratio	Current Assets/ Total Liabilities	CLT	Independent
Current Ratio	Currents Assets/ Current Liabilities	CR	Independent
Return on Assets	Net Income / Total Assets	ROA	Dependent
Return on Equity	Net Income / Total Share Holders Equities	ROE	Dependent

#### 4. Data Analysis

**Table 4.1: Summary Statistics**

Sr. No.	Variables	N	Mean	Std. Dev	Min.	Max.
1	Inventory Turnover (in Days)	177	29.159	28.003	0.000	112.889
2	Average Payment Period (in Days)	177	107.294	97.230	8.055	595.292
3	Cash Conversion Cycle	177	-28.778	76.945	-390.561	190.209
4	Net Trading Cycle	177	6.142	69.378	-236.295	211.113
5	Gross Working Capital Turnover Ratio	178	2.621	1.584	0.115	9.194
6	Current Assets to Total Assets Ratio	178	0.539	0.588	0.091	6.623
7	Current Liabilities to Total Assets	177	0.397	0.399	0.042	4.847
8	Current Ratio	177	1.696	1.450	0.142	12.063
9	Return on Assets	178	0.112	0.105	-0.353	0.437
10	Return on Equities	178	0.246	0.293	-1.429	2.157

The above table 4.1 shows the results of summary statistics of all the taken variables in the analysis. It provides the information about number of observation included and mean its dispersion and variability in the data.

**Table 4.2: Correlation Analysis between Working Capital Management and the Firms' Performance**

Correlation between Working Capital Management and the Firms' Performance		Return on Assets	Return on Equity
<b>Inventory Turnover (in Days)</b>	Correlation	-0.288**	-0.205**
	p- Value	(0.00)	(0.01)
<b>Average Payment Period (in days)</b>	Correlation	0.053	0.261**
	p- Value	(0.48)	(0.00)
<b>Cash Conversion Cycle</b>	Correlation	-0.067	-0.281**
	p- Value	(0.38)	(0.00)
<b>Net Trading Cycle</b>	Correlation	-0.079	-0.172*
	p- Value	(0.29)	(0.02)
<b>Gross Working Capital Turnover Ratio</b>	Correlation	-0.118	0.001
	p- Value	(0.12)	(0.94)
<b>Current Assets to Total Asset Ratio</b>	Correlation	0.275**	0.131
	p- Value	(0.00)	(0.08)
<b>Current Liabilities to Total Assets Ratio</b>	Correlation	-0.073	0.042
	p- Value	(0.33)	(0.54)
<b>Current Ratio</b>	Correlation	0.577**	0.161
	p- Value	(0.00)	(0.18)

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

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

The above table 4.2 displays the correlation analysis among the Working Capital Management variables and the Firms' Performance variables. The result shows that firms' performance variable Return on Assets has significantly affected on Current Ratio with positive correlation of 0.577 and Inventory Turnover with negative correlation of 0.288. These findings are very consistent with the result of Sen & Eda (2009). Net Trading Cycle is also negatively correlated by Return on Assets as it was found by Soenen (1993). On the other hand, firms' performance variable Return on Equity is found to be negatively associated by significant correlation with two most important dimensions working capital management, i.e., Cash Conversion Cycle and Inventory Turnover in Days with the value of 0.281 and 0.205 respectively.

**Table 4.3 Canonical Correlation Analysis (Test of H<sub>0</sub>)**

Eigenvalues of Inv(E)*H = CanRsq/ (1- CanRsq)			
Eigenvalue	Difference	Proportion	Cumulative
0.6811	0.5445	0.833	0.833
0.1365		0.167	1

	Canonical Correlation	Adjusted Canonical Correlation	Approximate Standard Error	Squared Canonical Correlation
1	0.6365	0.6149	0.0450	0.4051
2	0.3466	0.3076	0.0665	0.1201

Test of H <sub>0</sub> : The canonical correlations in the current row and all that follow are zero				
Likelihood Ratio	Approximate F Value	Num DF	Den DF	Pr > F
0.52339253	7.93	16	332	(<.0001)
0.87986304	3.26	7	167	(0.0029)

