IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY

Impact of Working Capital Management on Profitability of Textile

Sector of Pakistan

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ABSTRACT

Working capital can be considered as source of existence for a financial body and management of working capital is regarded as one of the most essential part of business management. This study aims to find out the impact of working capital policies on profitability. Return on assets is used as a measure of profitability. Current assets to total assets ratio is used to compute the investment policy of working capital management and to determine financing policy of working capital management current liabilities to total assets ratio is used. Other variables that are used in this study are quick ratio, debt to equity ratio and size of the firms. Secondary data of 117 textile firms listed on Karachi stock exchange is taken for a period of six years i.e. 2005-2010 to calculate all these variables. Results of the regression analysis show that aggressiveness of working capital management policies is negatively associated with profitability. Moreover liquidity and size of the firm have positive relation profitability whereas debt to equity ratio is negatively correlated with profitability. Textile sector is one of the majors sectors of Pakistan. It needs due consideration regarding the management of assets and liabilities. So, the aim of this study is to provide some useful recommendations for the people responsible for the management of this sector. This study also establishes the basis for future research in this area of business.

Key Terms: Working Capital Management, Profitability, Textile Sector, Pakistan

INTRODUCTION

Working Capital mainly represents the current assets of a firm which is the portion of financial resources of business that changes from one type of resources to another during the day-to-day execution of business (Gitman, 2002). Current assets mainly comprise of cash, prepaid expenses, short-term investments, accounts receivable, inventory and other current assets. Net working capital can be measured by deducting current liabilities of a firm from its current assets. If the value of current assets is less than that of current liabilities then net working capital would have a negative value showing a deficit working capital. When a business entity takes the decisions regarding its current assets and current liabilities then it can be termed as working capital management. The management of working capital can be defined as an accounting approach that emphasize on maintaining proper levels of both current assets and current liabilities. It provides enough cash to meet the short-term obligations of a firm.

Profitability can also be termed as the rate of return on investment. If there will be an unjustifiable over investment in current assets then this would negatively affect the rate of return on investment (Vishnani & Shah, 2007). The basic purpose of managing working capital is controlling of current financial resources of a firm in such a way that a balance is created between profitability of the firm and risk associated with that profitability (Ricci & Vito, 2000).

Every business requires working capital for its survival. Working capital is a vital part of business investment which is essential for continuous business operations. It is required by a firm to maintain its liquidity, solvency and profitability (Mukhopadhyay, 2004). The importance of managing working capital of a business efficiently cannot be denied (Filbeck & Krueger, 2005). Working Capital management explicitly impacts both the profitability and level of desired liquidity of a business (Raheman & Nasr, 2007). If a firm will invest heavily in working capital i.e. more than its needs, then the profits which can be generated by investing these resources in fixed or long term assets will be diminished. Moreover the firm will have to endure the cost of storing inventory for longer periods as well as the cost of handling excessive inventory (Arnold, 2008).

On the other hand, if a firm will invest heavily in fixed assets to generate profits by neglecting its short-term capital needs then it is quite possible that it may have to face bankruptcy because of insufficient funds. The profitability as well as adequate level of liquidity is required to be maintained for the survival of a business, so if a firm will not pay sufficient attention to its working capital management, then it is quite possible that the firm would have to face bankruptcy (Kargar & Blumenthal, 1994). Shortage of working capital is normally attributed as a major cause of failure of many small businesses in various developing and developed countries

(Rafuse, 1996).Effective management of working capital consists of two steps which are planning for resources and controlling them. Both of these are required to facilitate the firm in meeting its short term obligations and also to let the firm avoid wastage of resources by over investment in current assets (Eljelly, 2004). Effective management of working capital decreases the need for lending funds to pay back the short term debts of the firm.

There are different approaches for the management of working capital. Two basic policies of working capital management are namely aggressive working capital management policy and conservative working capital management policy. An aggressive investment policy with high levels of fixed assets and low investment in current assets may generate more profits for a firm. On the other hand it also accompanies a risk of insufficient funds for daily operations and for payment of short term debts. A conservative investment policy is opposite to it with less investment in fixed assets and more in current assets. For financing of working capital aggressive policy implies that current liabilities are maintained in a greater portion as compared to long-term debts. High level of current liabilities requires more resources to be in liquid form to pay back debts earlier. But current payouts bear less rate of interest and hence can cause more savings. In conservative working capital financing policy a greater portion of long-term debts is used in contrast to current liabilities.

Working capital management and profitability certainly have some relation with each other. Much research work is available on this relationship but the selected sector i.e. Textile Sector has not been under much consideration before this in Pakistan, regarding the significance of working capital management. So, much literature is not available in this sector in Pakistani context. Working capital is very important part of business activities of any firm. For the Textile sector as well, working capital management is of crucial value. So, the aim of this study is to find out *"Does efficient working capital management have any impact on the profitability of firms of Textile sector of Pakistan?"*

The remaining study is based on an analysis of previous literature which provides the theoretical background for the study, research methodology which includes description of all variables included in the study and sample size.Chapter 4 comprises of the empirical analysis and regression results of the study. Chapter 5 provides the conclusion on all above.

REVIEW OF LITERATURE

Working capital management can be considered as an important source of profitability of a firm. Many researchers investigated the impact of working capital management on profitability. This past research demonstrated that efficient working capital management leads to greater

profitability. Smith (1980) conducted a study on Profitability and Liquidity and suggested that working capital management directly influence risk and profitability of a firm. Hence it can be inferred that effective working capital management can increase the financial strength of a business. Soenen (1993) also performed an analysis of working capital management and its relationship with financial performance. His study was based on US firms and after the study he suggested that if the length of net trade cycle increases then it affects the return on investment negatively.

The Working Capital management is regarded as an essential part of financial management of a firm (Joshi, 1995). Lamberson (1995) observed the impact of economic activity on the Working Capital Management Policy. For this he took a sample of 50 small firms of US for a time period of 12 years i.e. 1980-1991. He found that economic expansion do not cause an increase in the investment of working capital during a specific period. Finally he suggested that there exists a slight impact of any change in economic activity on working capital management of these firms.

Some other researchers namely, Jose, Lancaster, and Stevens (1996) carried out a detailed analysis on the association of cash conversion cycle and financial returns. They located an inverse association of profitability with cash conversion cycle.

