Analyzing the Impact of Working Capital Management on the Profitability of SME's in Pakistan

Mustafa Afeef
Lecturer
Iqra National University
Phase 2, Hayatabad, Peshawar
Pakistan

Abstract

Working Capital Management has an overriding impact on a firm's profit performance. However, it is expected that an efficient management of working capital might have a more profound impact on profitability of small enterprises than on the performance of larger companies since a substantial proportion of the total assets of small and medium firms is constituted of the Current Assets and a sizeable fraction of their total liabilities is consisted of the Current Liabilities. This study, therefore, aims to determine the potential effect of working capital management on the profit performance of Small and Medium sized firms in Pakistan. To investigate, effect of working capital management was determined on profitability of a sample of 40 Pakistani small and medium enterprises (SME's) listed in Karachi Stock Exchange for a period of six years from 2003 to 2008 which led to a total of 240 firm-year observations. Findings from the analyses suggested that indicators of working capital management had a perceptible impact on profitability of firms under study.

Keywords: Working Capital Management, Cash Conversion Cycle, Inventory Conversion Period, Receivable Collection Period, Payable Deferral Period, Return on Assets, Operating Profit to Sales

1. Introduction

Working Capital Management is one of the most imperative and crucial aspects of short-term financial matters of an organization. Firms of all sizes demonstrate sensitivity of their profit performance to the efficient management of their working capital. However, which category of firms (small or large) exhibit relatively more responsiveness to proficient working capital management is obscure. Presumably small firms and large firms are different from each other in that working capital management may affect more (or less) the profitability of one or the other. This paper, however, is aimed at determining the effect of Working Capital Management on Profitability of *small* firms, commonly known as the "SME's", listed in Karachi Stock Exchange. Besides, an attempt is also made to discretely elucidate the influence of *Liquidity* on profitability of small companies listed at Karachi Stock Exchange.

2. Review of Literature

There has been some work previously done on the relationship between Working Capital Management and its influence on profitability of companies. Many researchers have recognized the effect of a sensible management of working capital on corporate performance. The ensuing lines enclose some of the research findings of the previously done work on this and the related topics:

Shin and Soenen (1998) were probably among the pioneers to relate efficient management of working capital with enhanced profitability. In their article *"Efficiency of Working Capital Management and Corporate Profitability"*, they analyzed whether the Cash Conversion Cycle (they used the *Net Trade Cycle* variable in which number of days inventory, receivables, and payables were all divided by the Sales figure and then multiplied by 365) had some potential impact on the profitability of a sample of firms listed on the US Stock Exchange during the period 1974-1994. They found that a reasonable reduction in the Cash Conversion Cycle could lead to an increase in the firms' Profitability.[1]

Marc Deloof investigated the relationship between working capital management and profitability for a sample of large-sized Belgian firms during the period 1992-1996. He observed that profitability could be enhanced by reducing the Receivable Collection Period and the Inventory Conversion Period. The increase in corporate profitability due to reduction in Payable Deferral Period was explained by him as less lucrative entities would tend to delay imbursement of their outstanding liabilities.[2]

Sushma Vishnani and Bhupesh Kr. Shah made a pragmatic analysis of Indian Consumer Electronics Industry to determine the impact of working capital policies & practices on profitability for the period 1994–95 to 2004–05. They found a negative relationship between the determinants of WCM and profitability for most of the companies in their sample. The same results were also confirmed in their industry-wide analyses. [3]

Pedro Juan García-Teruel and Pedro Martínez-Solano were probably the first to make an experimental analysis about the effects of WCM on the Profitability of Small and Medium Enterprises or *SMEs*. In their article, *"Effects of Working Capital Management on SME Profitability"*, they took a sample of 8,872 small and medium-sized Spanish firms for the period 1996-2002 for the purpose of constructing an empirical relationship between WCM and profitability. Their correlation analyses displayed a very significant negative relationship between the *Return on Assets* and the number of days accounts receivable, number of days inventory and the number of days accounts payable. Also, the correlation between the cash conversion cycle and the profitability variable was negative as well as statistically significant. The authors, thus, held that shortening the (CCC) would lead to an increase in profitability.[4] In another related paper written by Dr Ioannis Lazaridis and MSc Dimitrios Tryfonidis, profitability was found to be statistically significant with the cash conversion cycle of firms listed in the Athens Stock Exchange for the period 2001-2004.[5]

Azhagaiah Ramachandran and Muralidharan Janakiraman also attempted to devise a significant relationship between the Working Capital Management Efficiency and EBIT. The results of their Regression analysis showed a significant *negative* relationship of EBIT with Cash Conversion Cycle.[6]

Malaysian authors Zariyawati (*et al*) also endeavored to investigate the relationship between corporate profitability and working capital management of firms in six different Economic Sectors of the Malaysian Industry. The justification they had to conduct the study was that most of the previous studies, in their opinion, focused on large and/or developed markets. Thus reinvestigating the issue in the emerging markets of Malaysia could provide further insight on the impact of working capital management on profitability. Their results also were indicative of a strong and significant negative association between the two variables of study.[7]

