Working Capital Management and Firm Performance of Construction and Material Sector in Pakistan

Faiza Asghar
MS Scholar, Faculty of Management Sciences
International Islamic University, Islamabad, Pakistan
Dr. Hafiz Muhammad Ishaq
Assistant professor, Department of Business Administration
Federal Urdu University of Arts, Science and Technology,
Islamabad, Pakistan
Humaira Naz
MS Scholar, Faculty of Management Sciences
International Islamic University, Islamabad, Pakistan

Abstract

The purpose of this study is to investigate the relationship of profitability on working capital management. Working capital management efficiency measured with cash conversion cycle and its components. The present study evaluates the efficiency of the working capital management of construction and material sector of Pakistan for the period 2008-2012. Panel data analysis has been used and data has been taken from financial statements of construction and material companies. Hypothesis were tested using multiple regression analysis and was found that profitability has negative significant relationship with profitability, positive significant relationship with day's average inventory but insignificant relationship with day's average payable and cash conversion cycle. Working capital management impacts directly on firm's profitability and managers can achieve their major objective of maximizing shareholders wealth by reducing cash conversion cycle, inventory and receivable period and by delaying the payments payable to different parties.

Keywords: working capital management, performance, cash conversion cycle

1. Introduction

Working capital is the money which is always available for the business to maintain its operations. It is the capital available to purchase inventory, pay employees and finance other short term capital expenditures. This makes managing working capital an important business skill. Working capital describes as capital invested in current assets and converted into cash within short time period and is again invested this cash. So, it is constantly receiving or circulating and also recognized as floating capital or circulating capital.

Working capital management is important element in determining firm performance. For running firm's operations sufficient working capital amount is very essential and efficiency in this area helps to operate fixed assets profitably. It promise the firm's long term success and to obtain the goal maximization of the shareholders funds. Improper management of cash on due dates may result in loss of cash discount and loss of reputation due to non-payment of debt. Ogundipe and Idowu (2012) investigated that an inappropriate working capital management of accounts receivables, inventories and accounts payables will bring difficulties to continue a firm's operation that affects market value of the firm. Mohamad and saad (2010) examined that the managing working capital leads to development in market value of firms and effectiveness, this feature leads to operational and strategic thinking of company in order to work efficiently and effectively. Supplier's credit policy and credit time period to customers both have an impact on profitability of the company.

There are different approaches of working capital management. These are aggressive approach, conservative approach and matching approach. . In aggressive approach current assets need are financed through short term funds and current liabilities are kept in a greater portion as compared to long term debts. There is low cost, high risk and high profit. In conservative approach current assets should be used to finance through long term funds and greater portion of long term debts is used instead of current liabilities. There is high cost, low risk and low profit. Matching approach describe that permanent working capital should be invested through long term finances and temporary working capital need should be invested through short term finance. The use of short term sources should be restricted to only emergency situation or when there is unexpected outflow of funds. There is low cost, high risk and high profit.

The approach of working capital financing is implemented by a company is very important and it has an impact on its profitability and liquidity. If the firms will follow aggressive working capital policy then they have negative returns. Aggressive financing policy gives company profitability because short-term funds are less expensive to purchase so funding costs can be lower but aggressive financing policy not often yields high profitability and also creates the greatest risk of illiquidity. Nazir and Afza (2005) study shows the negative relationship between the working capital investment aggressiveness and financing policies and measures of profitability of firms.

Current assets increase have a negative impact on the profitability of firms while low level of current assets may bring difficulties in maintaining firm's operations and lower level of

liquidity. According to Barine, (2012) working capital decisions describe financial decision making of risk and return. Higher working capital reduces illiquidity risk and increases profitability of firms. For creation of firm value an optimal working capital management is consider to contribute positively. Optimal level of working capital can be describe as the one in which an equilibrium is maintained between efficiency and risk and involve attaining the optimum level of different components of working capital for example account receivables, inventory and payables.

Working capital management depends on two decision issues for the firm and they are:

- The optimal level of investment in current assets.
- The appropriate mix of long term and short term financing and use this investment in current assets.