Shin and Soenen (1998) conducted an expanded study by taking a large sample of 58985 firms of US. Their study was based on a longer time phase of 1975-1994. They suggested that for generating greater volume of wealth for the shareholders of a firm, it is very crucial to manage the working capital of that firm effectively and in an efficient manner. They also recommended that profitability and net trade cycle both are inversely related to each other.

Lyroudi and Lazaridis (2000) investigated the relationship of liquidity and cash conversion cycle for the food industry of Greece. They concluded that a considerable positive relationship exists among Cash Conversion Cycle and current ratio, average age of inventory and average collection period. Also they located an inverse relationship between CCC and average payment period. They concluded that there was no statistically significant relationship between variables used for liquidity measurement and that used for profitability measurement. Also they suggested that cash conversion cycle had no significant relationship with debt ratio.

Working capital management and profitability relationship has been explored by many other researchers as well. Deloof (2003) analyzed 1009 non-financial firms of Belgium. He found that gross operating profit of a firm is negatively related to inventory turnover and average collection period. Hence, he recommended that financial managers can try to improve profitability by enhancing average payment period and by curbing inventory turnover and average collection period. He also recommended that profitability is strongly related to working capital management of a business.Through a study on Saudi Arabian companies, Eljelly (2004)

discovered that the profitability and cash gap have a significant negative relationship with each other. Mallik, Sur, and Rakshit (2005) evaluated Indian pharmaceutical industry. They discovered that profitability and liquidity do not have any significant relationship for these firms.

Two researchers namely Meszek and Polewski (2006)analyzed the construction sector. Their work targeted mainly the strategies which should be used for the working capital management in construction sector. They have not worked to evaluate the overall working capital management effectiveness and financial performance of construction sector.

The study of S.M.Amir Shah and Sana (2006) was based on a period of five years i.e. 2001-2005. They used working capital ratios to determine the effect of working capital management on financial performance. These working capital ratios include inventory turnover, current ratio, quick ratio, average collection period and average payment period. They used correlation analysis and OLS method to reach the results. Finally they revealed that Gross profit is negatively associated with all working capital ratios except number of days payable.

In a study on small manufacturing firms, Padachi (2006) analyzed working capital management and its relation with profitability by examining a sample of manufacturing firm of Mauritius. Period of the study was six years i.e. 1998-2003. He used days of receivables, inventory turnover, cash conversion cycle and days of payables as explanatory variables, and return on total assets (ROA) as dependent variable. They used regression analysis to find out the results. They found that paper and printing industry showed greater scores for different working capital components amongst the overall manufacturing industry. These greater scores affect the profitability of this industry positively. Finally they concluded that if a firm will invest heavily in its inventory and accounts receivables then the profitability of that firm would be lower.

Vishnani and Shah (2007) from their study on Indian consumer electronic industry discovered that profitability for the overall industry had no recognized relationship with liquidity, but majority of the companies belonging to this industry showed a positive association for profitability and liquidity. Ganesan (2007) conducted a study on Telecommunication & equipment industry by taking 349 firms of this sector. The time period of this study was 7 years i.e. 2001-2007. He declared that in this industry effective working capital management and financial performance do not have any significant inverse relationship with each other. He also indicated that there exists a strong and inverse association between financial performance and liquidity.

Raheman and Nasr (2007) performed an analysis on 94 firms listed at KSE, based on a time span of 6 years from 1999 to 2004. They have taken different working capital ratios such as Net

Operating Profitability, Debt ratio, current assets to total assets ratio, cash conversion cycle, average collection period, inventory turnover, average payment period, current ratio and natural logarithm of sales. They suggested that profitability and working capital management are negatively related to each other.

Afza and Nazir (2007) studied 263 firms of Pakistan for a time phase of six years i.e. 1998-2003. They stated that adopting inefficient working capital management policies affects the profitability negatively.

Afza and Nazir (2008) reviewed their pervious study to estimate the impact of different types of working capital management policies on financial performance of firms in different sectors. For this they used a sample of 263 non-financial firms belonging to 17 different sectors listed at KSE from1998 to 2003. The secondary data was collected from the financial reports of selected companies and also from the publications of State Bank of Pakistan. There are two types of working capital management policies namely aggressive working capital management policy and conservative working capital management policy. In aggressive working capital management policy a firm places less amount of capital in current assets to earn more profit from fixed assets, whereas in conservative working capital management policy firms use more capital as current assets. For the measurement of the degree of aggressiveness they used current liabilities to total assets ratio (CLTAR) and current assets to total assets ratios (CATAR). To locate the impact of these policies on the performance of firms they used Return on Equity (ROE) and Return on Assets (ROA). Results were found by using regression analysis. They found an inverse relationship between degree of aggressiveness of these policies and profitability.

Uyar (2009) took a sample of 166 Turkish companies to predict the nature of relationship of profitability and size of the firms with Cash Conversion cycle. The result demonstrated that profitability and size of the firms both are negatively related with Cash Conversion Cycle.

The study of Binti Mohamad and Mohd Saad (2010) was based on secondary data of 172 firms of Malaysia. They evaluated the impact of various components of working capital on profitability and market value of the firms. The study covered a time span of five years from 2003 to 2007. For this purpose they used different working capital components namely cash conversion cycles (CCC), debt ratio (DR), current assets to total assets ratio (CATAR), current liabilities to total assets ratio (CLTAR)and current ratio (CR),. To see the effect of these working capital components on financial performance they used Tobin's Q (TQ), return on invested capital (ROIC) and return on assets (ROA) as a measurement of financial performance of the selected firms. To deduce the results they used correlations and multiple regression analysis. The results showed that there exists an inverse relationship between different working capital components and performance of firms.

Raheman, Afza, Qayyum, and Bodla (2010) studied 204 manufacturing firms of Pakistan to explore the impact of working capital management on the performance of a firm. The study was based on 10 years i.e. 1998-2007. They took average age of inventory, average payment period, average collection period, current ratio (CR), current liabilities to total assets ratio (CLTAR), gross working capital turnover ratio (GWCTR), current assets to total assets ratio (CATAR), sales growth (SG), size of the firm as natural logarithm of sales (LOS) and debt ratio (DR)as independent variables. In contrast, Net Operating Profitability (NOP) was taken as a dependent variable. Results of their study demonstrated that performance of firms is significantly related to cash conversion cycle and average age of inventory. They also described that Pakistani firms normally follow conservative policy for management of working capital i.e. they prefer to place more capital in liquid assets to avoid the risks of less availability of funds for daily operations. Finally they suggested that these firms need effective management and proper financing as well.