One of the very few efforts made in Pakistan with the aim to assess the impact of Working Capital Management on Profitability was that initiated by Abdul Rehman and Mohamed Nasr of COMSATS Institute of Information Technology, Islamabad. They took a sample of 94 Pakistani non-financial firms listed in Karachi Stock Exchange for a period of six years from 1999 to 2004. The results of their analyses demonstrated a very strong negative relationship between the determinants of working capital management and that of profitability. In addition to that, they also found a significant negative relation between the *liquidity* and profitability of firms in their sample.[8]

Another attempt to explore the relationship between the variables of Working Capital Management and Profitability was made by Haitham Nobanee and Maryam AlHajjar. Their analysis was based on a sample containing 2123 Japanese non-financial firms listed in the Tokyo Stock Exchange for the period from 1990 to 2004. The authors, after analyzing the results, suggested that Japanese firms should focus on shortening their Receivable Collection Period, Inventory Conversion Period and Cash Conversion Cycle to enhance profitability. Lengthening the Payable Deferral Period could also add to profitability, they argued. However, they deemed the over lengthening of the Payable Deferral Period to be equally risky as it could harm the firm's credibility and credit reputation in the long run.[9]

Christopher and Kamalavalli investigated the influence of the management of working capital on the profitability of Indian Corporate Hospitals by taking a sample of 14 out of the fifty one listed corporate hospitals in India using panel data analysis for the period 1996-97 to 2005-06. The results of their analysis depicted that Inventory Turnover ratio, Debtors Turnover ratio and Working Capital Turnover were positively related with the Return on Investment, a variable used for the measurement of a firm's profitability.[10]

Amit K. Mallik, Debashish Sur and Debdas Rakshit (2005) took a sample from the Indian Pharmaceutical Industry to examine the relationship between working capital management and profitability but failed to establish any.[11] Dr D. Mukhopadhyay (2004) indicated, in his article *"Working Capital Management in Heavy Engineering Firms—A Case Study"*, that no significant role did current assets play in the profit maximization of the firms under study.[12] A study with a view to analyzing the relationship between working capital management efficiency and corporate profitability in the Indian Cement Industry was conducted by Dr Santanu Kr. Ghosh and Santi Gopal Maji (2003).

His results depicted a significant association between effective and efficient use of current assets and profitability. However, the study also revealed that the performance of the industry was not remarkable during that period.[13] D. Sur, J. Biswas and P. Ganguly (2001) found a very strong positive link between liquidity and profitability in the Indian Aluminum Producing Industry.[14] D. Govind Rao and P. M. Rao (1999) researched the relationship of WCM and profitability in Indian cement industry and found a mix of positive and negative connections between the working capital related variables and that of profitability.[15] A. Vijaykumar and A. Venkatachalam (1995) explored a negative correlation between liquidity and profitability in the Tamil Nadu Sugar Industry.[16] On the other hand, Bardia (2004) discovered a positive relationship between liquidity and profitability in the steel giant SAIL for the period 1992-2002.[17] Narware (2004), however, found both positive and negative interrelationship between working capital management and profitability in a fertilizer company, NFL.[18]

The relationship between liquidity and profitability was also inspected by Eljelly in 2004 using a sample of Saudi Arabian companies. His results narrated that the Cash Conversion Cycle was more suitable to be used as a measure for assessing a company's liquidity rather than the more static Current Ratio. The results also showed a strong negative relationship between liquidity and profitability. The size of the company was found to have a profound impact on its profitability in the analysis made by Eljelly.[19]

The size of a firm was also known to have a substantial impact on its Cash Conversion Cycle. "Smaller firms have longer CCC", noticed Ali Uyar who endeavored to determine the association of CCC with the size and profitability of Turkish firms listed on the Istanbul Stock Exchange. In his work *"The Relationship of Cash Conversion Cycle with Firm Size and Profitability: An Empirical Investigation in Turkey"*, he found a strong and significant *negative* linkage of Cash Conversion Cycle with the *firm size* as well as with its *performance*.[20]

(Lyroudi & Lazaridis, 2000) made a unique study of the Greek Food Industry to determine the relationship between the Cash Conversion Cycle and the traditional liquidity indicators, i.e., the Current Ratio and the Quick Ratio. The results portrayed a significant positive association between the modern and traditional liquidity signifiers. The Cash Conversion Cycle was also found to be positively linked with the Return on Assets ratio.[21]

Manoj Anand and Keshav Malhotra (2007) also attempted to significantly relate the management of working capital with the firm profitability in their article *"Working Capital Performance of Corporate India: An Empirical Study*". They used the data of 339 S&P CNX 500 non-financial corporations for a period of 3 years from 2001-02 to 2003-04. Their work, however, indicated a slight positive association between the management of working capital and corporate profitability.[22]

