THE IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: CASE STUDY OF PHARMACEUTICAL AND CHEMICAL FIRMS LISTED ON KARACHI STOCK EXCHANGE

Bab Shah

Shaheed Benazir Bhutto University, Shaheed Benazirabad, Pakistan

babshah75@gmail.com

Muhammad Arif Gujar ✉

Shaheed Benazir Bhutto University, Shaheed Benazirabad, Pakistan

marif@sbbusba.edu.pk

Najam Uddin Sohu

Shaheed Benazir Bhutto University, Shaheed Benazirabad, Pakistan

Najam_sohu@yahoo.com

Abstract

This paper empirically investigates the impact of working capital management (WCM) on profitability for a sample of 25 Chemical and Pharmaceutical companies that are listed on Pakistan Stock Exchange (PSE) for a period of 2009 to 2014. We analyze secondary data reported in companies' financial statement through descriptive statistics, correlation and between effect regression model. The main contribution of this study is that, this study explains impact of operating cycle on return on assets and return on equity in context of working capital which is not found in WCM literature especially in context of Pakistani chemical and pharmaceutical companies. The key findings of analysis show that components of working capital include days inventory outstanding, cash conversion cycle, days payable outstanding are positively related with return on assets expects days sales outstanding which is negatively and insignificantly related. Operating cycle has significant P-value but insignificant negative coefficient. Furthermore, in case of return on equity, regression analysis shows that all variables have insignificant positive except days inventory

outstanding which has insignificant negative impact on profitability (ROE). F-test shows that return on assets and return on equity both variables are significant.

Keywords: Between Effect Model, Working Capital Management, Karachi Stock Exchange, Fixed Effect Model, Operating Cycle

INTRODUCTION

This article examine relationship linking between working capital management and the profitability of Pakistani chemical and pharmaceutical firms listed on Karachi Stock Exchange and sample consist 26 firms for six years a period of 2009-2014.

The fundamental aim of every organization is increasing the shareholders capital which could be attained by escalating profit. Financial executives constantly attempt to hit stability among current liabilities plus current assets to sustain trade-off among profitability and liquidity. Organization's working capital management is most important impact lying on their profitability.

Sharma & Kumar (2011) stated that circulating investment ways called current assets of a corporation so as to change into common course of a company as one to other, like for instance, from, inventories to receivables, cash to inventories and receivables to cash. Lazaridis and Tryfonidis (2006) and Besley and Meyer (1987) they examines the impact of suitable or most favourable inventory managing, others investigated that accounts receivables management seeking to propose a best possible means of the strategy that guide to a maximization of the profit.

Rehman and Nasr (2007) and Long and Malitz and Ravid (1993) according to them that munificent trade credit plan and large inventory may shows increases in the sales. Furthermore they stated that larger inventory as well decreases the threat of stock-out and trade credit might be arouse sales for the reason that it permit a firm to right use of product excellence before disburse. According to Rehman and Nasr (2007) account payable is another element of working capital. Furthermore, too much holdup of payables could be expensive so on early imbursement firm was offered discount. Through same coupon, cash flow crisis for firm may be occurred due to unresolved accounts receivables.(Karaduman, Halil, Arzu, & Salih, 2011)investigate relationship linking between the working capital management and the profitability through balanced panel data of the non-financial sample of five years of 127 firms were examined which provide a total number of 635 observations listed on Istanbul Stock Exchange. WCM measure by the means Cash conversion cycle and return on asset used as the measure for profitability. The finding demonstrated that the effective management of cash

conversion cycle will provide greater return. Popular calculation of management of working capital is cash conversion cycle. Deloof M (2003), for example, finds out that overlong time interval, sizable speculation in the working capital. An overlong cash conversion cycle may possibly raise profitability as it direct to make an increase in sales. Considering the significance of the working capital management researchers emphasised on   examining   the   relationship linking between the working capital management and the profitability such as Daniel Mogaka and Ambrose Jagongo (2013); Adina Elena Dănuleiu (2010); Vural and Sokmen and Cetenak (2012); Hina Agha (2014); Rekha Guila (2014); Barot (2012) ; (Mary, Okelue, & Uchenna, 2012); Sharma and Kumar (2011); (Babu & Chalam, 2014); Gill, Biger and Mathur (2010); Mathuva (2010); Malik, M. S., & Bukhari, M. (2014);(Akoto, Vitor, & Angmor, 2013); (Iqbal & Zhuquan, 2015); (KARADUMAN, AKBAS, OZSOZGUN, & DURER, 2010)among others.The working capital management may holds both negative as well as positive impact on profitability of firm, that have negative as well as positive impact on wealth of the shareholder.

