



Management

WORKING CAPITAL MANAGEMENT AMONG LISTED COMPANIES OF PAKISTAN

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Abstract

The study aims to investigate the strength of working capital management for measuring the financial performance of listed stocks. The study incorporates descriptive statistics, Pearson correlation, and multiple regression models for interpretation and execution of data. Five years (2006-11) panel data of 125 listed companies of Pakistan stock exchange (PSX) is selected in accordance to sample selection criterion. Results of regression analysis supported an inverse relationship between firm's profitability and working capital management. Return on asset and Gross operation income are taken as indicators of profitability. Inventory turnover in days, Average age of A/R, Average payable period and Cash conversion cycle are considered as independent variables to measure firm's profitability. Firm size, Sales growth, and financial debt ratio are favored as control variables. Overall Return on asset models indicated poor values of R-square's and Gross operating income models showed robustness.

Keywords: Working Capital Management; Firm Performance; Panel Data Analysis.

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1. Introduction

Corporate finance generally relies on the empirical analysis or investigation of long-term monetary settlements. Academicians and institutional analysts have especially proposed theories for capital structure, investment considerations, the organizational value in terms of dividend policies and market earnings. Short-term investments normally have the life of one year and also symbolize the most important portion of balance sheet analysis and require sensible attention because of their meaningful and valuable contribution toward firm's profitability (Smith, 1980).

Working capital management is all about allocation and monitoring of short-term corporate financial decisions (Gitman, 2005). Management arms should always strive to maintain the perfect level of working capital, in order to perform the business operation more efficiently (Howorth & Westhead 2003).

An investment concerning working capital develops a linkage between risk and return. Firm's decision to make a contribution for higher returns will also expand risk factors and the attempts to minimize risk will also lead toward lower returns. Raheman and Nasr, (2007) stated that efficacy in short-term financial decisions is the most important component because a major portion of firm's assets consists of fixed assets. Samiloglu and Dermigunes, (2008) discussed working capital management in relation to the financial health of corporations. They also suggest that an improper proceeding of working capital management may lead towards bankruptcy. Likewise, ignoring liquidity for generating greater profits can cause harmful results. Therefore, it is important for a firm to create a balance between profitability and liquidity. Furthermore, Gitman, (1974) stated cash conversion cycle as a major element for managing working capital. Firm's planning including how much they have to invest for customer accounts and inventory, how the amount of credit they have to accept from the vender, these are the situations which are highly mirrored in firm's cash conversion cycle, which also indicates the average days between accounts payable to receivable's. Prior studies used cash conversion cycle as a base for firm's profitability. Similarly, research studies on working capital management and firm's profitability indicate that aggressive working capital strategies lead towards profitability; Jose et al., (1996); Shin and Soenen, (1998); Wang, (2002); Deloof, (2003).

Working capital management is required to attain an optimal level of organization's profitability and liquidity. Higher current asset ratio lowers the inadequacy of cash, implying that all key participants of working capital including inventories, securities, cash, and receivables have a strong influence on firm's management, which may add value to shareholders attraction and retention (Eljelly, 2004). Several researchers Afza & Nazir, (2007); Samiloglu & Dermigunes, (2008); Ali & Ali, (2012) and Padachi, (2006) examined the statistical relationship between working capital management and firm's profitability, findings of the study acknowledge the importance of this relationship for a modern firm.

2. Review of Literature

2.1. Working Capital Management Concept

Working capital management is declared as the most important tool for firm's financial management. Proper concentration of working capital may help organizations to stay healthy, in financial terms (Shin & Soenen, 1998). It is the responsibility of firm's management to gauge trade-off among proposed earnings and risk, prior to making a decision on the amount of current asset investment. There are two basic ways for managing working capital i.e. either by reducing working capital investment or by designing strategies for boosting sales volume. Adopting aggressive policies (reducing working capital investment) generally positively affect firm's profitability.

According to Wang, (2002) handsome reduction in corporate inventory and customer credit requirements may lower down sales volume, on the other hand expanding suppliers financing may decline discount percentage. Opportunity cost exceeds up to 20 percent, depending on the granted period and discounted percentage Wilner, (2000). Contrary to conventional theories, adopting conservative policies (healthier investments) towards firm`s working capital may also result in firm`s financial benefits. Maintaining huge volume of inventory minimizes the possible intrusion cost during the production process and business loss caused by products deficiencies minimizes the cost of supply, and product price fluctuations (Blinder & Maccini, 1991).