The relationship of Working Capital Management and Profitability was also examined by Chakraborty (2008) in Indian Pharmaceutical companies. He took a sample of 25 selected firms in the industry for the period 1996-97 to 2007-08 in his article *"Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry*". He observed that there were two different view points: One was that there might exist a negative relationship between working capital and profitability and that the former does not play any role in improving the later. The second view was that Working Capital Management had a notable impact on Profitability and that without investment in working capital, the desired level of Sales could not be achieved.[23]

Singh (2008) observed that the level of Inventory had a profound influence on the management of working capital. He stressed on the need to prudently handle the Inventory.[24]

J. P. Singh and Shishir Pandey Jr. (2008), in their article *"Impact of Working Capital Management in the Profitability of Hindalco Industries Limited"* observed a significant effect of the management of working capital on the profitability of Hindalco Industries.[25]

The impact of working capital management on profitability was also observed by Cote and Latham (1999) who discovered that management of inventory, receivables and payables had a direct influence on a company's Cash Flows which could ultimately affect its profitability.[26]

3. The Hypothesis

The hypothesis developed for the study is:

H_0: *Working Capital Management has no relevance to Profitability of Small and Medium-sized corporations listed at Karachi Stock Exchange.*

H_1: An efficient management of Working Capital may have a significant relationship with the Profitability of Small and Medium-sized corporations listed at Karachi Stock Exchange.

4. Objectives

The primary objectives of this research study are:

1. To formulate an empirical relationship between Working Capital Management and Profitability for Small and Medium-sized firms listed in Karachi Stock Exchange, and
2. Separately analyze the effects of different components of Working Capital Management on Profitability of SMEs listed in Karachi Stock Exchange

4. Plan of Work and Methodology

This research work investigates the relationship of Corporate Profitability and Working Capital Management in *small* listed companies of Karachi Stock Exchange for a period of six years from 2003 to 2008. The data for this purpose was acquired from an official and legitimate document titled, *"Balance Sheet Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange --- (2003-2008)"*, formally published by the Statistics and DWH Department of the State Bank of Pakistan (SBP). This document contains the Balance Sheet analysis of all the *non-financial firms* listed on the Karachi Stock Exchange as at June 30, 2008. Hence the research is entirely based on the *Secondary data*. Firms of various economic groups and sectors are included in the document including Cotton and Other Textiles, Chemicals, Engineering, Sugar and Allied Industries, Paper & Board, Cement, Fuel & Energy, Transport & Communication, Tobacco, Jute, Vanaspati & Allied Sector and others. It should be mentioned that the *financial corporations* like Banking Companies, Insurance Companies, Leasing Companies and Modarabas etc. are not included in this study due to their distinctively dissimilar nature of business in comparison with the *non-financial* business entities.

There were a total of 436 non-financial companies listed on the Karachi Stock Exchange as at June, 2008 as per the analysis published by the State Bank of Pakistan. Out of these, 93 were found to be small or medium-sized companies as per the SBP's *SME Prudential Regulations* and the remaining were large corporations.

5. The Sample Size

The size of the sample used for the study was dependent on the availability of complete financial data of SME's in the source document published by SBP. As mentioned earlier, there were a total of 93 small and medium-sized non-financial firms listed in KSE. However, only 40 out of them had complete set of data required for the study, i.e., the data for each year from 2003 to 2008. Hence, analyses of all the 40 firms (having thorough six year financial data) were made for six years ranging from 2003 to 2008 that led to a total of 240 firm-year observations.

6. Variables used in the Study

Following are the discreet variables used in this study to measure the efficiency of working capital management, profitability and liquidity for firms taken in the sample:

Profitability (which is a dependent variable in the study) is measured by two variables separately --- the *Return on Assets (ROA)* which is a ratio of the *Earnings Before Interest and Taxes* to *Total Assets*, and the *Operating Profit to Sales (OPS)* ratio which is calculated by dividing the *Operating Profit* of a firm by its *Net Sales*.
The Cash Conversion Cycle (CCC) is used for measuring the efficiency of Working Capital Management of firms. Calculated as *Receivable Collection Period* plus *Inventory Conversion Period* minus *Payable Deferral Period*, it serves as one of the best known measures so far for representing WCM.
Receivable Collection Period (RCP) is the number of days (on average) for which the company receivables remain unsettled. It is calculated as:
Receivable Collection Period = (Receivables/Sales) × 365
Inventory Conversion Period (ICP) is the number of days (on average) for which a company retains its Inventory. It is calculated as:
Inventory Conversion Period = (Inventory/Cost of Sales) × 365
Payable Deferral Period (PDP) is the number of days (on average) it takes a firm to pay off its credit purchases. It is calculated as:
Payable Deferral Period = (Payables/Cost of Sales) × 365

In order to measure the *Liquidity* of firms in the samples, the *Current Ratio* is used. Current Ratio is a measure of the degree to which a firm can repay its outstanding liabilities that might become due in the short-run. The ratio is calculated as:

Current Ratio = Current Assets/Current Liabilities

Aside from the dependent and the independent variables just discussed, a few control variables are also incorporated that are likely to influence the way working capital is managed. These are the *Natural Logarithm of Sales* (a variable used for determining the size of the sample companies, measured by taking the Natural Log of the Sales figure), the *Sales Growth* (a variable used to determine the level of growth in Sales in each passing year, measured by dividing the increase or decrease in *Sales* by the previous year's sales figure) and the *Financial Leverage* (used to gauge the total debt obligations of a firm as a percentage of its total assets, measured by dividing the total liabilities by total assets).