The main purpose of this paper is to examine the impact of WCM on profitability of 25 listed chemical and pharmaceutical firms listed on KSE for the period of 2009-2014. In current study, the explanatory variables of working capital and profitability consisting on set comprise six understudy variables:, Day's payable outstanding, cash conversion cycle, day's receivables outstanding, day's inventory outstanding and operating cycle ratios for measuring working capital (independent) and return on asset ratio and return on equity ratio for measuring profitability (dependent) variable.

This research contributes in literature in two manners. First, focal point is Pakistani chemical and pharmaceutical companies where not much research had been carried out on these firms in recent time. Second, the above said study authenticates a few of results of prior author through testing relationship of management of working capital with profitability concerning selected firms. As a result, this research adds material to existing theory evolve by prior authors.

Research Objectives

1. To examine the relationship of WCM and the profitability of Chemical and Pharmaceutical firms.
2. To examine impact of the WCM on profitability of Chemical and Pharmaceutical firms.

Research Hypotheses

H_1: Positive relationship among WCM and ROE and ROA of selected firms is exists.

H_{01}: Negative relationship among WCM and ROE and ROA of selected firms is exists.

H_2: Positive impact exists among WCM and ROE and ROA.

H_{02}: No impact exists among WCM and ROA and ROE.

Justifications

According to Ganesan (2007); Afza& Nazir (2007) Working capital management and Capital structure are the means of fundamentals to evaluate any company's prosperity. Most of the pragmatic studies on working capital management generally paying attention merely on accounts receivable and management of inventory, payables and cash conversion cycle.

This study will be contribution in the pool of literature in the following ways; Although the working capital management apprehension is not just these parts but operating cycle is an additional area of concern. According to the authors knowledge, it is seen from literature that not much work had been found which were operating cycle consider as the measure of working capital, especially in the context of Pakistani chemical and pharmaceutical sectors.

This study will be also contribution to the literature review and it will be helpful for students of Business studies as well.

This work resolves also practical approach for improvement of company managers while most favourable working capital procedure to implement thus to take in relation to efficient profitability and working capital management.

Scope

The scope of this study is especially limited because this research is used for purely academic use and provide only for descriptive and correlation research. Above mentioned study could not generalize used for the entire Pharmaceutical and Chemical industries everywhere in the world.

LITERATURE REVIEW

    i)   *Importance and Nature of Working Capital*

(Rafuse, 1996), stated that just like blood circulation is essential in human being's body in the direction of sustained life, funds circulation is essential to sustained business. Starvation of working capital is usually credited is a most important reason for the small business collapse in several developed as well as developing countries. According to Jarvis et, al (1996) firm success lays lying on its capability of generating cash proceeds in overloaded of payments. The problem of cash flow problem of several small sized businesses is aggravated by deprived financial management, especially deficient in the planning of requirements of cash.

    ii)   *Management of Working Capital*

The managing of working capital holds very important to financial wellbeing of any business of every sizes. Amounts utilized in the company's working capital are found in usually higher in percentage as compare to total assets utilized, so this is very important that all these proportion are utilized in effective and efficient way.

If funds are blocked for a long time period of supply, this would be takes longer time duration of cash operating cycle. While this might be boost profitability due to raise in sales, it Might be also negatively affect profitability but costs blocked in working capital greater the gain of holding additional amount of inventory or giving greater trade credit to customers.

Accounts payable is another element of working capital, but it do not consume funds; rather than it usually employ as short-term resource of financing. Therefore it facilitates firms through diminish their cash operating cycle, however it have an implied cost wherever discount can be propose for untimely completion of their invoices.

Review of Previous Studies

Babu & Chalam (2014) empirically examines the relationship linking between the component of working capital and company's profitability of Indian leather industry. They used secondary data for a period of 1997-2011. ROA used as dependent variables for profitability and cash conversion cycle, inventory conversion period, average collection period and average payment period were used as the independent variables for measured working capital. They used correlation analysis, ANOVA and multiple regression analysis ''t'' and ''f'' test for analysis the findings. The results of regression analysis of their study shows that inventory collection period and profitability has positive insignificant relationship and average collection period positive significant relationship. Furthermore, cash conversion period and average payment period were significant negative relationship linking to the profitability. They suggest that there were significant impact of working capital on the firm's profitability.

Karaduman, Akbas, Ozsozgun, & Dure (2010) Provide empirical evidence on effects of WCM on profitability of chosen companies listed on Istanbul Stock Exchange for 2005 to 2008. They utilized panel data methodology to analysis the effects. They used ROA as dependent variable as measure of profitability and number of days account receivable, number of days of inventory, number of days of account payable, cash conversion cycle as dependent variable as measure of working capital while leverage, real GDP, size as control variable for the study. The results of analysis found that account receivable, account payable, cash conversion cycle and inventory have significant negative effects the profitability whereas the size and GDP found positive while leverage had negative effects on profitability. The study suggests that WCM is

important determinant of market value of the firm and also exceptionally crucial for the selected companies from the point of view of sustainability of the firms.