Awarding trade credits may support organizations in multiple ways. Petersen & Rajan, (1997); Brennan et al. (1988) stated that trade credit is an effective tool for price cut, to provide monetary benefits to customers for collecting products at low demand times (Emery, 1987), to confess customers in order to investigate and ensure that delivered products meet the agreed quantity and quality (Smith, 1987), which advice organization`s to establish long-term relationships with customers (Ng et al., 1999). Though, these advantages required proper attention for preventing a decline in profitability due to increase in short-term investments.

Empirical research works regarding working capital management and firm`s profitability encourage aggressive working capital policies for strengthening financial viability. Jose et al. (1996) support the role of aggressive working capital approaches for enhancing firm`s profitability by providing empirical evidence from listed companies of United States. Shin and Soenen (1998) proved the strong positive impact of trade credit reduction on firm`s profitability by taking a sample from US capital market for the period ranges from 1974 to 1994, though this relationship seems to be poor while conducting analysis at the industry level (Soenen, 1993).

Deloof, (2003) studied Belgian firm`s for the period of 1992 to 1996, for the purpose of investigating relationship between average age of accounts receivable and firm`s financial performance, study indicated that reduction in average age of accounts receivable improves firm`s profitability, additionally it was stated that low profitable firms require long time durations to settle down their outstanding claims. However, Wang, (2002) took a sample of Taiwanese and Japanese firm`s for the period ranges from 1985-1996, results of the study supported short cash conversion cycle is relatively better for firm`s operational achievements.

Theoretical findings defined the fact that designing working capital strategies requires following some industry specific benchmarks which organizations have to maintain (Hawawini et al., 1986). Hence, firm`s speed up their amount of profitability by reducing inventories and accounts receivables to a minimal level, as per their given benchmarks. Moreover, Soenen, (1993) stated that management should struggle to collect cash inflows as soon as possible, on the other hand, delay the cash outflows as longer as possible. This strategy will shorten the age of cash conversion cycle, which will ultimately lead towards organizational long-term financial benefits.

2.2.Earlier Studies on Working Capital Management

Although numerous studies have already been conducted to evaluate the impact of working capital management on firm`s financial viability, some of the empirical findings are discussed here to design research gaps and objectives.

Samiloglu & Dermigunes (2008) examined the impact of firm`s working capital on their profitability by taking a sample from Turkish capital market. The objective of the study was to undercover the strength of statistical relation among components of cash conversion cycle and firm`s profitability. In order to reach empirical findings, study carried sample for the period ranges from 1998 to 2007. Multiple linear regression analysis demonstrates the negative behavior of accounts receivable, leverage and inventory period, while the positive attitude of sales growth toward firm`s profitability.

Pooled OLS, fixed effect panel regression models were adopted by Mathuva, (2010) in order to measure the performance of working capital management on listed stocks of Kenya. The study took a sample of 30 firm`s over the period ranges from 1993 to 2008. Regression results indicated the negative relationship among firm`s profitability and average time duration required to convert stock into cash. Furthermore, there exist positive association among average time firm`s required to meet their financial obligations.

Akinlo, (2011) explore the impact of working capital management on the profitability of listed Nigerian stocks, with the panel data statistical techniques. Eight years data of Nigerian stocks were gathered for the period of 1999 to 2007. Results proved positive linkage among firm`s financial performance and sales growth. Moreover, there exist negative harmony among firm`s leverage and profitability. Moreover, firm`s average collection period and leverage also indicated positive behavior for each other.

Textile sector of Pakistan was studied in order to analyze the impact of working capital management on firm`s profitability. Average time duration required to convert stock into cash, average days for working capital and operating cycle were selected as independent variables to study the efficacy of firm`s working capital system, while return on equity, return on asset, profit margins and economic value additions were favored as firm`s profitability indicators. Six years data of 160 textile firm`s for the period of 2000 to 2005 was selected as a sample to reach empirical findings. Ordinary least square and fixed effect regression equations were applied for analyzation and interpretation of collected data sets. Results highlighted significant and inverse relationship among average age of accounts receivables, average payable period and return on assets, while positive significant association exists between return on asset and the average age of inventory. Furthermore, a positive association was found among return on asset and cash conversion cycle of textile sector of Pakistan (Ali, 2011).

Sharma & Kumar (2011) studied the impact of working capital management for identifying the performance of Indian listed stocks. Panel data consisting of 263 non-financial Bombay stock exchange indexed firms was collected as a sample of the study. The study used Ordinary least square regression analysis to make conclusive statements about the hypothesized relationships. Results proved significant and positive association with working capital management and Indian listed firms. Cash conversion cycle and the average age of accounts receivables showed positive correlation toward profitability, while average life of inventory and accounts payable indicated negative behavior for gauging profitability. The study concluded that expanding cash conversion cycle and average receivable period will help Indian organization`s to boost profitability.