7. Statistical Tools used in the Study

This study makes use of the Statistical tools for both its descriptive and quantitative analysis using the SPSS 16. The *Mean* and *Standard Deviation* are used in the descriptive portion of the analyses to determine the Mean values of each set of variables and their Standard Deviation. In the quantitative analysis portion, a statistical *Correlation analysis* is made to determine the relationship between an efficient management of working capital and corporate profitability for the sample under study. Similarly, the Correlation analysis is also made to assess the impact of *liquidity* on profitability of the sample firms.

The *Pearson Product Moment Coefficient of Correlation* is used throughout the study. The Quantitative analysis also includes *Multiple Regression analyses* in order to shed more light on, and develop a better understanding of, the relationship of WCM and corporate performance, and that between the Liquidity and Profitability of firms under study.

8. The Regression Model

The Multiple Regression analysis was employed in the study to explore the combined effect of the variables of working capital management on profitability.

The Regression Equation for the sample follows:

$ROA\ ot = \beta 0 + \beta 1\ (RCP\ ot) + \beta 2\ (ICP\ ot) + \beta 3\ (PDP\ ot) + \beta 4\ (CCC\ ot) + \beta 5\ (CR\ ot) + \beta 6\ (LNS\ ot) + \beta 7\ (SG\ ot) + \beta 8\ (FL\ ot) + \varepsilon$

Where:

ROA ot = Return on Assets of firm *o* at time *t*; *o* = 1, 2, 3, …, 40 Small firms listed in Karachi Stock Exchange
β0 = The intercept of equation
t = Time = 1,2,3, …, Years
RCP = Receivable Collection Period
ICP = Inventory Conversion Period
PDP = Payable Deferral Period
CCC = Cash Conversion Cycle
CR = Current Ratio
LNS = Natural Logarithm of Sales
SG = Sales Growth
FL = Financial Leverage
ε = The Error Term

9. The Descriptive Analysis

This section presents the descriptive statistics of the pooled data of all firms included in the sample. Table 1 gives the mean values and the standard deviation for each variable in the study. Aside from that, the table also includes the minimum and maximum values for each variable in order to trace out the extreme values achieved by all variables during the years of study.

Insert Table 1 about here

The Return on Assets, as per Table 1, has a mean value of 9.6% of the total Assets for all the small firms in the sample and its standard deviation is 0.736. The minimum value for ROA recorded in the analysis is -1.232 and the maximum is 9.683.

The mean value of Operating Profit to Sales ratio for the sample firms is 0.047 and the standard deviation is 0.731. The minimum value of Operating Profit to Sales is -3.760 for a firm in a year of study and the maximum value is 6.419.

Firms in the sample take, on average, 118 days to sell inventory with a standard deviation of 154 days. There are a few firms that do not keep inventory at all and the minimum time to sell inventory for them is 0 days. On the other hand, the maximum time ever taken by any sample firm in the course of study to sell its inventory is 1420 days.

Companies receive payments against sales in an average time period of 106 days but the standard deviation is 298 days which means many firms deviate, to a fairly great extent, from the mean value. Some firms probably do not engage themselves in credit sales and thus the minimum time to collect proceeds from sales for any firm in sample 1 is 0 days whereas the maximum time is 2540 days.

Firms in the sample pay for their bills, on average, in 461 days with the standard deviation of 643 days. The minimum time for any firm to pay back its liabilities in any year is 5 days and the maximum is 6675 days. The mean value of the Cash Conversion Cycle for firms taken in the sample is -237 days and the standard deviation is 640 days. The minimum and maximum recorded values for CCC are -5897 days and 2611 days respectively.
The average Current Ratio for sample companies is 2.041 with a standard deviation of 3.428. The least Current Ratio recorded for any firm during a year is 0.024 while the maximum is 27.067.

Financial Leverage is used as a control variable to examine the impact of debt financing used by a firm over its profitability. The average debt ratio or financial leverage for any firm in the sample is 0.865 and the standard deviation is 0.997. The minimum and maximum values recorded for Financial Leverage of sample firms during the years of study are 0.014 and 9.118 respectively.

To measure the effect of firm size over its profitability, Natural Logarithm of sales of each firm is calculated as an indicator of the size of the firm. The mean value of size of the sample firms is 18.372 with a standard deviation of 0.957. The smallest firm in the sample has a Natural Log of 14.732 for a year and the largest firm has a Log of 19.749.

To analyze the impact of the growth in sales for any firm over its profitability, the Sales Growth ratio has been worked out as a control variable for each firm for every year of study. The average growth in sales recorded for firms taken into account is 0.329 and the standard deviation is 1.663. The minimum sales growth for any firm during the course of study is -1 and the maximum recorded growth in sales is 19.133.