Iqbal & Zhuquan (2015) Investigate relation between WCM and Pakistani firms profitability for a period of 2008-2013 listed in Karachi Stock Exchange. They used panel least square and correlation analysis to examine impact of WCM on firm's profitability. The results found negative relation between average collection period, cash conversion cycle, average payment period, debt and inventory turnover in days with return on assets, whereas, found positive relation between return on assets and GDPGR, sales growth and size of the firms of Pakistan.

Sharma and Kumar (2011) claimed that positive relationship connected between accounts receivables and profitability was a reason by the aspect that Indian companies had to fund more the trade credit for sustain rivalry with their overseas competitors and that has better services and product.

Rekha Guila (2014) evaluated and examined six pharmaceuticals corporations over time of i.e. 2009-2013, 5 years for working capital management. It wants to find out in view of Cash profits and Profit after Tax for the relationship among companies profitability and working capital. It revealed so as to there a relation exist within working capital Cycle, turnover and liquidity. But statistically mentioned relationship no more important. It establishes that Total outside liabilities / tangible net worth, Debt-Equity Ratio, and the Total term liabilities / tangible net worth include most important negatively association by means of both indicators concerning profitability. Furthermore, Net working Capital ratio as well establishes in the direction of negative associated and statistically momentous on 95% confidence level. Taken in support of pharmaceutical area it is established that capital in use is competently consumed and it is also shown that quick ratios and current ratio concerning companies secure periphery appear. It is found out that liquidity, working capital cycle, working capital and turnover is negatively correlated with the profit of companies. The facts as of the chosen pharmaceutical companies through what this pessimistic correlation obtain statistical significance through only Net Working Capital and statistically insignificance found for further three variables.

Barot (2012) studied that the negative relation found linking between corporate profitability and account receivables and the positive relation find between the accounts payable and the profitability. He was sum up that companies correctly manage accounts payables, cash, inventories and accounts receivables in an appropriate way, would ultimately raise the company's profitability.

(Mary, Okelue, & Uchenna, 2012) Their study based on Examination of the factors that determine profitability of Nigerian beer brewery companies. Multiple regression was used to

yearly data produced from yearly reports concerning with sampled beer brewery companies covered up time period of 2000 to 2011. The outcomes showed that ratios of sales, account receivable to sales, general expenses to sales and inventory to cost of goods sold, have seen significant effected on gross profit margin.

Malik, M. S., & Bukhari, M. (2014) investigates the impact of working capital on performance of corporate of Pakistan in chemical, cement and engineering industries for a time of 2007-2011. They used pooled OLS analysis for measures the impact of WCM include average collection period, operating cycle, average age of inventory, cash conversion cycle and average payment period and profitability measure by return on equity. Firm size and leverage were used as the control variable in the study. Their results shows that cash conversion cycle positive significantly and average payment period significant negative impact on return on equity. Whereas operating cycle, average collection period and average age of inventory significantly negative related to return on equity.

Daniel Mogaka and Ambrose Jagongo (2013) investigate effects of WCM on profitability of construction and manufacturing Kenyan firms for a period of 2003-2012 listed in Nairobi Securities Exchange. They used Pearson's correlation and OLS regression models for analysis the relationship linking between WCM and profitability. They found that cash conversion cycle and day's account receivable negatively related to the profitability, but number day's payable and number days of inventory were positively related to profitability. Moreover, sales growth, firm size, financial leverage and current ratio also had significantly effects on profitability of the firms. On the basis of the findings of their paper, they concluded that firm's management could build their shareholder's value by decreasing days account receivable and it is also possible through increasing inventories at the possible level. Firms could also take lengthy time to pay as far as they did not damage their relations with creditors. Firm's also able achieved healthy competitive advantage by efficient and effective deployment of resources of organization through diminishing their cash conversion cycle to a minimum level, through this way the firms increases their profitability.

Hina Agha (2014) examines the relation between WCM and profitability of Glaxo Smith Kline pharmaceutical firm of Pakistan for time period of 1996-2011. She used correlation and least square regression analysis and found that current ratio has no significant impact on return on asset. Whereas, debtors turnover ratio, inventory turnover ratio and creditor turnover have significant positive impact on the return on assets.

Akoto, Vitor, & Angmor (2013) WCM playd a significant part in success of any business because of its infleuence on liquidity and profitability. They examines relation linking between WCM practices and profitability of 13 listed Ghanian manufacturing firms for time period of

2005-2009. They used panel data and study found negative significant relation between account receivable days and profitability. They suggest that financial managers could build value by building benefits to reducing their account receivables to 30 days for their shareholders. Another research carried out by Adina Elena Dănuleiu (2010) has study relationship between profitability along with its impact on working capital management by the means of Pearson correlation. Inventories, financial short-term investments, Current debt, account receivables and Account payables had been using as components for working capital management. He analyzed financial statements concerning with 20 companies furthermore it is finding out that the linear correlation and inverse correlation exists among profitability and working capital management.