Firm`s financial performance and working capital management have significant positive relation with one another. Abuzayed, (2012) proved this statistical relation by conducting a research in Jordan. Eight years panel data for the period ranges from 2000-2008 was collected from listed firms of Amman stock exchange. The major interest of shareholders is to gain handsome profit margins on their investments so that both financial and marketing measures were adopted. Most advanced panel data techniques random effect, fixed effects and generalized movement methods were favored for analysation and interpretation of data sets. Findings suggested creating equilibrium among profitability and liquidity, in order to operate business affairs more efficiently and effectively.

Five-panel regression models were developed by Vural et al. (2012) to examine the nature of the relationship among firm`s performance of Istanbul stock exchange-listed stocks and working capital management. Seven years data of 75 traded stocks, ranges from 2002 to 2009 was gathered from a sample of the study. Operating profit and Tobin`s Q are favored as profitability indicators for measuring Istanbul stocks performance. Regression findings showed the insignificant relationship between profitability and firm`s working capital management, only cash conversion cycle and average collection period indicated strength for measuring firm`s profitability. Results revealed that reduction in average collection period and cash conversion cycle will enhance firm`s profitability.

2.3.Research Gap

Malik and Bukhari, (2014) selected ROE as an indicator of profitability and five years data of 38 KSE listed companies from Cement, Chemical and Engineering sectors to study working capital management. Qazi et al. (2011) limited their research work by taking 20 Oil & Gas companies listed on KSE from 2004 to 2009 and net income for measuring profitability. Asad, (2012) studied working capital management by gathering data of 30 textile listed firms as a sample and EPS for symbolizing profitability.

Forwarding with the concept of working capital management, Ahmad and Bano, (2015) used six years data of 115 KSE listed textiles companies while taking ROA as profitability measure. Raza with his research colleagues in 2015, favored three indicators of profitability; ROE, ROI, and ROA for measuring working capital management of KSE listed Oil & Gas companies. Iqbal and Zhuquan, (2015) also selected ROA as a measure of profitability and 85 non-financial KSE firms for studying working capital management.

Ary et al. (2002) stated that larger sample size helps to control regression errors and stabilizes the relationships between Y and X variables. Scholars in developed economies take multiple indicators of firm`s profitability like; ROE, ROA, ROI, EPS, GOI, Net Income for better estimation of results. Previous studies conducted in Pakistan on working capital management, ignore to synergize larger sample size and multiple profitability indicators for estimation of working capital determinants toward firm`s performance.

2.4. Research hypothesis

Persistent with the working capital theories, studies indicated that average collection period and average age of inventory have negative association towards firm's profitability; (Rehman & Nasr, 2007); (Charitou et al. 2010); (Deloof, 2003); (Karaduman et al. 2010); Deloof, (2003) stated that poor financial firm's required longer time span to pay-off their liabilities, Flope and Ajilore, (2009) negate earlier theories and support Deloof findings by proving negative association among DPO and profitability. On the basis of earlier theories and research studies, following hypotheses are being proposed to reach empirical findings;

H1: Average collection period is negatively related to profitability.

H2: Average age of inventory is negatively related to profitability.

H3: Average payment period is negatively related to profitability.

H4: Cash conversion cycle is negatively related to profitability.

2.5. Objectives of the Study

The present study aims to explore the impact of specific components of working capital management including; the average age of accounts payable, the average age of accounts receivable, the average age of inventory and cash conversion cycle on the financial performance of the listed companies of Pakistan. In order to present a comprehensive analysis, firm size, annualized sales growth and financial debt-ratio have been taken to control un-wanted effects of other variables in the regression equation.

3. Research Methodology

3.1. Sample Selection

The study gathered five years panel data (2006-11) of 125 textile firms. Textile is amongst one of the largest sectors of Pakistan's economy, as it contributes about 60% to total national exports and 9.5% of GDP (Pakistan bureau of Statistics, 2012). A sample of 125 textile firms is selected from a total of 155 listed textile firms at KSE, study based data availability and listing criteria for selection of sampled firms, in order to avoid missing values.

3.2. Variables Measurement

3.2.1. Dependent Variable

Return on asset (ROA) and Gross operating income (GOI) are taken as measures of firm's profitability (dependent variable). ROA is defined as net profit divided by total assets; while GOI is measured as sales minus cost of goods sold, wholly divided by total assets minus financial assets.