Another researcher Danuletiu (2010) conducted an analysis on 20 companies of Alba country. He assessed the effect of working capital management efficiency on the financial performance of these companies for a period of five years i.e. 2004 to 2008. For his analysis he used net working capital (NWC) as a measure of long-term financial balance, working capital necessary (WCN) as a measure of short-term financial balance and net treasury (NT) a difference of both NWC and WCN. Return on Assets (ROA), Return on Sales (RS) and Return on equity (ROE) were used to measure the profitability. To find the results, Pearson correlation analysis was used. The study concluded that profitability has an inverse relationship with working capital management components.

Gill, Biger, and Mathur (2010) studied 88 companies of Newyork. The time span of the study was 3 years i.e. 2005 to 2007. To elaborate the relationship of profitability with working capital management, they took Accounts receivables, Accounts payables, Cash conversion cycle, Inventory, natural log of sales as a proxy of size of the firm, fixed assets ratio and debt ratio as independent variables while dependent variable was Gross Operating Profit. The regression analysis was used to find out the results. They stated that if the collection period of accounts receivable is greater, then there would be less profitability. So, they suggested that managers should try to reduce the credit period in order to improve the profitability. They also recommended that cash conversion cycle is positively related with financial performance.

Ikram ul Haq, Sohail, Zaman, and Alam (2011) also carried out a study using data of 14 companies from cement sector of Pakistan. The study was based on six years i.e. 2004-2009. They used Current Ratio (CR), Current assets to total assets ratio (CATAR), Liquid Ratio (LR), Inventory Turnover ratio (ITR), Age of Debtors (AOD), Current assets to total sales ratio (CTSR) and Age of Creditors (AOC) as predictors and Return on investment (ROI) as dependent variable

for this purpose. To produce the results they used statistical techniques of regression and correlation analysis. They realized that a moderate relationship exists between financial performance and working capital management.

To propose working capital management's effect on liquidity and solvency of small and medium size enterprises (SMEs), James Sunday (2011) worked on Nigerian companies. He reported that small firms have weak financial positions so they highly depend on credit for smooth running of their operations.

Singh and Asress (2011) also examined the effect of working capital solvency level on profitability by their study on a sample of 449 Indian manufacturing firms. The study was based on a period of ten years i.e. 1999-2008. For this purpose, working capital requirement (WCR) was selected as dependent variable and Total Operating Cost (TOC), cycles (N) and Operational breakeven point (OBEP) as independent variables. To find out the results they used One-way ANOVA test, multiple means comparison test (Bonferroni, Scheffe and Sidak) and Independent t-test. Results of these tests showed that if a firm will have adequate amount of capital for its current operations than its performance will be better as compared to the firms having lower amount of working capital. So, they suggested that availability of sufficient amount of working capital have positive impacts on the profitability of a firm as it enables a firm to manage all the current operating activities without any interruption.

Overall from this review of literature, it is concluded that a lot of work is available on manufacturing sector of Pakistan regarding working capital management and profitability. But there is no research work available specifically on textile sector of Pakistan. Textile sector contributes a lot in exports of Pakistan. Pakistan is regarded as 8th biggest exporter in Asia for exports of textile products. Textile sector can play a major role in the future growth of economy of Pakistan. So, this sector requires considerable attention. This study aims to fill this gape of non-availability of research work on textile sector of Pakistan.

DATA AND METHODOLOGY

To determine working capital management's impact on profitability of textile sector, secondary data of these firms is used. The data for the study is collected from the publications of State Bank of Pakistan as well as from the publications of Karachi stock exchange. The required data is also gathered from the official websites of the companies incorporated in the study. The data is taken from the balance sheets of the companies of textile sector.

A simple random sample of 117 companies is selected out of 164 textile companies of Pakistan. The firms with missing or inaccessible data were eliminated from the study. As well as the companies which are originated or liquidated during the selected time period are also excluded

from the study. Random sampling is a quite useful technique as it avoids sampling error by giving equal chance of selection to each company (Castillo, 2009).The study period is five years starting from 2005 to 2010.

METHODOLOGY

As the data selected for the study consists of observations in a time series manner so, panel data methodology is used in this study. Panel data methodology has specific benefits such as it assumes that different firms are heterogeneous in nature i.e. have widely dissimilar elements, it also considers the variability in data, it provides more instructive data and more degree of freedom, hence it provides more efficiency than cross-sectional data methodology (Baltagi, 2001). Panel data also provides a solution for the unobserved heterogeneity which is a general problem in cross-sectional data and panel data can easily handle large number of observations (Dougherty, 2011).

Panel data includes observations having both dimensions, cross-sectional and time-series. So, it is quite possible that there may be present cross sectional effect for some of the observations. To deal with this kind of problems, several techniques can be used. The two main techniques for this is fixed effect model and random effect model. Dougherty (2011) has provided a decision making criteria for using these two techniques as illustrated in the figure below:

Figure 1: Choice of regression model for panel data.
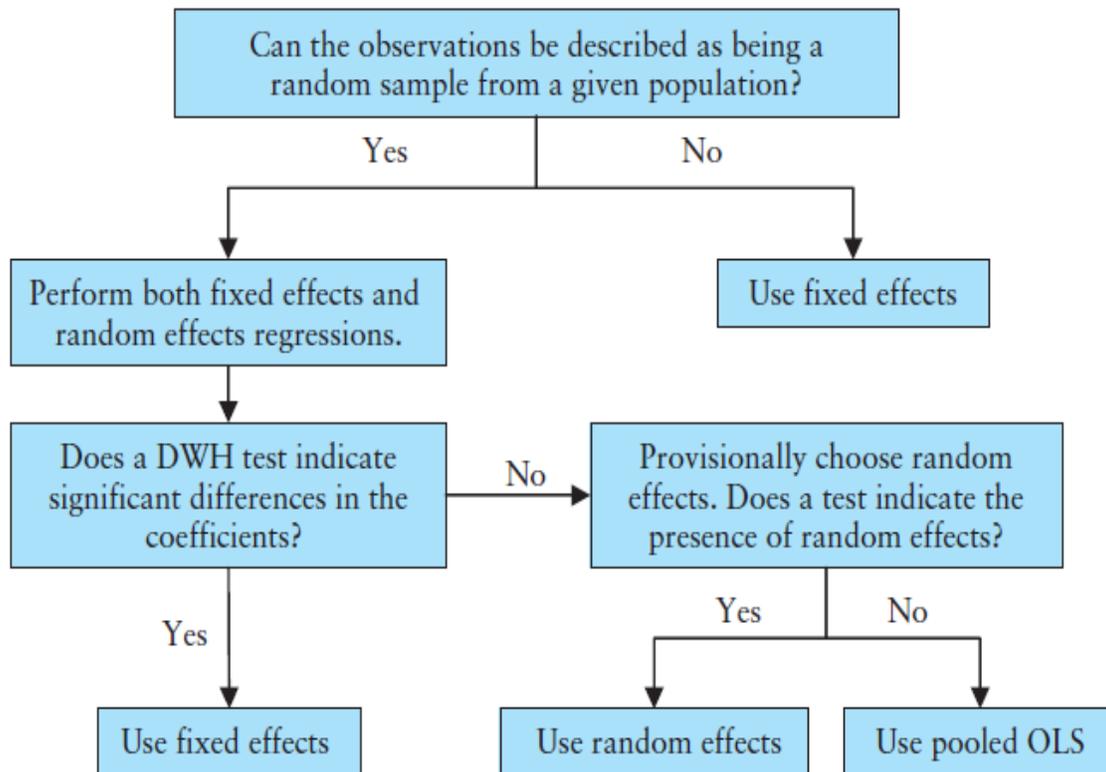
Source: Adapted from Dougherty (2011)

If the observations are based on a random sample then both random effect model and fixed effect model are applicable to it. To check that which of these models should be used, Housman's specification test is applied. This test uses the null hypothesis that "there is not a systematic difference in coefficients". If this hypothesis is not accepted then fixed effect model is used otherwise random effect model is preferred. In case of acceptance of the above said null hypothesis, validity of random effect model is further checked by using Breusch Pagan Langrange multiplier test. If this test rejects the null hypothesis developed here i.e. "there are no random effects" then random effect model is employed otherwise pooled ordinary least square regression is used.

Both fixed and random effect models that can be used in this study are given below.

Fixed effect model:

    i. $\text{ROA}_{it} = \beta_{0i} + \beta_1(\text{CATAR}_{it}) + \beta_2(\text{CLTAR}_{it}) + \beta_3(\text{QR}_{it}) + \beta_4(\text{LOS}_{it}) + \beta_5(\text{DER}_{it}) + u_{it}$

Random effect model:

ii. $ROA_{it} = \beta_0 + \beta_1(CATAR_{it}) + \beta_2(CLTAR_{it}) + \beta_3(QR_{it}) + \beta_4(LOS_{it}) + \beta_5(DER_{it}) + u_{it} + \varepsilon_{it}$

Where:
ROA= Return on Assets, CATAR= Current Assets to Total Assets Ratio, CLTAR= Current Liabilities to Total Assets Ratio, DER= Debt to equity Ratio, QR= Quick Ratio and LOS= natural logarithm of Sales.

Return on assets (ROA) is included in the study as a dependent variable as a measure of profitability of the firms. Current assets to total assets ratio (CATAR) is included in the study as an independent variable to measure the investment policy of working capital adopted by the textile sector of Pakistan. Current liabilities to total assets ratio (CLTAR) is also included as an independent variable to determine the working capital financing policy of the selected firms. These two ratios have been used by many researchers to know the investing and financing policy of working capital such as Afza and Nazir (2008), Raheman et al. (2010), Ikram ul Haq et al. (2011), Raheman and Nasr (2007) and Mohamad and Saad (2010). Quick ratio (QR) is used as a control variable to find the impact of intense liquidity on profitability. Quick ratio (QR) is also used by many researchers as a control variable to determine working capital management and profitability relationship, for example, Bhunia and Brahma (2011) and S.M.A. Shah and Sana (2005) has used this ratio in their study. Size of the firms is also included in the study as a control variable. Natural log of sales is used by many researchers as a proxy to demonstrate size of the firms i.e. Raheman and Nasr (2007), Raheman et al. (2010) and Padachi (2006).To show leverage, debt to equity ratio (DER) is used as a control variable. This ratio is used by Mohamad and Saad (2010), Gill et al. (2010), Raheman and Nasr (2007), Ching et al. (2011) and Raheman et al. (2010) as well in the past research.

Variables
The study attempts to elaborate the effect of various policies used for working capital management on financial performance. To achieve this aim variables are selected by analysis of previous studies discussed in the section of literature. All the selected variables are used for developing and testing the hypothesis. These variables include dependent, independent and control variables.

Dependent Variable

Return on assets (ROA) is used as a dependent variable. ROA is a ratio which explains how efficiently a firm is utilizing its existing resources for the maximization of profits. Increase in ROA normally shows an increase in profitability (Gitman, 2002).
ROA= (Earnings available to common shareholders/ Total Assets) × 100

It is used by many researchers as dependent variable for the measurement of profitability such as Afza and Nazir (2008), Mohamad and Saad (2010), Danuletiu (2010), Padachi (2006) and Ching et al. (2011).

Independent Variables

Current Assets to Total Assets Ratio (CATAR)is used as an independent variable. This ratio is used to find out the investment policy of working capital adopted by the firms under consideration. This investment policy can be of two types, first is the aggressive policy and second is the conservative policy. In aggressive investment policy of working capital, less investment is made in current assets as compared to fixed assets to get more returns. On the other hand, in conservative investment policy of working capital, more investment is placed in current assets as compared to fixed assets. Aggressive investment policy allows getting more profits through investing major portion of resources in fixed assets. Conservative investment policy helps to circumvent the risk of bankruptcy.

It can be measured by using following formula.

CATAR = Total current assets / Total assets

Here, CATAR = Current assets to total assets ratio

A lesser value of Current assets to total assets ratio demonstrates more aggressive policy.