Vural and Sokmen and Cetenak (2012) build up five different models for check out the relationship among management of working capital and performance of the company. Data had been in use from 75 different companies which were listed on Istanbul stock exchange and during a time period of 2002 to 2009. Operating profit and Tobin's Q are used as an understudy for company's value and profitability. Panel data method was utilized for the analysis and it was come out from results that average collection period and cash conversion cycle were having negatively related with the profitability that means through dropping both profitability would be increases. But relationship among other elements regarding working capital as well as profitability was insignificant.

Moreover Mathuva (2010) contradicting proof is finding that management regarding account payables and he find positive effecting the number of day's accounts payables on profitability of the companies in Kenya and he give explanation that positive relationship with the two causes, first one he argue that the high profitable companies wait prolonged to disburse their invoice. These companies used accounts payables for short-term as sources of finances. Second one argument that why companies raise accounts payables was these companies are capable of raising the working capital volume and therefore raising profitability. This is seen that negative effected Cash Conversion Cycle the company's profitability. That is reason through aspects that a number of days account payables requirements to include in the calculation of Cash Conversion Cycle. Thus, superior quantity concerning a number of day's accounts payables causes to superior profitability by the negative relation among Cash Conversion Cycle and the profitability of a company.

The evidence was founded by (Gill, Biger, & Mathur, 2010), they conducted their study in the USA and found a positive relation between Cash Conversion Cycle and profitability of the company. Although find out the highly noteworthy negative relationship among the company's profitability and accounts receivables and also they suggested that company can increase profitability through maintaining the working capital to a minimum. That was as they proclaim

that the smaller amount of profitable companies will follow a decline in their accounts receivables an attempt to decreases the cash interval in Cash Conversion Cycle.

The summary, literature analysis point out that the working capital management imposed both negative and positive impacts on profitability of company but still there is uncertainty concerning suitable variables so as to might be used as understudy for working capital management. This study examined relationship linking between variables of WCMand profitability of Pakistani chemical and pharmaceutical companies.

Table A1. Summary of Review of Previous Studies

|	Measure of Profitability	Relation DSO with Profitability	Relation DIO with Profitability	Relation DPO with Profitability
Babu & Chalam	Return on Asset	+ve significant	Positive (insignificant)	Negative (significant)
Malik, M. S., & Bukhari, M.;	Return on Equity	+ve (not significant)	Negative (not significant)	Negative (significant)
Daniel Mogaka and Ambrose Jagongo;	Return on Asset	Negative (insignificant)	Positive (significant)	Positive (significant)
Sharma & Kumar;	Return on Assets	+ve	Negative	Negative
Vural, Sokeman, & Cetenak;	Gross Operating Profit	-ve	Negative	Negative
Iqbal &Zhuquan;	Return on Assets	-ve	Negative	Positive
Agha, H.;	Return on Asset	+ve	Positive	Positive
Mathuva;	Net Operating Profit	-ve	Positive	Positive
Rekha Guila;	Profit after Tax and Cash Profit	-ve	Negative	Negative
Barot;	Operating Profit	Positive (significant)	Positive	Positive (significant)
Akoto, Vitor, &Angmor;	Return on equity	Negative	--------	Positive
Adina Elena Dănuleiu;	Return on Equity, Return on sales and Return on assets	Negative	Positive	Negative
Karaduman, Akbas, Ozsozgun, & Durer;	Return on Asset	Negative (significant)	Negative (significant)	Negative (significant)
Mary, Okelue, &Uchenna;	Gross Profit Margin	Positive	Positive	Negative
Gill, Biger, & Mathur;	Gross Operating Profit	Negative	Positive (insignificant)	Negative (insignificant)
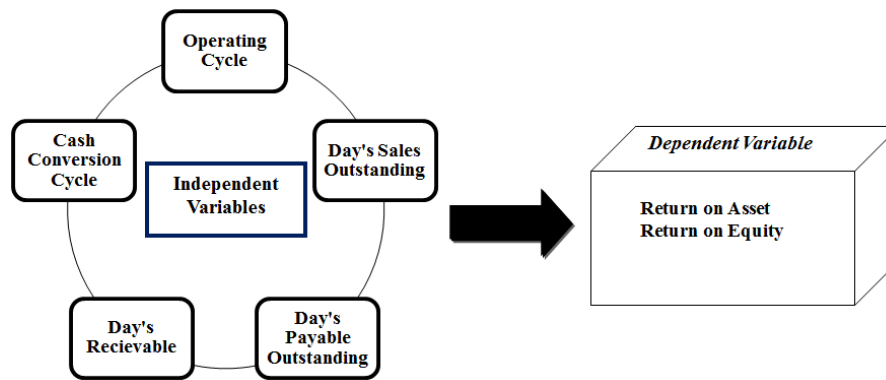
Figure 1. Conceptual Framework of the Study