3.2.2. Independent Variables

DSI act as a tool for firm's inventory management. It measures the average number of days from delivery of raw materials to the sale of finished goods. It is calculated as inventory divided by

cost of goods sold, multiplied by an annual number of days. DSO indicates the average collection period, it measures an average number of days a firm required to collect its bills. It is computed by dividing accounts receivable to sales and multiplied with an annual number of days. DPO shows the average payment period. It is measured as accounts payable to cost of goods sold, and multiplied by an annual number of days.

CCC is an indicator of working capital management that quantifies the average time period between cash outflow for inventories or resources and cash inflow from sales. CCC is measured as DSO plus DSI minus DPO. Firm size, sales growth, and financial debt ratio are taken as control variables.

4. Statistical Analysis

Working capital management among listed companies of Pakistan is examined with the help of panel regression models using SPSS 16.0. Following regression equations have been designed to test hypothesized relationships.

$$\text{Profitability} = \beta_0 + \beta_1\text{DSI} + \beta_2\text{FS} + \beta_3\text{SG} + \beta_4\text{FDR} + \epsilon_{it} \quad (1)$$

$$\text{Profitability} = \beta_0 + \beta_1\text{DSO} + \beta_2\text{FS} + \beta_3\text{SG} + \beta_4\text{FDR} + \epsilon_{it} \quad (2)$$

$$\text{Profitability} = \beta_0 + \beta_1\text{DPO} + \beta_2\text{FS} + \beta_3\text{SG} + \beta_4\text{FDR} + \epsilon_{it} \quad (3)$$

$$\text{Profitability} = \beta_0 + \beta_1\text{CCC} + \beta_2\text{FS} + \beta_3\text{SG} + \beta_4\text{FDR} + \epsilon_{it} \quad (4)$$

$$\text{Profitability} = \beta_0 + \beta_1\text{DSI} + \beta_2\text{DSO} + \beta_3\text{DPO} + \beta_4\text{CCC} + \beta_5\text{FS} + \beta_6\text{SG} + \beta_7\text{FDR} + \epsilon_{it} \quad (5)$$

Where;

Profitability = 1. ROA = Net profit divided by total assets
= 2. GOI = Sales minus cost of goods sold, whole divided by total assets minus financial assets

DSI = Inventory turnover in days

DSO = Average age of accounts receivables

DPO = Average age of accounts payables

CCC = Sum of DSI and DSO, minus DPO

FS = Natural log of sales

SG = Current year sale minus previous year sale, divided by previous year sale

FDR = Financial debts divided by total assets

Study employed descriptive statistics to examine the temporal properties of given variables, Pearson correlation analysis to study the amount of relationships among studied variables and OLS regression analysis to measure the strength of independent variables for gauging dependent variable.

5. Empirical Results

5.1.Descriptive analysis

Table 4.1 describes mean, standard deviation and number of observations against each studied variable. Five years panel data of 125 textile firm`s is studied, so a number of observations for each variable are 625. Standard deviation is the amount of dispersion or variance of studied variable from its mean. ROA showed 6% greater deviation as compare to GOI. The average ROA and GOI is 0.19% and 11.21% respectively.

Table 4.1: Descriptive Statistics

<i>Variable</i>	<i>Description</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Observations</i>
ROA	Return on Assets	0.0019	0.1822	625
GOI	Gross Operating Income	0.1121	0.1212	625
DSI	Days sales inventory	1.1900	926.11	625
DSO	Days sales outstanding	40.823	65.808	625
DPO	Days payable outstanding	2.6600	1821.9	625
CCC	Cash conversion cycle	-1.0600	983.57	625
FS	Firm size	14.303	1.3868	625
FG	Firm growth	0.2624	1.2019	625
FDTAR	Financial debt to total asset ratio	0.7022	0.2467	625

Table 4.2 presents correlation coefficients of all selected variables of the study. DSI and CCC showed weaker positive correlation for ROA and GOI, on the other hand, DSO and DPO presented poor negative association for measuring ROA and GOI. DSI, DSO and DPO and positively related to each other, while DSI, DPO showed strong negative behavior for CCC and DPO indicated weaker inverse role toward CCC.