10. The Quantitative Analyses

This section offers en bloc quantitative analyses for the sample firms. The analyses further include two distinct methods of statistical examination. The first portion holds the Correlation analysis to determine the degree of association between any two variables of study. The second portion contains the Regression analysis for each of the profitability indicator used in the study separately.

10.1. The Correlation Analysis

This section explains the Correlation of the profitability variables (i.e., the *Return on Assets* and the *Operating Profit to Sales*) with that of the indicators of working capital management and liquidity. Table 2 holds the Correlation Matrix for firms studied in the sample.

Insert Table 2 about here

Results of the Correlation analysis between the Inventory Conversion Period and the Operating Profit to Sales depict a significant negative coefficient of -0.153. The *p*-value is (0.018) which denotes that the result is significant at $\alpha = 5\%$. The results suggest that in order to augment profitability, Inventory Conversion Period must be kept as short as possible. No significant relationship is found, however, between the Inventory Conversion Period and the Return on Assets.

Results of the Correlation analysis between the Receivable Collection Period and the Operating Profit to Sales also represent a very significant negative coefficient of -0.191. The *p*-value is (0.003) which denotes that the result is significant at $\alpha = 1\%$. The results suggest that collecting receivables on time enhances the profitability of firms. Nonetheless, no significant relationship is found between the Receivable Collection Period and the Return on Assets.

On the other hand, *no* significant relationship is found to exist between any of the profitability indicators and the Payable Deferral Period, Cash Conversion Cycle & Current Ratio for firms in the sample.

In order to throw more light on the interrelationship between elements of working capital management and profitability of sample organizations, the regression analyses are performed in the ensuing pages.

10.2. The Regression Analysis 'A'

In the Regression analysis A, the indicators of working capital management and liquidity are regressed against the 'Return on Assets'. A total of five regressions are made to investigate the determinants of ROA for all 240 firm-year observations. The results of the Regression analysis 'A' are shown in Table 3 and described in the next lines:

Insert Table 3 about here

The Regression 1 is run to explore the relationship between the Return on Assets and the Inventory Conversion Period. The Regression shows an insignificant negative association of -0.046 between the two variables.

In Regression 2, the Inventory Conversion Period is replaced by the Receivable Collection Period. This Regression also shows an insignificant negative relationship of -0.054 between the RCP and the ROA.

The third Regression is run using the Payable Deferral Period as a replacement for the Receivable Collection Period. This Regression also shows an insignificant negative association of -0.126 between the PDP and the ROA. In the fourth Regression, the Payable Deferral Period is replaced by the Cash Conversion Cycle. This Regression too shows an insignificant positive association of 0.075 between the CCC and the ROA.

In Regression 5, all the indicators of working capital management are excluded in order to separately measure the impact of Current Ratio (liquidity) on the Return on Assets. The Regression shows an insignificant positive association of 0.030 between the CR and the ROA.

10.3. The Regression Analysis 'B'

In the Regression analysis B, the indicators of working capital management and liquidity are regressed against the 'Operating Profit to Sales'. A total of five regressions are made (from Regression 6 to 10) to investigate the determinants of OPS for all 240 firm-year observations. Results of the Regression analysis 'B' are shown in Table 4 and described in the ensuing lines:

Insert Table 4 about here

The Regression 6 is run to explore the relationship between the Operating Profit to Sales and the Inventory Conversion Period. The Regression shows a significant negative association of -0.114 between the two variables. But the significance level is not fairly high as the *p*-value is (0.091). Hence, the result is significant at $\acute{\alpha} = 0.1$ level.

In Regression 7, the Inventory Conversion Period is replaced by the Receivable Collection Period. This Regression also shows a significant negative relationship, with a coefficient of -0.170 and at the significance level of (0.032), between the RCP and OPS.

The eighth regression is run using the Payable Deferral Period as a replacement for the Receivable Collection Period. This Regression shows an insignificant negative association of -0.018 between the PDP and the OPS.
In the ninth regression, the Payable Deferral Period is replaced by the Cash Conversion Cycle. This Regression shows an insignificant negative association of -0.142 between the CCC and the OPS.

In Regression 10, all the indicators of working capital management are excluded in order to separately measure the impact of Current Ratio (liquidity) on the Operating Profit to Sales ratio. This Regression shows a highly insignificant negative association of -0.010 between the CR and the OPS.

11. Conclusion and Discussion

Based on the Correlation analysis and the Regression analysis of pooled data of the sample firms, following deductions are drawn:

- The Correlation matrix of the pooled data of sample firms exhibited strong negative relationships of the 'Inventory Conversion Period' and the 'Receivable Collection Period' with the 'Operating Profit to Sales' of small firms. However, no significant associations were found between the profitability measures and the Payable Deferral Period, Cash Conversion Cycle & Current Ratio.