Mohamad and Saad (2010), Afza and Nazir (2008), Raheman et al. (2010), Ikram ul Haq et al. (2011) and Raheman and Nasr (2007) have used this ratio as an independent variable to find the impact of working capital management on profitability. They all suggested that this ratio has a positive relationship with profitability. So, in this study as well a positive relation is expected between profitability and current assets to total assets ratio.

Current Liabilities to Total Assets Ratio (CLTAR)is included to discover the working capital financing policy. It can also be of two types, aggressive financing policy and conservative financing policy. In aggressive financing policy a greater portion of current liabilities is used than long-term debts. In conservative financing policy, more long-term debts are used than current liabilities. This ratio can be measured as follows:

CLTAR = Current liabilities / Total Assets ratio

Where, CLTAR = current liabilities to total assets ratio.

Mohamad and Saad (2010), Afza and Nazir (2008) andRaheman et al. (2010) have found an inverse relation between current liabilities to total assets ratio and profitability. So, the expected relation between this ratio and profitability is negative.

Quick Ratio (QR) is used as a control variable. Quick ratio shows the credit worthiness of a firm. If the value of this ratio is higher, then it shows that the firm can pay its debts earlier. Quick ratio can be calculated as given below:

Quick Ratio = Quick assets / Current liabilities

Previous work of different researchers shows a negative relation between quick ratio and profitability i.e. S.M.A. Shah and Sana (2005); (S.M.Amir Shah & Sana, 2006),Mohamad and Saad (2010), Bhunia and Brahma (2011), Raheman and Nasr (2007), Afza and Nazir (2008) and IkramHaq, Sohail, Zaman, and Alam (2011). So, the expected relation of quick ratio and profitability is also negative.

To show the firm size, natural logarithm of sales (LOS) is used as a control variable. Sales volume has a positive relation with profitability. Raheman and Nasr (2007), Padachi (2006); Raheman et al. (2010) and Raheman et al. (2010) have used natural logarithm of sales in their study. They all found a positive relation between sales and profitability.

Debt to Equity Ratio (DER) is also used as a control variable. Debt Ratio estimates that how much portion of total assets of a firm is financed by its creditors. It represents the leverage of a firm. Higher value of debt ratio shows that the firm has greater indebtedness and more financial leverage. Greater leverage shows that the cost of financing working capital would be higher. Debt ratio can be calculated by using the following formula:

Debt ratio = (Total Liabilities / Total equity) × 100 (Gitman, 2002)

Many researcher have discovered an inverse relationship between debt ratio and financial performance such as Mohamad and Saad (2010), Gill et al. (2010), Raheman and Nasr (2007), Ching et al. (2011) and Raheman et al. (2010). So, an inverse relationship is expected between debt to equity ratio and profitability in this study as well.

RESULTS AND DISCUSSION

This section provides the details of the model and findings of the study. Before moving towards formal discussion of results, an analysis of descriptive statistics is presented.

Descriptive Statistics

Table 1 provides the descriptive statistics for all the variables. It shows the number of observations of all variables, their average values and their standard deviation. It shows the minimum and maximum values as well which can be attained by these variables.

The descriptive statistics show that all the variables have 465 observations. The dependent variable return on assets has the average value of 0.8220. It has a minimum value of -26.21and a maximum value of 160.97. The standard deviation for return on assets is 10.4774.

To check the working capital investment policy of these companies, current assets to total assets ratio (CATAR) is included, it has an average value of 0.3385with a standard deviation of 0.09412. Minimum value of CATAR is 0.0667 and its maximum value is 0.49949.

To check the financing policy adopted by the selected firms for the management of working capital and its relationship with profitability, current liabilities to total assets ratio (CLTAR) is used. It has an average value of 0.48673while the standard deviation of0.23546. The minimum value for CLTAR is 0.10964 and the maximum value for it is 2.5460.

The independent variable quick ratio (QR) has a maximum value of1.01and a minimum value of zero. It has an average value of 0.21264 while standard deviation of 0.1631.

To determine the firm size and its impact on working capital management, natural logarithm of sales volume is included. Average value of this variable is 6.0783.The maximum value for log of sales is 7.4988 and the minimum value for this is 3.4704.It has a standard deviation of 0.50016.

To check the leverage of these firms, debt to equity ratio (DER) is used. It has the average value of -1.0717 while standard deviation of 93.8627. The minimum value is -2001.88for debt to equity ratio and its maximum value is 236.66.

Table 1 Descriptive Statistics

Variable	Observations	Average	Std. Dev.	Min	Max
ROA_{it}	465	0.822086	10.47744	-26.21	160.97
$CATAR_{it}$	465	0.3385418	0.0941203	0.066716	0.499495
$CLTAR_{it}$	465	0.4867373	0.2354631	0.109649	2.54608
QR_{it}	465	0.2126452	0.163176	0	1.01
LOS_{it}	465	6.078312	0.5001614	3.47041	7.4988
DER_{it}	465	-1.07172	93.86273	-2001.88	236.66

Pearson's correlation coefficient analysis

Correlation coefficient explains the relationship between two variables. It shows change in one variable because of any change in other variable (Kohler, 1994). Table 2 shows the matrix of Pearson's correlation coefficient analysis. This analysis helps to locate the relationship that exists among the independent or explanatory variables. It signifies the presence of muti-colinearity among the independent variables. Multi-colinearity can influence the results, so a good model should not have any multi-colinearity among the predictors.

First of all correlation between dependent variable which is return on assets (ROA) and independent variable current assets to total assets ratio (CATAR), is analyzed. The results of correlation analysis show a positive correlation between them having a value of 0.1091. This correlation indicates that these two variables have a positive relationship with each other i.e. if there will be an increase in current assets to total assets ratio then the dependent variable return on assets will also increase and vice versa. P-value for this correlation is 0.0186 which shows the significance of this relationship. This correlation is significant at 5% level of significance. Return on assets (ROA) has a negative correlation with independent variable current liabilities to total assets ratio (CLTAR). The value of this correlation is -0.1400 having p-value of 0.0025. The p-value shows the significance of the relationship between return on assets and current assets to total assets ratio at 5% level of significance. This correlation is good for the study as it shows a significant relationship between independent variable current assets to total assets ratio and dependent variable return on assets.