METHODOLOGY

The recommended means in this work is a utilization of information which is in secondary format. The sample firms were listed on Pakistan stock Exchange, as total 29 chemical firms available out of which 17 finalized and total 11 pharmaceutical firms available out of which 8 finalized based on the availability of complete variables required for the years 2009-2014. It is a descriptive as well as correlation research in nature. The study used three techniques to describe the Panel Data first; Descriptive Analysis, second; Correlation Analysis, third; Regression Analysis with the help of STATA software analysis the impact of the working capital on profitability of companies by using different Between Effect Regressions (regression of group mean) of Panel data. The printed annual reports of chosen firms were used as the sources of data.25 Pharmaceutical and Chemical companies were studied listed in Karachi Stock Exchange; list given in appendix (I) in the table A2.

Variables Selected for the Study

The purpose is to examine the impact of CCC, DSO, DPO, DIO and OC (independent variable) on profitability (dependent variable).

Dependent Variables

As (Lyroudi&Lazaridis, 2000; Sharma & Kumar, 2011; Padachi, 2006), these all researchers used Return on Asset and Return on Equity these variables as dependent variable as the proxy of measuring the profitability.

Return on Asset that is distinct firm's profitability with respect to total amount of assets from owners has been invested within the business and these assets comprise both fixed and working capital. Return on Equity that is defines as firm's capability to utilize borrowed finances efficiently in addition to owners' wealth.

Independent Variables

In calculating working capital CCC is use as a main variable. For calculate working capital effectiveness the mainly accepted measure is CCC (Zariyawati, Annuar, & Abdul-Rahin, 2007; Deloof, 2003; Gill, Biger, & Mathur, 2010; Raheman& Nasr, 2007; Malik & Bukhari, 2014) uses OC, DSO, DIO and DPO as measure of working capital.

Days Inventory Outstanding is defines by that is how rapidly firm can complete the circle of inventories turn into the cash. Generally, reduce in day's inventory outstanding is the sign of an progress to the working capital and raise is the deterioration.

Days Payable Outstanding is defined as in how frequent days average a firm pay off their account payables throughout with in an accounting time period. Lower ratio, means more rapidly the company pays their liabilities. This shows average disbursement terms settled to a firm by their suppliers. Although from a firm's approach, a raise in the days is the sign of an upgrading and diminish is the deterioration.

Days Sales Outstanding is defines as how many days so that companies receive to collect their cash as of its sales which is on credit. This demonstrates that efficiency and liquidity of companies compilation department. Lower the Days Sales Outstanding value indicates that the company less number of days account receivable's collection. A high Days Sales Outstanding value indicates that company is taking many days to collection and selling their product on the credit to the customers.

Operating Cycle is defines as indicates average period of time between purchasing inventory and then receiving its cash takings from the sales. It does expect to have negative association with the profitability seeing that smaller the period of Operating Cycle, greater is profitability.

Cash conversion cycle is defines that time-span of a firm get to exchange assets input into the cash flows. It is measures time the cash input is fixed in production along with sales progression before transformed through the transactions into the cash in addition it consider sum of the time to vend inventory, collection of receivables as well as to disburse the bills. It also expect to has negative association with the profitability seeing that lesser number of cash conversion cycle indicates a smaller amount of investments within the current assets to cash whereas higher number of cash conversion cycle means greater amount of investments within current assets in addition to as a result demonstrates that greater necessitate of the current assets of financings.
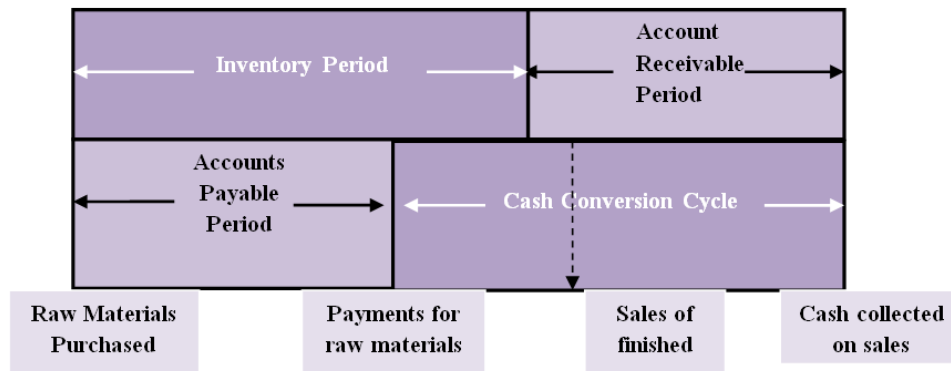
Figure 2: Model of Cash Conversion Cycle

Source: (Brealey, Myers, & Marcus, 2001)

Investigation Methods

Descriptive analysis used mean, standard deviation (SD). Correlation analysis and regression analysis were used to data analysis. The Data used in this study is Panel data in nature and for this type of data there is three kind of model one; Between Effect Model (BEM), Fixed Effect Model and Random Effect Model. Hausman (1978) test also used to select the most suitable regression model for the study. If H_0 is accepted then we conclude that between effect model is fitted otherwise fixed effect model is fit for the study.