- Studying the results of the Regression Analysis 'A', no significant associations were detected between the indicators of WCM & liquidity and the Return on Assets.
- In the Regression Analysis 'B', however, a weak but significant relationship was found between the Inventory Conversion Period and the Operating Profit to Sales and a highly significant negative association was discovered between the Receivable Collection Period and the OPS. The Payable Deferral Period and Cash Conversion Cycle had no significant link with the profitability variable.

Although the results do not depict any significant relationship of the profitability variables with the Payable Deferral Period and Cash Conversion Cycle of firms, they do represent an association between profitability and the Inventory Conversion Period and that between the profitability and the Receivable Collection Period. Hence, based on the deductions made above, we reject our Null Hypothesis H_0 that stated, "*Working Capital Management has no relevance to Profitability of Small and Medium-sized corporations listed at Karachi Stock Exchange*", and accept the Alternate Hypothesis H_1. In fact, in the pooled data analyses, it was observed that both the Correlation and the Regression analysis for the sample exhibited significant negative relationships of the 'Inventory Conversion Period' and the 'Receivable Collection Period' with the 'Operating Profit to Sales' of small firms. Hence, it can be held that *an efficient management of working capital does have a substantial impact on the Profitability of Small and Medium-sized corporations listed at Karachi Stock Exchange*.

END NOTES

[1] Shin, H.H and Soenen, L. (1998). "Efficiency of Working Capital Management and Corporate Profitability". *Financial Practice and Education*, Vol. 8, No. 2, 37-45.

[2] Deloof, Marc. (2003). "Does Working Capital Management Affect Profitability of Belgian Firms?" *Journal of Business, Finance and Accounting*, Vol. 30, 573-88.

[3] Vishnani, Sushma & Shah, Bhupesh Kr. (2007). "Impact of Working Capital Management Policies on Corporate Performance --- An Empirical Study". *Global Business Review*, Vol. 8, 267. [Online] Available: http://gbr.sagepub.com/cgi/content/abstract/8/2/267

[4] García-Teruel. Pedro Juan, Martínez-Solano, Pedro. (2007). "Effects of Working Capital Management on SME Profitability". *International Journal of Managerial Finance*, Vol. 3, Issue 2, 164-177.

[5] Lazaridis, Ioannis & Tryfonidis, Dimitrios., (January-June 2006). "The relationship between working capital management and profitability of listed companies in the Athens Stock Exchange". *Journal of Financial Management and Analysis*, Vol. 19. No. 1, 26 – 35.

[6] Ramachandran, Azhagaiah & Janakiraman, Muralidharan., (2009). "The Relationship between Working Capital Management Efficiency and EBIT". *Managing Global Transitions*. University of Primorska, Faculty of Management Koper. Vol. 7. Issue. 1, 61-74.

[7] Zariyawati, M. A., Annuar, M. N. & Rahim, A.S. Abdul., "Effect of Working Capital Management on Profitability of Firms in Malaysia". [Online] Available: http://www.docstoc.com/docs/18167286

[8] Rehman, Abdul & Nasr, Mohamed., (March 2007). "Working Capital Management and Profitability – Case of Pakistani Firms". *International Review of Business Research Papers*, Vol. 3. No.1, 279 – 300.

[9] Nobanee, Haitham and Al Hajjar, Maryam. (July 13, 2009). "A Note on Working Capital Management and Corporate Profitability of Japanese Firms". [Online] Available: http://ssrn.com/abstract=1433243

[10] Christopher, S. Benjamin and Kamalavalli, A. L., (January, 22 2009). "Sensitivity of Profitability to Working Capital Management in Indian Corporate Hospitals". [Online] Available: http://ssrn.com/abstract=1331500

[11] Amit, K. Mallik, Sur, Debashish and Rakshit, Debdas. (2005). "Working Capital and Profitability: A Study on their Relationship with Reference to Selected Companies in Indian Pharmaceutical Industry". *GITAM Journal of Management*, Vol. 3, 51–62.

[12] Mukhopadhyay, D. (2004). "Working Capital Management in Heavy Engineering Firms—A Case Study". [Online] Available: http://www.myicwai.com/knowledgebank/fm48.

[13] Ghosh, S.K. and Maji, S.G. (May 2004). "Working Capital Management Efficiency: A Study on the Indian Cement Industry". *The Management Accountant*, 363–72.

[14] Sur, D., Biswas J. and Ganguly P. (June 2001). "Liquidity Management in Indian Private Sector Enterprises: A Case Study of Indian Primary Aluminium Producing Industry". *Indian Journal of Accounting*, 8–14.

[15] Govind Rao, D. and Rao, P.M. (1999). "Impact of Working Capital on Profitability in Cement Industry—A Correlation Analysis". *Working Capital Management*. (Deep & Deep Publications Pvt. Ltd., New Delhi), 239–59.

[16] Vijaykumar, A. and Venkatachalam, A. (June 1995). "Working Capital and Profitability—An Empirical Analysis". *The Management Accountant*. ICWAI, Kolkata, 748–50.

[17] Bardia, S.C. (June 2004). "Liquidity Management: A Case Study of Steel Authority of India Ltd.". *The Management Accountant*. ICWAI, Kolkata, 463–67.