Table 4.2: Pearson Correlation Matrix

	<i>ROA</i>	<i>GOI</i>	<i>DSI</i>	<i>DSO</i>	<i>DPO</i>	<i>CCC</i>	<i>FS</i>	<i>FG</i>	<i>FDTAR</i>
ROA	1								
GOI	0.282	1							
DSI	0.000	0.064	1						
DSO	-0.006	-0.036	0.024	1					
DPO	-0.018	-0.020	0.950	0.051	1				
CCC	0.033	0.094	-0.816	-0.006	-0.955	1			
FS	0.165	0.409	0.005	-0.090	-0.057	0.105	1		
FG	0.049	0.032	-0.014	-0.077	-0.009	-0.002	0.021	1	
FDTAR	-0.218	-0.215	-0.037	-0.092	-0.018	-0.008	-0.144	-0.090	1

5.2.Analysis and Discussion

In this study, the researchers have conducted tests with five regression panel equations to determine the strength of working capital management elements, for measuring firm`s profitability by taking ROA and GOI as indicators of profitability. Table 4.3 and table 4.4

presents ROA and GOI results respectively. R-square of ROA models showed the value of 0.067, which means poor robustness of ROA equations. DSI, DSO, DPO and CCC all studied variables indicated insignificant and negative behavior for measuring dependent variable. DPO is omitted in equation (5) while regressing with other variables.

Table 4.3: Multiple regression models on Return on Assets (ROA)

Column	1	2	3	4	5
WCM Elements	<i>DSI</i>	<i>DSO</i>	<i>DPO</i>	<i>CCC</i>	<i>Full Model (DPO Omitted)</i>
Constant	0.055*** (-0.153)	0.064*** (-0.150)	0.058*** (-0.151)	0.062*** (-0.150)	0.082*** (-0.143)
DSI	0.837 (-1.570)				0.768 (-3.970)
DSO		0.81 (-2.622)			0.8 (-2.766)
DPO			0.723 (-1.380)		Omitted
CCC				0.653 (-3.246)	0.618 (-6.338)
FS	0.001* (-0.018)	0.001* (-0.018)	0.001* (-0.018)	0.001* (-0.018)	0.001* (-0.017)
FG	0.466 (-0.004)	0.478 (-0.004)	0.466 (-0.004)	0.463 (-0.004)	0.472 (-0.004)
FDTAR	0.000* (-0.145)	0.000* (-0.146)	0.000* (-0.145)	0.000* (-0.145)	0.000* (-0.145)
R-Square	0.067	0.067	0.067	0.067	0.067
N	625	625	625	625	625

Notes: *p<0.01; **p<0.05; ***p<0.1

GOI regression equations showed R-squares ranges from 0.192 to 0.220, presenting robust models for measuring relationships between firm's profitability and working capital management. DSI, DSO, DPO and CCC showed insignificant and negative attitude for firm's profitability calculation in equations (1), (2), (3) and (4) respectively. DPO is omitted in equation (5), while DSI, DSO, and CCC remained significant and negative for measuring dependent variable.

Table 4.4: Multiple regression models on Gross Operating Income (GOI)

Column	1	2	3	4	5
WCM Elements	<i>DSI</i>	<i>DSO</i>	<i>DPO</i>	<i>CCC</i>	<i>Full Model (DPO Omitted)</i>
Constant	0.000* (-0.317)	0.000* (-0.312)	0.000* (-0.316)	0.000* (-0.308)	0.000* (-0.274)
DSI	0.119 (-7.356)				0.000* (-4.021)

DSO		0.672 (-2.854)		0.529 (-4.162)	
DPO			0.994 (-1.853)		Omitted
CCC				0.145 (-6.521)	0.000* (-3.778)
FS	0.000* (0.034)	0.000* (0.034)	0.000* (0.034)	0.000* (0.033)	0.000* (0.031)
FG	0.776 (-0.001)	0.826 (-0.001)	0.797 (-0.001)	0.793 (-0.001)	0.7 (-0.001)
FDTAR	0.000* (-0.077)	0.000* (-0.079)	0.000* (-0.078)	0.000* (-0.078)	0.000* (-0.075)
R-Square	0.196	0.193	0.192	0.195	0.220
N	625	625	625	625	625

Notes: *p<0.01; **p<0.05; ***p<0.1

Negative relationships of working capital management elements in both ROA and GOI models for measuring firm`s profitability proved all four hypothesis of the study. Inverse relationships of ROA equations supported the earlier studies; (Ahmad & Bano, 2015); (Rahman & Nasr, 2007); (Deloof, 2003), while GOI findings encourage the works of; (Eljelly, 2004); (Sharma & Kumar, 2011) and Shin and Soenan, (1998).

6. Conclusion

Efficient management of working capital is an important tool for achieving organizational profitability. The purpose of the present study was to test the performance of working capital management for measuring firm`s profitability. Findings of the present study support the work of prior researches. This study indicated that ROA as is a poor indicator of firm`s profitability, moreover GOI is a better explanatory measure for organizational performance. Results of the current study will help organizations to improve their effectiveness by managing their working capital.

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