Between Effect Model Regression

Between Effect Model is used when you only concerned in investigating impact of the specific variables that are constant over a specific time.

Between Effect Model Specifications

Model 1:

$$ROA_i = \beta_0 + \beta_1 CCCi + \beta_2 OCi + \beta_3 DIOi + \beta_4 DSOi + \beta_5 DPOi$$

Model 2:

$$ROEi = \beta 0 + \beta 1 CCCi + \beta 2 OCi + \beta 3 DIOi + \beta 4 DSOi + \beta 5 DPOi$$

Whereas:

$ROAi$ = Return on Asset of $i$the company

$ROEi$ = Return on Equity of $i$the company

$\beta 0$=Intercept coefficient of company

$\beta 1$ =   Slop coefficient of the independent variables

$CCCi$= Cash Conversion Cycle of the company i

OCi= Operating Cycle of the company i

$DIOi$= Day's Inventory Outstanding of the company i

$DSOi$= Day's Sales Outstanding of the company i

$DPOi$= Day's Payable Outstanding of the company i

ANALYSIS AND RESULTS

All results tables of descriptive statistics, correlation analysis and Between Effect Model Regression analysis are given in Appendix- II.

Descriptive Analysis

Table A4 shows descriptive analysis of chosen variables in the study, Mean; Standard Deviation (SD); maximum and the minimum values of data for collected for six years and total no. of observation (N= 150). The mean (average) of cash conversion cycle is 47.53742 and SD is 118.68. Also the mean (average) of operating cycle is 139.8647 and SD is 95.29432 days. The mean (average) of days inventory outstanding is 90.79172 and SD is 67.55625 days and day's sales outstanding mean (average) is 49.07298 and SD is 54.58241. The mean (average) of days payable outstanding is 92.327229 and SD is 82.24823 days and the mean (average) of return on asset is 10.25338 and SD is 11.41389. The minimum companies take 5.14 and 608.45 days to takes complete their operating cycle.

Correlation Analysis

The result of table A5 shows that all variables significantly correlated with return on assets at α = 10% but coefficient of correlation of cash conversion cycle, days inventory outstanding, operating cycle, days sales outstanding are negatively correlated with return on asset. This negative relationship indicates that if cash conversion cycle, operating cycle, inventories and sales outstanding increases by 1%, its decreases ROA by 11.40%, 28.76%, 24.62% and 12.35% respectively. Day's payable outstanding is positively correlated with profitability measure by return on assets.

Table A6 shows the result of correlation, as illustrates the relationship between all independent and Profitability measures by the ROE. The above-stated result points out the significant relationship, moreover, Cash conversion cycle, operating cycle, days inventory outstanding, days sales outstanding having significant negative relationship at the significance level of α = 10% expect days payable outstanding is significant positive relationship with profitability (ROE) at the significance level of α = 1%.

Regression Analysis

Table A7 shows the results of the regression analysis of equation1 and between effect model regression method is used to obtain the results. The result of table 5 shows that cash conversion cycle (p-value= 0.066) which indicates the result is significant at significant level of α = 10% and coefficient (0.0886637) having positive relationship linking between the cash conversion cycle and the profitability (ROA).Therefore, higher the cash conversion cycle, higher firm's profitability. The operating cycle has positive insignificant (p-value = 0.127) relationship with the profitability (ROA). The days inventory outstanding significant (p-value = 0.016) at the level of α = 5% but coefficient (-42.33251) having negative relationship with profitability (ROA). The days sales outstanding (p-value = 0.055) and coefficient (19.78726) and days payable outstanding (p-value = 0.095) and coefficient (8.06417) both variables having significant positive relationship with the profitability (ROA).

R^2 shows that all the independent variables explain only 0.16% variation in the dependent variable. F-test shows that all coefficients are jointly significant at α = 5% level of significance. This shows a well-fitted model. Thus, results of this table illustrate clearly and consider that as a whole regression model is statistically significant for ROA.

Table A8 BEM is presented for ROE as dependent variable. All variables have a positive coefficient expect OC is negative and all variable's p-value indicates that the results are insignificant. The R^2 indicates that CCC, DSO, DIO, DPO, and OC are explaining the dependent variable ROE is 1.6% variability in the profit of the companies and F-test shows that all coefficients are jointly significant at α = 10% level of significance. Thus results of this table illustrate clearly and considerably that as a whole regression model is good for ROE.

DISCUSSION

The findings of current study shows that the working capital management have significantly positive impact on profitability (ROA) and insignificant positive impact on ROE of chemical and pharmaceutical firms listed on Karachi Stock Exchange.