The table 4.3 shows that first dependent variable Return on Assets (ROA) is moderately positively correlated with independent variables showing value 0.6365 and the remaining correlation with second dependent variable Return on Equity (ROE) is 0.3466. The adjusted canonical correlation is the value which is obtained after the subtraction of the approximate standard error. The value after deduction of the standard error gives the more accurate

information about the model fitness if one can further adjust the model by his own. And the values of adjusted canonical in this table are 0.6149 and 0.3076 respectively. The values of squared canonical correlation are 0.4051 and 0.1201. It depicts that how much model is representing the accuracy of data. The Eigen's value represents the amount of variance that is captured by the component. The column of Eigen value shows 0.6811 which is more than that of other Eigen value that is 0.1365 given in second row. Further likelihood ratios are 0.52339 and 0.8798 respectively. The F value in the first column shows the value of 7.93 and the p-value is given by 0.0001 which is less than 0.05 and similarly in the second case F- value is 3.26 having p-value 0.0029 which also less than 0.05. So we reject our null hypothesis. This shows that Working Capital Management is significantly correlated with the Firms' Performance.

**Table 4.4 Multivariate Statistics and F Approximation**

S=2 M=2.5 N=82					
Statistic	Value	F Value	Num DF	Den DF	Pr > F
<b>Wilks' Lambda</b>	0.523	7.93	16	332	(<.0001)
<b>Pillai's Trace</b>	0.525	7.44	16	334	(<.0001)
<b>Hotelling-Lawley Trace</b>	0.818	8.44	16	268.07	(<.0001)
<b>Roy's Greatest Root</b>	0.681	14.22	8	167	(<.0001)

The table 4.4 shows the four multivariate statistical test information for all independent variables. The four tests are numbered on top of the output table. For each of the four test statistics, an F statistics and related p- value also demonstrate.

Wilks' Lambda is first of the four multivariate statistics to test the null hypothesis that the canonical correlations are zero (which, in turn, mean there is no linear relationship between two specified groups of variables). The F value of this test in 7.93 and the p- value is 0.0001 which is less than 0.05, so this value assure that our null hypothesis is rejected showing that canonical correlation is not zero and there is a significant relationship between two specific groups.

The second test in this table is Pillai's trace. It is the sum of their squared canonical like  $0.6365^2 + 0.3466^2$  that is equal to 0.5253 with the F- value of 7.44 and the p- value is 0.0001 which is also smaller then 0.05 and rejecting our null hypothesis. The third test to

test the null hypothesis is Hotelling Lawley Trace. It is the sum of the value of (canonical correlation<sup>2</sup> / (1 - canonical correlation<sup>2</sup>)). The value of this test is calculated by  $0.6365^2 / (1 - 0.6365^2) + 0.3466^2 / (1 - 0.3466^2)$  resulted in 0.818 with the F- value of 8.44 alongwith p- value of 0.0001. So, we are rejecting our null hypothesis because p- value is smaller than 0.05. The fourth test of Roy's Greatest Root is based on the largest Eigenvalue. The value of test is 0.681 and F value is 14.22 with p- value is 0.001 which is also less than 0.05 and rejecting our null hypothesis. The entire four tests are rejecting our null hypothesis. So, we conclude that there is a significant impact of working capital management on firms' performance.

### 5. Concluding remarks and Policy implications

The present study has investigated the impact of Working Capital management on firms' performance for non- financial institutes listed in Karachi Stock Exchange (KSE-30) Index. Panel data have been analyzed by applying Canonical correlation for the time period of 2001 to 2010. It was found that inventory turnover in days has negative relationship with both indicators of firm performance i.e. Return on Assets and Return on Equity which means that companies performance can be increased by reducing inventory in days. APP is found to be significant positive association with both Return on Assets and Return on Equities, indicating that if time period of supplier's payment is increased then overall firm's performance also improves. Cash Conversion Cycle and Net Trading Cycle shows significant negative relation with Return on Assets and Return on Equities showing that firms' performance can be increased with short size of both of them. Lastly liquidity (Current Ratio) is positively associated with both performance dimensions. These findings are very consistent with the results of Raheman et al (2010) and Zubairi H.J (2010).

This research indicates that there should have proper inventory management system to avoid over stock of inventory resulting efficient outcome of investment. It has to make sure certain standards and levels which will stop us piling up inventory. Companies should engage in relationship with those suppliers who allow long credit time period and those customers who allow short payment period. There is still need in the future to indentify the sector wise relationship between working capital management and firms' performance in Pakistan.

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