The correlation outcomes for current assets to total assets ratio (CATAR) and current liabilities to total assets ratio (CLTAR) show that they have a positive correlation of 0.0816 with each other. This means that an increase in the value of independent variable current assets to total assets ratio will cause an increase in current liabilities to total assets ratio and vice versa. But this correlation is not statistically significant at 5% level of significance as its p-value is 0.078.

The correlation of current assets to total assets ratio is 0.3315with quick ratio and p-value for this is 0.00. This correlation has a positive value so this relationship is also positive as the previous one.

Current assets to total assets ratio has a correlation value of 0.2659 with log of sales, a variable included to measure the size of firms. It has a p-value of 0.00. The correlation results for current assets to total assets ratio and log of sales show a positive relationship between them.

Current assets to total assets ratio has a positive relationship with debt to equity ratio. The value of correlation coefficient between them is 0.0978 having a p-value of

0.0350.Thiscorrelation signifies that a raise in current assets to total assets ratio is accompanied by an increase in debt to equity ratio and vice versa.

Pearson's correlation demonstrates a negative relation between current liabilities to total assets ratio and quick ratio. Correlation coefficient for these is -0.3688and its p-value is 0.00. Negative relation shows that an increase in current liabilities to total assets ratio subsequently causes a decrease in quick ratio.

Current liabilities to total assets ratio also have an inverse relationship with log of sales which is included to measure the size of the selected firms. Correlation coefficient for this is -0.2360having a p-value of 0.00, showing a negative and insignificant relationship between these two variables.

Correlation coefficient of current liabilities to total assets ratio with debt to equity ratio is 0.0450 having a p-value is 0.3334.

Quick ratio has an insignificant but positive relationship with both debt to equity ratio and log of sales. It has a correlation coefficient of 0.1542 and 0.0247 respectively for log of sales and debt to equity ratio. Its p-values for debt to equity ratio and log of sales are 0.5945 and 0.0009 respectively. Log of sales have a coefficient of correlation of 0.0554 for debt to equity ratio with a p-value of 0.2328.

From table 2 it is quite clear that all the independent variables have correlation coefficient values less than 1. The cut-point show the multi-colinearity is 0.6. All the correlation coefficients of independent variables have values less than 0.6, which demonstrates no multi-colinearity among the independent variables. So, there is no problem of multi-colinearity in this analysis.

Table 2 Pearson's correlation coefficient matrix

Variables	ROA_{it}	$CATAR_{it}$	$CLTAR_{it}$	QR_{it}	LOS_{it}	DER_{it}
ROA$_{it}$	1.0000					
CATAR$_{it}$	0.1091 (0.0186)	1.0000				
CLTAR$_{it}$	-0.1400 (0.0025)	0.0816 (0.0788)	1.0000			
QR$_{it}$	0.1928 (0.0000)	0.3315 (0.0000)	-0.3688 (0.0000)	1.0000		
LOS$_{it}$	0.2025 (0.0000)	0.2659 (0.0000)	-0.2360 (0.0000)	0.1542 (0.0009)	1.0000	

DER$_{it}$	0.0149	0.0978	0.0450	0.0247	0.0554	1.0000
	(0.7481)	(0.0350)	(0.3334)	(0.5945)	(0.2328)	

The values in parenthesis show P-values.

Regression analysis and results

The working capital management and profitability relationship is analyzed by using panel data techniques of fixed effects regression and random effects regression. The results of both of these techniques are illustrated in table 4.3 and table 4.5.

Fixed effect model

Table 3 demonstrates the results of fixed effect model. At 5% level of significance, current assets to total assets ratio appears to be significant in this model. Current liabilities to total assets ratio is also significant in this model but its significance level is 1%.All of the three control variables i.e. quick ratio, debt to equity ratio and log of sales are insignificant in the fixed effect model. They do not cause any significant change in the independent variable. The significance of current assets to total assets ratio shows its correlation with the independent variable, return on assets. In the same way, current liabilities to total assets ratio also have a strong correlation with return on assets. Both of these predictors affect the independent variable. A change in any of them will definitely cause some change in dependent variable.

The β-coefficient of current assets to total assets ratio is 19.2848, which shows that if there is an increase of 1 unit in CATAR then it causes an increase of 19.2848 units in ROA. So, there is positive relationship between them.

Similarly the β-coefficient of current liabilities to total assets ratio is -14.5197. This coefficient with negative sign shows an inverse relationship of CLTAR with the independent variable. This can be interpreted as an increase of 1 unit in CLTAR will lead to a decrease of 14.5197 units in ROA.

Quick ratio has β-coefficient of 2.4176, which demonstrates a positive relation between QR and ROA. But this relationship is not significant. Coefficient of log of sales having a value of 1.2813 signifies an affirmative relationship between firm size and return on assets. Here again the relationship is not significant because of its p-value of 0.633, showing insignificance even at 10% level of significance. Debt to equity ratio has an inverse and insignificant relationship with return on assets with coefficient -0.0033.

The value of R-square for fixed effect model between variables is 7.68%. R-square with variables is 6.91% and overall R-square for this model is 4.33%. This model is good fit as F-statistics is significant.

Table 3 Fixed effect models

Variables	Coefficient	Std. Err.	t	P>t
$CATAR_{it}$	19.28488	9.2676	2.08	0.038**
$CLTAR_{it}$	-14.5197	3.506887	-4.14	0.000*
QR_{it}	2.417611	4.498834	0.54	0.591
LOS_{it}	1.281314	2.684708	0.48	0.633
DER_{it}	-0.0033507	0.0053258	-0.63	0.530
Constant	-6.945533	16.71203	-0.42	0.678

R-square within = 0.0691, between = 0.0768 and overall = 0.0433, F-statistics = 5.39, and Prob. > F = 0.0001. Variable is significant at *1, **5 and ***10% level of significance (Two tailed).

Table 4 represents the results of fixed effect model with robust standard error. The robust test standardizes the standard errors. In this test, the values of coefficients for the variables remain same as the previous results with simple standard errors. So, the relationship that exists among dependent and explanatory variables remains same. In this test, current assets to total assets ratio (CATAR) is significant at 1% level of significance and current liabilities to total assets ratio (CLTAR) is significant at 5% level of significance. Moreover, debt to equity ratio (DER) which was insignificant previously has become significant now and its level of significance is 1%. So, these results are more favorable as compared to the previous one.