It is to be concluded on the basis of the study that results of correlation analysis for Model-1 describes the significant negative relationship of CCC, DSO, DIO and OC with the ROA of companies except DPO has significant positive relationship. Furthermore, correlation analysis for Model-2 shows that insignificant positive relationship exist between working capital and ROE of the chemical and pharmaceutical companies.

This positive relation is clearer by regression analysis which shows that positive relationship exists among the working capital and the profitability. The result of BEM shows that CCC and DPO have positive impact on profitability. This result in line with (Akoto, Vitor, &

Angmor, 2013); Barot (2012) while inconsistent with (Babu & Chalam, 2014); (KARADUMAN, AKBAS, OZSOZGUN, & DURER, 2010). DSO and DIO also have positively impact on profitability (ROA) of firms, this result is consistent with prior researchers Hina Agha (2014); Barot (2012) ; while OC has negative impact. This result in line with (Vural, Sokeman, & Cetenak, 2012) who found negative impact while inconsistent with Malik, M. S., & Bukhari, M. (2014) found insignificant positive impact of OC on profitability. This positive relationship between working capital and profitability (Return on Assets) and above variables demonstrates that increases the inventories causes decline in Return on Assets, and decrease in Inventories determined the increase in Return on Assets. Likewise sales outstanding and payables outstanding have contrary relationship with Return on Assets. A rising in payable and sales will holds a negative consequence on Return on Assets whereas a decline in payable and sales Outstanding will have positively impact on Return on Assets. Decreases or increases in Cash Conversion Cycle and Operating Cycle holds positively impact on Return on Assets. Based on results of paper, concluded that the profitability could be improved if companies manage working capital in well-organized manner.

Therefore the result of model 2 demonstrates that components of working capital (CCC, DIO, DSO and DPO) have positive but insignificant impact on profitability of the selected companies. In addition this is finding that other component of working capital (OC) has an insignificant negative relationship with ROE. The result implies that rising the company's Inventory and Payable days direct to decreasing the profit whereas significant financial achievement will be getting with increases made Payable Outstanding days. Further suggest that financial managers can be enhancing their companies' profitability by made declining in the Sales Outstanding days. This means that dependent variable (ROE) is not affected by all independent variables (CCC, DSO, DIO, DPO and OC). Thus results of this table illustrate clearly and consider that as a whole regression model is not statistically significant for ROE. This study finds negative and insignificant relationship of OC and profitability as measured by ROE in this model of regression demonstrating that lower the operating cycle, lower will be the profitability whereas positive but insignificant relationship find between DIO and ROE which indicates that greater Inventory Outstanding days, lower the profitability of the company and vice versa. Also the relationship linking between DPO and ROE is positive but insignificant indicating that the more profitable companies pay bills on time or earlier compared with those companies who are low profitable. Moreover CCC insignificant but positive relationship with ROE. The findings of this model are inconsistent with prior studies because of positive association of CCC and DPO and the insignificant relationship of DIO which construct it distinct from prior studies in perspective of Pakistan.

CONCLUSION AND RECOMMENDATIONS

It is to be concluded based on the study that results of correlation analysis for Model-1 describes the significant negative relationship of CCC, DSO, DIO and OC with the ROA of companies except DPO has significant positive relationship. Furthermore, correlation analysis for Model-2 shows that insignificant positive relationship exist between working capital and ROE of the chemical and pharmaceutical companies.

It is recommended on the light of above findings of this study that companies should maintain components of working on an optimum level for managing their company's business as well they should properly effectively utilize and efficiently manage the components of working capital, as it affects the profitability.

It is also proposed that the financial managers could be generate value for shareholders through dropping number of days receivables, as well as, positive relation between the receivables and profitability of firms recommend that the firms with low profitability would practice reducing accounts receivables for attempting to decrease cash conversion cycle.

It is suggested that companies arrange training courses, sessions, program and seminar for their financial managers as it is helpful for the staff as well as for the companies that they benefited from latest financial management strategies.

It is also helpful in improving the creditability and quality of the financial performance in addition; guides the financial managers for the performance improvement.

This study further suggest that companies properly maintain the working capital components like marketable securities, inventories, payable, receivables management should be further evaluate their relationship with other measures of the profitability.

REFERENCES

Adina Elena Dănuleţiu. 2010. ―Working Capital Management and Profitability – Case of Alba County Companies‖, Annales UniversitatisApulensis Series Oeconomica, 12 (1).

Afza T., Nazir, M.S. 2007. Is it Better to be aggressive or conservative in managing working capital? Paper presented at Singapore Economic Review Conference (SERC) on August 02-04, 2007, Singapore.

Agha, H. (2014) . IMPACT OF WORKING CAPITAL Management ON PROFITABILITY. European Scientific Journal, 10(1), 374-381.