[18] Narware, P. C . (2004). "Working Capital and Profitability– An Empirical Analysis". *The Management Accountant*. ICWAI, Kolkata.

[19] Eljelly, A. (2004). "Liquidity-Profitability Tradeoff: An empirical Investigation in an Emerging Market". *International Journal of Commerce & Management*, Vol. 14. No. 2, 48 – 61.

[20] Uyar, Ali., (2009). "The Relationship of Cash Conversion Cycle with Firm Size and Profitability: An Empirical Investigation in Turkey". *International Research Journal of Finance and Economics*. ISSN 1450-2887. Issue 24. EuroJournals Publishing, Inc., 186-193.

[21] Lyroudi, K., & Lazaridis, Y. (2000). "The Cash Conversion Cycle and Liquidity Analysis of the Food Industry in Greece". EFMA 2000 Athens. [Online] Available: http://ssrn.com/paper=236175.

[22] Anand, Manoj and Malhotra, Keshav., (January 2007). "Working Capital Performance of Corporate India: An Empirical Study". *ICFAI Journal of Applied Finance*, Vol. 13, No. 1, 46-81.

[23] Chakraborty, Kaushik., (December 2008). "Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry". *The ICFAI Journal of Management Research*, Vol. 7, No. 12, 41-59.

[24] Singh, P. (2008). "Inventory and Working Capital Management: An Empirical Analysis". *The ICFAI University Journal of Accounting Research.*

[25] Singh , J. P. and Pandey, Shishir., (December 2008). "Impact of Working Capital Management in the Profitability of Hindalco Industries Limited". *The ICFAI University Journal of Financial Economics*, Vol. 6, No. 4, 62-72.

[26] Cote J. M. and Latham C. K. (1999). "The Merchandising Ratio: A Comprehensive Measure of Working Capital Strategy". *Issues in Accounting Education*, Vol. 14, Issue 2, 255-267.

Annexure

40 Small Non-financial Firms Listed in KSE: (2003-2008) 240 Firm-year Observations

VARIABLES	Obs.	Mean	Minimum	Maximum	St. Dev.
Return on Assets	240	0.096	-1.232	9.683	0.736
Operating Profit to Sales	238	0.047	-3.760	6.419	0.731
Inventory Conversion Period	240	117.99	0.00	1420.00	154.03
Receivable Collection Period	240	105.94	0.00	2539.67	298.28
Payable Deferral Period	240	461.35	4.89	6675.44	643.25
Cash Conversion Cycle	240	-237.42	-5896.78	2611.02	639.66
Current Ratio	240	2.041	0.024	27.067	3.428
Financial Leverage	240	0.865	0.014	9.118	0.997
Size (Measured by LN Sales)	238	18.372	14.732	19.749	0.957
Sales Growth	240	0.329	-1.000	19.133	1.663

Source: Calculations based on the Balance Sheet Analysis of firms from 2003 to 2008

Table 1: The Descriptive Analysis

Correlation Matrix for Sample 1

		Return on Assets	Operating Profit to Sales	Inventory Conversion Period	Receivable Collection Period	Payable Deferral Period	Cash Conversion Cycle	Current Ratio	Financial Leverage	Size (Measured by LN Sales)	Sales Growth
Return on Assets	Pearson Correlation	1	.495**	-.044	-.043	-.016	-.014	-.014	.104	-.021	.010
	Sig. (2-tailed)		.000	.494	.511	.803	.826	.826	.109	.742	.876
	N	240	238	240	240	240	240	240	240	238	240
Operating Profit to Sales	Pearson Correlation	.495**	1	-.153*	-.191**	-.047	-.080	-.059	.069	.144*	-.019
	Sig. (2-tailed)	.000		.018	.003	.473	.217	.361	.292	.026	.771
	N	238	238	238	238	238	238	238	238	238	238
Inventory Conversion Period	Pearson Correlation	-.044	-.153*	1	-.063	.409**	-.200**	.046	-.015	-.261**	-.017
	Sig. (2-tailed)	.494	.018		.328	.000	.002	.475	.813	.000	.794
	N	240	238	240	240	240	240	240	240	238	240
Receivable Collection Period	Pearson Correlation	-.043	-.191**	-.063	1	.079	.371**	.440**	-.145*	-.335**	-.081
	Sig. (2-tailed)	.511	.003	.328		.222	.000	.000	.025	.000	.213
	N	240	238	240	240	240	240	240	240	238	240
Payable Deferral Period	Pearson Correlation	-.016	-.047	.409**	.079	1	-.870**	-.198**	.525**	-.581**	-.028
	Sig. (2-tailed)	.803	.473	.000	.222		.000	.002	.000	.000	.667
	N	240	238	240	240	240	240	240	240	238	240
Cash Conversion Cycle	Pearson Correlation	-.014	-.080	-.200**	.371**	-.870**	1	.415**	-.599**	.364**	-.014
	Sig. (2-tailed)	.826	.217	.002	.000	.000		.000	.000	.000	.833
	N	240	238	240	240	240	240	240	240	238	240
Current Ratio	Pearson Correlation	-.014	-.059	.046	.440**	-.198**	.415**	1	-.331**	-.061	.022
	Sig. (2-tailed)	.826	.361	.475	.000	.002	.000		.000	.349	.740
	N	240	238	240	240	240	240	240	240	238	240
Financial Leverage	Pearson Correlation	.104	.069	-.015	-.145*	.525**	-.599**	-.331**	1	-.284**	.031
	Sig. (2-tailed)	.109	.292	.813	.025	.000	.000	.000		.000	.634
	N	240	238	240	240	240	240	240	240	238	240
Size (Measured by LN Sales)	Pearson Correlation	-.021	.144*	-.261**	-.335**	-.581**	.364**	-.061	-.284**	1	-.037
	Sig. (2-tailed)	.742	.026	.000	.000	.000	.000	.349	.000		.575
	N	238	238	238	238	238	238	238	238	238	238
Sales Growth	Pearson Correlation	.010	-.019	-.017	-.081	-.028	-.014	.022	.031	-.037	1
	Sig. (2-tailed)	.876	.771	.794	.213	.667	.833	.740	.634	.575	
	N	240	238	240	240	240	240	240	240	238	240