These decisions are control by the tradeoff between profitability and risk. Firm manager should manage the tradeoff between liquidity and profitability maximization accurately to obtain optimal working capital management (Jail, 2010). If net working capital of company is smaller than its liquidity risk is higher. If conversion of current assets in to cash brings any disruption it may result failure in the payment of current outstanding liabilities (Fletcher, 2007).

By reducing the cash conversion cycle, inventory period and days account receivables, managers can increase the firm's profitability but they cannot raise profitability by rising the day's payable period (Deloof, 2003; and Napompech, 2012). Managers can increase share holders value and ROA if they reduce their inventory size, cash conversion cycle and payable period and increasing in

supplier time period and liquidity will bring overall firms' performances (Azam and Haider, 2011). Managing working capital correctly is important for companies that use intensively fixed capital same as those that use intensively working capital. (Ching *et al*., 2011).

In this paper the problem will be analyze "does the change in working capital effects firms' performance in Pakistan"? And identify the important variable that effect on working capital management.

To examine the problem the researcher develops the following objectives:

- Determine the relationship between working capital management and profitability of the firm.
- Determine the impact of accounts receivables days, inventories days, accounts payable days and cash conversion cycle on firm performance and
- To determine working capital needs of firms.

Working capital management determines the optimum investment level in current assets such as cash, inventories, receivables, and other investment in short term. Major focus in working capital management will be given to the firm's investment optimization. This research is mainly based on the impact of the working capital management on the firm's performance in Pakistan. In this paper for comprehensive measure of working capital management cash conversion cycle is used. The performance measures with Return on assets (ROA) and defined as profit before interest and tax divided by total assets (Padachi, 2006; Lingesiya and

Nalini, 2011, Sen and Oruc, 2010; Azam and Haider, 2011), Current ratio, size, sales growth, debt ratio used as control variables.

Specific research studies especially on the working capital management impact and firm performance in Pakistan are rare. Our study will throw light on the working capital management by measuring firm performance in Pakistan will contribute to the literature. This study will allow many large companies in changing environment of Pakistan to determine their own working capital management and help to set tradeoff between liquidity and performance to adopt optimum working capital policy in order to increase profitability. The findings of this study will provide an insight on the company working capital management policy for concerned managers. They would know that in order to increase the performance level at how much level they can increase their liquidity and the optimal level of inventory level and receivables.

The remainder of this paper will organize as follows: In second section a review of literature on the topic of the working capital management and firm's performance and past empirical studies will be discuss. The third section will describe data collection, methodology and analysis procedures. The fourth section will gives details regarding the results of the research. Finally the fifth section includes findings and conclusion.

2. Literature Review

Working capital management is an essential part of corporate finance. Working capital management includes working capital components, receivables, inventory, payables and for day to day

operations using the cash efficiently. Firms may maximize their value by an optimal level of working capital.

Debtors' collection period, cash conversion cycle, capital structure and size have significantly negative relationship with the cash position while creditor's payment period and profitability have positive relationship with the cash position. So, not only does firms improves their profitability by reducing the cash conversion cycle but it has also the tendency to improve the cash position of firms. (Yeboah and Agyei, 2012)

Managers by reducing the number of day's accounts receivable and inventories can increase corporate profitability and less profitable firms to pay their bills wait longer (Deloof, 2003; García-Teruel and Martínez-Solano, 2007). Lower gross operating profit is related to an increase in the accounts payables number days. Low profitable firms take benefit of credit period given by suppliers and wait longer to pay bills. Managers for their companies generate profits by handling the cash conversion cycle properly and by keeping each component to an optimum level for example account receivables, inventories and accounts payables (Lazaridis and Tryfonidis, 2006). Working capital management and profitability of firm has strong relationship. High investment in receivables and inventories will lead to lower profitability and current asset to total asset will lead to higher profitability. Increase in the cash conversion cycle will reduce the profitability of firms (Lingesiya and Nalini, 2011).