Table4 Fixed effect model with robust standard error

Variables	Coefficient	Robust Std. Err.	t	P>t
$CATAR_{it}$	19.28488	6.569668	2.94	0.004*
$CLTAR_{it}$	-14.5197	6.069076	-2.39	0.019**
QR_{it}	2.417648	4.304679	0.56	0.576
LOS_{it}	1.281354	2.323034	0.55	0.583
DER_{it}	-0.0033507	0.000861	-3.89	0.000*
Constant	-6.945533	15.76557	-0.44	0.661

R-square within = 0.0691, between = 0.0768 and overall = 0.0433, F-statistics = 11.28, and Prob. > F = 0.0000. Variable is significant at *1, **5 and ***10% level of significance (Two tailed).

Random effect model

In random effect model current assets to total assets ratio and current liabilities to total assets ratio, both are insignificant because their p-value is insignificant even at 10% level of significance. So, they do not cause any definite change in return on assets, the dependent variable. Quick ratio and log of sales both are significant at 1% level of significance. Debt to equity ratio is insignificant in random effect model as well. Table 5 shows the results of random effect model.

Current assets to total assets ratio has β-coefficient value of 2.5775. This shows that 1 unit increase in CATAR will cause an increase of 2.5775 units in ROA, but this effect is not significant. Current liabilities to total assets ratio has an inverse and insignificant relationship with return on assets. Its β-coefficient is -2.3027.

Table 5 Random effect model

Variables	Coefficient	Std. Err.	z	P>z
CATAR$_{it}$	2.57755	5.718221	0.45	0.652
CLTAR$_{it}$	-2.30271	2.298942	-1.00	0.317
QR$_{it}$	9.050446	3.381468	2.68	0.007*
LOS$_{it}$	3.399958	1.017443	3.34	0.001*
DER$_{it}$	0.0002797	0.0050574	0.06	0.956
Constant	-21.51995	6.291944	-3.42	0.001

R-square within = 0.0366, between = 0.2253 and overall = 0.0699, Wald Chi^2 = 34.47, and Prob. >Chi^2 = 0.0000. Variable is significant at *1, **5 and ***10% level of significance (Two tailed).

Quick ratio, log of sales and debt to equity ratio have an affirmative relation with return on assets in random effect model. Their coefficients are 9.0504, 3.3999 and 0.0002 respectively.

Value of R-square for random effect model is 3.66% within variables and 22.53% between the variables. Overall R-square for this model is 6.99%.Thismodel is good fit with significant value of Wald Chi2 test.

Table 6 Random effect model with robust standard errors

Variables	Coefficient	Robust Std. Err.	z	P>z
CATAR$_{it}$	2.57755	7.692858	0.34	0.738
CLTAR$_{it}$	-2.30271	2.530986	-0.91	0.363
QR$_{it}$	9.050446	2.507026	3.61	0.000*
LOS$_{it}$	3.399958	0.9716831	3.50	0.000*

DER$_{it}$	0.0002797	0.0008763	0.32	0.750
Constant	-21.51995	6.449842	-3.34	0.001

R-square within = 0.0366, between = 0.2253 and overall = 0.0699, Wald Chi^2 = 23.15, and Prob. >Chi^2 = 0.0003. Variable is significant at *1, **5 and ***10% level of significance (Two tailed).

Table 6 represents the results of random effect model with robust standard errors. The results of random effect model are not changed in robust standard error test. Quick ratio (QR) and log of sales (LOS) are significant again in this model as the previous one at 1% level of significance.

Comparison of fixed and random effect models

Table 7 presents a comparison of fixed and random effect model where model I includes the results of fixed effect and random effect with simple standard errors and model II represents the results of these two models with robust standard errors. In fixed effect model with robust standard errors maximum number of variables has significant relationship with dependent variable. So, the results of fixed effect model with robust standard errors are most favorable.

Table 7 Comparison of fixed and random effect models

Variables	Model I				Model II			
	Fixed effect		Random effect		Fixed effect		Random effect	
	Coefficients	P>t	Coefficients	P>z	Coefficients	P>t	Coefficients	P>z
CATAR$_{it}$	19.28488	0.038**	2.57755	0.652	19.28488	0.004*	2.57755	0.738
CLTAR$_{it}$	-14.5197	0.000*	-2.30271	0.317	-14.5197	0.019**	-2.30271	0.363
QR$_{it}$	2.417611	0.591	9.050446	0.007*	2.417648	0.576	9.050446	0.000*
LOS$_{it}$	1.281314	0.633	3.399958	0.001*	1.281354	0.583	0.399958	0.000*
DER$_{it}$	-.0033507	0.530	0.0002797	0.956	-.0033507	0.000*	0.0002797	0.750
Constant	-6.945533	0.678	-21.51995	0.001	-6.945533	0.661	-21.51995	0.001

Variable is significant at *1, **5 and ***10% level of significance (Two tailed).

Hausman's specification test

The values of R-squares are higher in random effect model as compared to the R-square values in fixed effect model. Hausman's specification test is applied for checking the suitability of the model i.e. either fixed effect model should be used or random effect model. It has the value of Ch^2 statistics equal to 26.18 significant at 1% level of significance. This rejects the null hypothesis developed in hausman's specification test that there is no systematic difference in coefficients. So, these results show that fixed effect model is more suitable for this study as compared to random effect model. Table 8 presents the results of this test.

Table 8 Hausman Test

Variables	Fixed	Random	Difference
$CATAR_{it}$	19.28488	2.57755	16.70733
$CLTAR_{it}$	-14.5197	-2.30271	-12.21699
QR_{it}	2.417648	9.050446	-6.632798
LOS_{it}	1.281354	3.399958	-2.118605
DER_{it}	-.0033507	.0002797	-.0036304

Chi^2 = 26.18, and Prob. >Chi^2 = 0.0001

DISCUSSION

The β-coefficient of current assets to total assets ratio (CATAR) is 19.2848. The positive value of this coefficient shows a positive relationship between independent variable current assets to total assets ratio and dependent variable return on assets. Moreover the significance of its p-value shows a statistically significant relationship between them. Return on assets is included here to demonstrate profitability. So, consequently there is a positive relation between current assets to total assets ratio and profitability. A higher value of this ratio escorts towards more profitability.