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

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

Table 2: The Correlation Matrix

The Regression Analysis A: Linear Regressions for Sample Firms						
Dependent Variable: Return on Assets						
40 Small-sized Non-Financial Firms listed in KSE (2003 to 2008), 240 Firm-year Observations						
VARIABLES		Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5
(Constant)	Beta	0.030	0.086	0.733	0.102	-0.184
	p-value	(0.977)	(0.937)	(0.543)	(0.924)	(0.854)
Current Ratio	Beta	0.031	0.053	0.014	0.005	0.030
	p-value	(0.660)	(0.499)	(0.838)	(0.946)	(0.670)
Financial Leverage	Beta	0.112	0.111	0.162	0.149	0.116
	p-value	(0.128)	(0.133)	(0.045)	(0.076)	(0.112)
Size (Measured by LN Sales)	Beta	0.000	-0.005	-0.048	-0.006	0.014
	p-value	(0.994)	(0.948)	(0.561)	(0.936)	(0.844)
Sales Growth	Beta	0.003	-0.001	0.000	0.006	0.005
	p-value	(0.959)	(0.985)	(0.991)	(0.927)	(0.942)
Inventory Conversion Period	Beta	-0.046	-	-	-	-
	p-value	(0.503)	-	-	-	-
Receivable Collection Period	Beta	-	-0.054	-	-	-
	p-value	-	(0.504)	-	-	-
Payable Deferral Period	Beta	-	-	-0.126	-	-
	p-value	-	-	(0.173)	-	-
Cash Conversion Cycle	Beta	-	-	-	0.075	-
	p-value	-	-	-	(0.425)	-
Adjusted R Square		-0.008	-0.008	-0.002	-0.007	-0.006
F-Statistic		0.627	0.626	0.914	0.665	0.672

Table 3: Linear Regressions for Sample Firms with 'Return on Assets' as a Dependent Variable

The Regression Analysis B: Linear Regressions for Sample Firms						
Dependent Variable: Operating Profit to Sales						
40 Small-sized Non-Financial Firms listed in KSE (2003 to 2008), 240 Firm-year Observations						
VARIABLES		Reg. 6	Reg. 7	Reg. 8	Reg. 9	Reg. 10
(Constant)	Beta	-1.963	-1.650	-2.360	-3.029	-2.491
	p-value	(0.057)	(0.117)	(0.047)	(0.004)	(0.012)
Current Ratio	Beta	-0.007	0.063	-0.012	0.037	-0.010
	p-value	(0.916)	(0.414)	(0.864)	(0.625)	(0.887)
Financial Leverage	Beta	0.105	0.099	0.122	0.054	0.116
	p-value	(0.146)	(0.172)	(0.125)	(0.509)	(0.110)
Size (Measured by LN Sales)	Beta	0.143	0.118	0.167	0.213	0.176
	p-value	(0.043)	(0.107)	(0.042)	(0.003)	(0.010)
Sales Growth	Beta	-0.019	-0.034	-0.016	-0.017	-0.015
	p-value	(0.773)	(0.598)	(0.807)	(0.788)	(0.816)
Inventory Conversion Period	Beta	-0.114	-	-	-	-
	p-value	(0.091)	-	-	-	-
Receivable Collection Period	Beta	-	-0.170	-	-	-
	p-value	-	(0.032)	-	-	-
Payable Deferral Period	Beta	-	-	-0.018	-	-
	p-value	-	-	(0.843)	-	-
Cash Conversion Cycle	Beta	-	-	-	-0.142	-
	p-value	-	-	-	(0.125)	-
Adjusted R Square		0.026	0.033	0.014	0.023	0.018
F-Statistic		2.241	2.605	1.651	2.135	2.063

Table 4: Linear Regressions for Sample Firms with 'Operating Profit to Sales' as a Dependent Variable