Working capital management associates with inflation, growth opportunity, size and economic growth. Their results show that to maintain optimal working capital management the managers

should consider and firm specific (internal) macroeconomic (external) factor to (Taufiq *et al*., 2010). Firms can increase profitability by reducing accounts cash conversion cycle and receivable period. Leverage has a negative significant relationship with firm value and as a control variable with profitability. This indicates that due to increase in the level of leverage value and profitability of the firm will decline (VURAL *et al*., 2012).

Alipour (2011) selected Tehran stock exchange and found that cash conversion cycle is the important measuring tool to calculate the working capital management efficiency. Working capital management and profitability of companies has significant effect on the profitability of the companies. By decreasing inventory and accounts receivables managers can generate value for the shareholders. Gill *et al*., (2010) measured profitability through gross operating profit and found significant relationship statistically between the profitability and cash conversion cycle and It shows that by keeping accounts receivables at an optimal level and handling properly the cash conversion cycle managers can create profits for their companies. The relationship between firm's profitability and accounts receivables is negative this indicates that to reduce the cash gap in the cash conversion cycle, low profitable firms will decrease their accounts receivables.

Bagchi and bhaskar (2012) found that working capital management variables and profitability of firms has negative relationship and as profitability of firm decreases Cash conversion cycle increases, for the shareholders managers can create a positive effect by decreasing the Cash conversion cycle to a lowest level. Debt and profitability has also negative relationship. Mathuva (2010) also

investigated that firms by operating effectivly and efficiently their resources are able to achieve and keep competetive advantage of the organization through reducing the cash conversion cycle to a minimum level. Sen and Oruc (2010) determined the efficiency level of firms traded in ISE (Istanbul Stock Exchange) and the relationship between return on total assets and working capital management. They found the relationship between cash conversion cycle, current ratio, net working capital level, days accounts receivable, days inventory has significant negative with return on total assets.

Garcı́a-Teruel *et al*., (2007) investigate that working capital management has important role in medium and small sized firms. Medium and small sized profitability of firms and the day's account receivable and days of inventory has negative significant relationship. Quayyum (2012) found that the Profitability and different Working Capital Components has significant level of relationship between industries also shows that level of relationship change from industry to industry significantly.

Managers cannot raise profitability level by increasing the payables deferral period and they by shortening the cash conversion cycle, inventory period, and receivables collection period they can increase the profitability of their firms and also indicates that gross operating profits depends upon industry characteristics of the firms (Napompech, 2012). Corporate governance does not improve working capital management efficiency but improve the larger broad (Gill and Biger, 2012). Working capital intensive companies will yield more profit if managing inventory and cash conversion cycle properly. For improving Return on sales for firms that use working capital and Cash conversion cycle and days inventory are important

but day's inventory is most important variable for Return on assets. For improving Return on sales and Return on assets, Day's working capital and Debt ratio are main variables that affect the companies (Ching *et al*., 2011).

Risk-return nature of financial decision making is example of Working capital decision. Risk of illiquidity reduces by increasing in the firm's working capital and also raises the overall profitability for companies. Efficiency of firm's operations requires proper management and trade-off of risks and returns Nwidobie *et al*., (2012). In order to maximize the value of a firm manager of firms needs to obtain required tradeoff between and profitability and liquidity. Cash conversion cycle is affected positively with Profitability, shows that managing their working capital for more profitable firms are less motivated and for inefficient working capital management managers in financial markets are failed to penalize in emerging markets (Abuzayed, 2011).

Working capital management and firm's capital expenditure has significant relationship. Policies of working capital management based upon many factors and these are operating cash flow, capital expenditure and sales growth, etc. Operating cash flow for firms has a significant impact on working capital management and predict as control variable. When the Companies have growth opportunities they manage working capital effectively that they can fulfill the required capital expenditure for expansion of their business (Appuhami, 2008). Managing working capital properly is very essential regardless of the type of company whether fixed capital intensive or working capital.