A greater value of current assets to total assets ratio shows less aggressive investment policy of working capital (Afza & Nazir, 2008). From this, it can be concluded that a less aggressive working capital investment policy leads to more profitability. If a firm invests more in fixed assets then it can generate more profits. If a firm uses more of its resources as current assets then it will lead to wastage of resources. These results are similar to the findings of Afza and Nazir (2008), Ikram ul Haq et al. (2011), Raheman and Nasr (2007), Raheman et al. (2010) and Mohamad and Saad (2010).

The β-coefficient for current liabilities to total assets ratio (CLTAR) is -14.5197. Negative value of this coefficient demonstrates a negative relationship between current liabilities to total assets ratio and return on assets i.e. profitability. An increase in current liabilities to total assets ratio leads to less profitability.

A higher value of current assets to total assets ratio shows a comparatively more aggressive working capital financing policy, that means more investment in current liabilities as compared to long-term debts. An aggressive financing policy results in less profitability. These results are in accordance to the findings of Mohamad and Saad (2010), Afza and Nazir (2008) and Raheman et al. (2010).

The value of β-coefficient is 2.4176. It shows a positive relationship between debt to equity ratio and profitability of a firm. These results are contradictory to the findings of Mohamad and Saad (2010), Gill et al. (2010), Raheman and Nasr (2007) and Ching et al. (2011).

Size of the firm is positively related with Profitability. Natural logarithm of sales is used as a proxy of firm size. The value of β-coefficient for this relation is 1.2813. Positive relation shows that an increase in size of the firm enhances the profitability. A firm with greater size will also have greater profitability. These findings are consistent with that of Raheman and Nasr (2007), Raheman et al. (2010) and Padachi (2006).

Debt to equity ratio is used as proxy of leverage. The value of β-coefficient for this is -0.00335. A negative sign exhibits the presence of a negative relation between leverage of a firm and its profitability. When leverage increases, then it negatively affects the profitability. Some previous researchers have also reported the same results such asRaheman and Nasr (2007), Mohamad and Saad (2010), Gill et al. (2010) and Ching et al. (2011).

DISCUSSION AND CONCLUSION

The management of working capital is one of the most important financial decisions of a firm. Efficient level of working capital should be present for smooth running of business regardless of the nature of business. From this study, it is concluded that maintaining efficient level of working capital is very important for textile sector as well like all other sectors of business.

The present study includes 117 textile firms of Pakistan for a time span of six years from 2005 to 2010. It explores the role of efficient working capital management in generating profitability through two main policies of managing working capital namely working capital investing policy and working capital financing policy. Investing policy is regarding the management of current assets of the business and financing policy is concerned about the management of current liabilities mainly. In aggressive working capital investing policy more resources are invested in

fixed assets than current assets to gain more profits. A conservative working capital investment policy is opposite to it. In aggressive working capital financing policy more current liabilities are used than long-term debts and vice versa for conservative financing policy. The results of this study show that conservative investing policy of working capital leads to more profitability similarly conservative financing policy also results in more profitability. Moreover, the results show a positive correlation between investing policy and financing policy of working capital. This positive relation demonstrates that the firms which follow aggressive working capital investing policy, they also go for aggressive financing policy. Similarly the firms pursuing conservative investing policy also prefer conservative financing policy for the management of working capital.

Regarding the hypothesis, it is found in the study that the alternative hypothesis (H_{11}) which illustrates, there is a significant relationship between aggressive/conservative working capital investment policy and profitability is accepted, so null hypothesis (H_{01}) is rejected. A positive and significant relation is found between degree of conservatism of investment policy of working capital and profitability of textile sector of Pakistan. The second alternative hypothesis (H_{12}) that there is a significant relationship between aggressive/conservative working capital financing policy and profitability is also accepted. So, null hypothesis (H_{02}) is rejected. The findings show a negative and significant relationship of profitability with degree of aggressiveness of working capital financing policy. The third null hypothesis (H_{03}) is also rejected that there is no relationship between liquidity and profitability and alternative hypothesis (H_{13}) is accepted showing a significant relation between liquidity and profitability. In the same way, fourth alternative hypothesis (H_{14}) is accepted that there is a considerable positive relationship between the firm size and profitability, hence null hypothesis (H_{04}) is rejected. Fifth null hypothesis (H_{05}) is also rejected and alternative hypothesis (H_{15}) that there is a considerable negative relationship between total debts utilized by the textile firms of Pakistan and their profitability; is accepted. These findings are similar to the results of some previous researchers such as Raheman and Nasr (2007), Afza and Nazir (2008) and Padachi (2006).

The findings of this study are helpful for the financial managers of the textile sector as these provide the information regarding the management of short-term capital and also inform them about the management policies used by their peers. This information is useful for maintaining a healthy competition and improving own organization. Eventually it is recommended that the managers should try to create good synchronization between the assets and liabilities of the firm.

The relationship between working capital management and profitability can be examined using many variables and covering many dimensions. In this study, an attempt is made to cover as

many important dimensions as possible. But to cover all the dimensions and to include all the variables is just not possible. So, the results estimated from this study should be evaluated keeping in mind that there could be many other variables as well besides the variables mentioned above, that can explain working capital management and profitability correlation and this study is limited only to the effect of selected variables in measuring the efficiency of working capital management. Another limitation of the proposed study is that the data used of only 6 years due to the limitation of lack of availability of data. This study has the implication for textile sector only.

This study can be extended in terms of empirical model such as some other variables can be also be included in the model used in this study. These other variables can be cash conversion cycle, current assets, return on equity and gross profit etc. Moreover this study can be extended in terms of number years as well.

Textile sector is selected for this study; future research can also be done for other sectors as well such as cement sector, telecommunication sector etc. Research can also be made on financial sector which unexplored with respect to working capital management.

This study concludes that aggressiveness of working capital management policies is inversely related to profitability. This implies that the financial managers of textile sector should follow conservative investment policy and conservative financing policy of working capital management i.e. they should invest more of their financial resources in current assets as compared to fixed assets and they should use more long term debts as compared to current liabilities.

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