3. Research Methodology

The secondary data required to perform the research was collected from the official sites of the listed firms on Karachi Stock Exchange. Additionally, some of the required data was gathered from the State Bank, rest of the data is collected from annual reports and SBP analysis reports. Yearly data included on sales, cost of goods sold, total assets, average receivable, Days average Inventory, Days average payable, cash conversion cycle, and leverage ratio. There are 35 listed constructions and material firms at Karachi Stock Exchange and those firms are not included whose observations were missing for few years or data was not available. The data used for research purpose consisted of 5 years annual data of the variables. Data of all the variables belonged to period starting from fiscal year 2008 to fiscal year 2012. There are total 125 observations.

3.1 Dependent Variable

Return on Assets (ROA) used as dependent variable and can defined as profit before interest and tax divided by total assets. (Padachi, 2006; Lingesiya and Nalini, 2011; Sen and Oruc, 2010; and Azam and Haider, 2011) have used this variable in their study.

3.2 Independent Variables

Cash conversion cycle used for measuring working capital management. It shows that the companies first have credit transactions, companies buy and sell goods in credit and then they recover receivable account which is called cash conversion cycle.

Cash conversion cycle=Days average receivables + Days average Inventory- Days Average payment

Days average receivables =360/ (Sales/ Account Receivables)

Receivable collection period is important for operational and financial performance of firms and determines the difficulties in collecting sales made on credit. The average collection period is the average number of days a company needs to accumulate its accounts receivables, i.e. the number of days on average required to transfer into cash.

Days average Inventory=360/ (COGS/ Inventory)

Days average inventory measure is the procedure of converting raw materials into cash and is the component of cash conversion cycle.

Days Average payment period= 360/ (COGS/ Accounts payable)

Accounts payable are actually liabilities to avoid default risk and within a given period of time must be paid off.

3.3 Control Variables

Control variables are used and includes following variables: Current ratio, size, sales growth and leverage. Current ratio defined as current assets divided by current liabilities. Current ratio gives a sense of efficiency of a company's operating cycle or its ability to converts its goods into cash and shows company ability to pay its short term debt by using current assets, (Padachi, 2006; Lingesiya and Nalini , 2011; Rehman and Nasr, 2007; and Azam and Haider, 2011).

The logarithm of sales or the LOS is used to know how the firms have grown in the recent years. The companies are more profitable which have more sales so the company size is used as proxy for size. (Deloof , 2003; Padachi , 2006 ; Alipour, 2011; and Rehman and Nasr, 2007). Sales growth is used to measure investment growth opportunity and is calculated by (This year's sales-previous

year's sales)/previous year's sales (Deloof , 2003; and Abuzayed, 2011).

Leverage ratio can be defined as financial risk of company and determine that how much of the company's assets are financed by debt. Firms leverage is calculated by dividing long term total debts by the total assets. If the firm has more debt the more would be the interest factor which would in turn affect the profitability. (Deloof , 2003 ; Padachi , 2006; Rehman and Nasr, 2007).

All above variables have relationships that affect working capital management.

3.4 Hypothesis

To find the relationship between working capital management and firm performance following hypotheses are generated and to support these hypotheses statistical data calculated.

H 1: There is significant relationship between day's average receivable and profitability.

H 2: There is significant relationship between day's average inventory and profitability.

H 3: There is significant relationship between day's average payable and profitability.

H 4: There is significant relationship between cash conversion cycle and profitability.

3.5 Model Specification

To find the relationship between working capital management and firm performance in Pakistan four regression models developed using empirical framework first used by Deloof (2003) and later work of Padachi (2006).

ROAit = βo + β1 (DARit) +β2 (CRit) + β3 (LOSit) +β4(SGsit) +β5(LEVit) + €it

ROAit = βo + β1 (DAIit) +β2 (CRit) + β3 (LOSit) +β4(SGsit) +β5(LEVit) + €it

ROAit = βo + β1 (DAPit) +β2 (CRit) + β3 (LOSit) +β4(SGsit) +β5(LEVit) + €it

ROAit = βo + β1 (CCCit) +β2 (CRit) + β3 (LOSit) +β4(SGsit) +β5(LEVit) + €it

4. Data Analysis

To analyze the data various analysis techniques were used

4.1 Descriptive statistics

Descriptive statistics shows that on average firms has return on assets of (59) % it indicates that they are not able to maintain their operations overtime and profitability. Firms take average 86days to convert inventory into goods whereas average collection period for firms is 22days and firm's holdup their payables for 152 days. Average firms' cash conversion cycle is (46) days it indicates that the firms have excess cash to invest for 46 days. Liquidity current ratio suggests that firms can pay their short term liabilities 0.894 times out of current assets. On average sales grow annually almost 29% whereas 14% of their liabilities taken up by debt.

Table 1: Descriptive Statistics

	ROA	DAR	DAI	DAP	CCC	CR	SG	LOS	LEV
Mean	-0.59	21.87	85.97	152.27	-44.43	0.89	0.293	0.97	14.11
Median	0.87	3.20	13.63	31.24	30.55	0.08	0.094	0.12	0.26
Max.	-0.32	8.31	34.96	75.31	-21.32	0.73	0.119	0.67	14.88
Min.	-23.64	0.11	2.18	21.12	-2704.39	0.03	-1.000	0.02	0.00
Std. Dev.	9.69	35.81	152.41	349.30	341.56	0.90	1.054	1.40	2.96

4.2 Correlation Analysis

Correlation analysis is used in the model to get the relationship between working management and firm's performance. Correlation analysis results show that Return on assets is negatively related with Days average relievable and days average payables. It shows that if day's average receivables and day's average payable decreases than these have a positive impact on the profitability. Day's average inventory and cash conversion cycle positively correlated with return on assets. Current ratio is positive which indicates the relationship between profitability and liquidity and companies with more liquidity are more profitable. Leverage ratio is negatively correlated which shows that if debt decrease profitability increases while sales growth and company size is positively correlated with ROA.

Table 2: Correlation Analysis

	ROA	DAR	DAI	DAP	CCC	CR	SG	LEV	LOS
ROA	1								
DAR	-0.240	1							
DAI	0.002	0.108	1						
DAP	-0.101	0.001	0.291	1					
CCC	0.080	0.153	0.160	-0.893	1				
CR	0.264	0.028	-0.015	0.272	-0.282	1			
SG	0.020	-0.048	-0.073	-0.115	0.080	-0.049	1		
LEV	-0.222	-0.001	0.312	0.023	0.116	-0.234	-0.099	1	
LOS	0.241	-0.188	-0.490	-0.697	0.474	-0.049	0.079	-0.367	1

4.3 Multiple Linear Regressions

To investigate the relationship between working capital management and firm performance Regression analysis is used.

Model 1

Table 3 represents the regression results of first model. According to first regression model hypothesis 1 is accepted at 5% significant level and indicates that there is significant relationship between day's average receivable period (DAR) and profitability. Coefficient of DAR is negative at which calculated t-statistic is more than critical value. So it shows that there is a negative significant relationship between receivable period and profitability. Firms earlier in collecting their receivables earn high profits as compared to firms recovering receivables late. Adjusted R square of 15% shows that after adjusting for degrees of freedom model is capable to explain 15% of profitability.

Table 3: Coefficient Model (A)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-9.340	4.943	-1.890	0.061
DAR	-0.058	0.023	-2.524	0.013
CR	2.748	0.929	2.958	0.004
SG	-0.017	0.769	-0.022	0.982
LEV	-0.676	0.644	-1.049	0.296
LOS	0.582	0.302	1.931	0.056

Summary Model (A)

R-Squared	Adjusted R-Square	S.E of Regression	F-Statistics
0.183	0.149	8.944	5.339

Model 2

Table 4 shows the second regression model which is run by using the day's average inventory as an independent variable. The results show the positive significant relationship between day's average inventory and profitability whereas t statistic is equal to critical value.

Hypothesis 2 is accepted but relationship is positive it indicates that firms with high day's average inventory maintain too much inventory and cash is tied up in goods that cannot be sold this is not good for the company and to move out this inventory quickly, management have to decrease prices, selling its product at a loss. The adjusted $R2$ has a value of 13% and F-statistic has a value equal to 4.751 that reflects the significance of the model or significance of R square.

Table 4: Coefficient Model (B)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-17.603	5.352	-3.289	0.001
DAI	0.012	0.006	1.960	0.050
CR	2.765	0.939	2.945	0.004
SG	0.103	0.777	0.133	0.895
LEV	-0.747	0.657	-1.138	0.257
LOS	1.006	0.329	3.057	0.003

Summary Model (B)

R-Squared	Adjusted R-Square	S.E of Regression	F-Statistics
0.166	0.131	9.035	4.751

Model 3

According to the third regression model third hypothesis is rejected that there is significant relationship between days average payables and profitability because coefficient of day's average payment is negative and significant but p value is more than 0.05. The value of t-statistics is (0.232) which is more than critical value.

Table 5: Coefficient Model (C)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-11.696	7.122	-1.642	0.103
DAP	-0.001	0.004	-0.232	0.817
CR	2.819	0.987	2.857	0.005
SG	0.042	0.793	0.053	0.958
LEV	-0.597	0.689	-0.866	0.388
LOS	0.658	0.448	1.468	0.145

Summary Model (C)

R-Squared	Adjusted R-Square	S.E of Regression	F-Statistics
0.140	0.104	9.178	3.871

Model 4

According to the model 4 hypotheses is rejected at 5% significance level and cash conversion cycle is insignificant as t statistic is less than critical value. The results are against with analysis that in the decrease of Cash Conversion Cycle will generate high profits for the company and it also shows that firms by maintaining the Cash Conversion Cycle to a higher level can create value for their shareholders. The value of F-statistic is 4.008 and the value of adjusted R-square is 10% which shows the significance of the model. It means companies couldn't maintain their cash conversion cycle profitable and couldn't use their large part of investments in working capital this is the reason that cash conversion cycle is insignificant.

Table 6: Coefficient Model (D)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.559	5.664	-1.864	0.065
CCC	0.002	0.003	0.801	0.424
CR	2.929	0.974	3.006	0.003
SG	0.019	0.789	0.024	0.981
LEV	-0.717	0.690	-1.039	0.301
LOS	0.577	0.360	1.602	0.112

Summary Model (D)

R-Squared	Adjusted R-Square	S.E of Regression	F-Statistics
0.144	0.108	9.155	4.008

5. Conclusion and findings

The different analyses identified important management practices and it helps managers to improve the financial performance of the companies and to recognize the areas of their operation. The result gives information to managers about financial management practices used in the firms. This study has shown that profitability has negative significant relationship with profitability, positive significant relationship with day's average inventory but insignificant relationship with day's average payable and cash conversion cycle. (Deloof, 2003; Alipour, 2011; Rehman and Nasr, 2007) found negative significant relationship with cash conversion cycle but I found insignificant relationship between cash conversion cycle and profitability. This is due to the reason that this sector has average negative returns this shows firms are more fixed capital intensive and doesn't maintain their working capital requirements properly, firms needs to manage their working capital efficiently.

Working capital needs of an organization change with time and firms should maintain a good management of its assets and liabilities. This research concludes that there is need for further empirical studies to be undertaken on construction and material sector of working capital practices by increasing the size of sample so that the study can help to disclose the hidden factors that explain the better performance of some business and how these practices could be increase to the other industries. This would also help out policy makers and to identify the requirements and problems faced by construction and material sector in Pakistan. This analysis has been controlled by the sample size and the nature of the data, which could have affected the results.

In order to reduce the cash conversion cycle a firms either decrease days average Inventory, days average receivable or increase days average Payable to increase the amount of cash on hand to use this to pay current liabilities or able to use this cash for expenses, dividend payments and growth. These results can be strengthened if the firms manage their working capital in more efficient ways. By manage accurately accounts receivables, cash, inventories and account payables the firms will increase and improve performance. Due to changing world of economy, advancement of technology and increased global competition, this sector must struggle to increase their profits to bring their cash conversion cycle at optimum level to increase profitability.

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