Akoto, R. K., Vitor, D. A., & Angmor, P. L. (2013, December). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms . Journal of Economics andInternational Finance , 5(9), 373-379. doi:10.5897/JEIF2013.0539

Babu, M. S., & Chalam, P. G. (2014, October). Study on the Working Capital Management Efficiency in Indian Leather Industry- An Empirical Analysis . International Journal of Research in Management & Technology , 5(4), 196-201.

Barot Haresh, ―Working Capital Management and Profitability: Evidence from India- An Empirical Study‖, GFJMR, 2012, Vol. 5, pp.1-9.

Besley, S., & Meyer, R. (1987). An empirical investigation of factors affecting the cash conversion cycle. Paper Presented at the Annual Meeting of the Financial Management Assocation,.

Brealey, R. A., Myers, S. C., & Marcus, A. J. (2001). Fundamental of Corporate Finance (Third ed.). London: McGraw-Hill Companies, Inc.

Daniel Mogaka and Ambrose Jagongo, "Working Capital Management and Firm Profitability: Empirical Evidence from Manufacturing and Construction firms listed on Nairobi Securities Exchange, Kenya", International of Accounting and Taxation, 2013, Vol. 1(1), pp. 1-14.

Deloof. (2003). Does Working Capital Management Affect Profitability of Belgian Firms? Journal of Business Finance and Accounting, 30(3/4), 573-587.

Ganesan, V., (2007) An Analysis of Working Capital Management Efficiency in Telecommunication Equipment Industry, Rivier Academic Journal, 3(2) [Accessed 1o May 2015] https://www.rivier.edu/journal/ROAJ-Fall-2007/J119-Ganesan.pdf

Gill, A, Biger, N. & Mathur, N. (2010). The Relationship Between Working Capital Management And Profitability: Evidence From The United States. Business and Economics Journal, 2010.

Hausman, Jerry (1978), "Specification Tests in Econometrics", Econometrica, Vol. 46, No. 6, pp.1251-1271.

Iqbal, A., & Zhuquan, W. (2015, January 20). Working Capital Management and Profitability Evidence from Firms. International Journal of Business and Management, 10(5), 231-235. doi:10.5539/ijbm.v10n2p231

Jarvis, R., Kitching, J., Curran, J. and Lightfoot, G. 1996, —The Financial Management of Small Firms: An Alternative Perspectivell, ACCA Research Report No. 49

KARADUMAN, H. A., AKBAS, H. E., OZSOZGUN, A., & DURER, S. (2010). EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: THE CASE FOR SELECTED COMPANIES IN THE ISTANBUL STOCK EXCHANGE (2005-2008). INTERNATIONAL JOURNAL OF ECONOMICS AND FINANCE STUDIES , 2(2), 47-54.

Karaduman, H. A., Halil, E. A., Arzu, O. C., & Salih, D. (2011). The Relationship between Working Capital Management and Profitability: Evidence from an Emerging Market. InternationalResearch Journal of Finance and Economics(62).

Lazaridis I, Tryfonidis D, 2006. Relationship between working capital management and profitability of listed companies in the Athens stock exchange. Journal of Financial Management and Analysis, 19: 26-25.

Long MS, Malitz IB, Ravid SA, 1993. Trade credit, quality guarantees, and product marketability. Financial Management, 22: 117- 124.

Lyroudi, K., &Lazaridis, J. (2000). The cash conversion cycle and liquidity analysis of the food industry in Greece. Social Science Research Network Electronic Paper Collection.

Malik, M. S., & Bukhari, M. (2014). The Impact of Working Capital Management on Corporate Performance: A Study of Firms in Cement, Chemical and Engineering Sectors of Pakistan. Pakistan Journal of Commerce and Social Sciences , 8 (1), 134-148.

Mary, O. I., Okelue, U. D., & Uchenna, A. S. (2012). AN EXAMINATION OF THE FACTORS THAT DETERMINE THE PROFITABILITY OF THE NIGERIAN BEER BREWERY FIRMS. Asian Economic and Financial Review, 2(7), 741-750. Retrieved from http://aessweb.com/journal-detail.php?id=5002

Mathuva, D.M. (2010). Influence of working capital management components on corporate profitability: A survey on Kenyan listed firms. Research Journal of Business Management 3 (1), 1-11

Padachi, K. (2006). Trends in working capital management and its impact on firms'performance: an analysis of Mauritian small manufacturing firms. International Review of business research papers, 2(2), 45-58.

Rafuse, M. E. 1996. —Working Capital Management: An Urgent Need to Refocusll, Journal of Management Decision, Vol. 34 No 2, pp. 59-63

Raheman, A., & Nasr, M. (2007). Working Capital Management And Profitability – Case of Pakistani Firms. International . Review of Business Research Papers, 3, 279-300

Rekha G. (2014). Effects of Working Capital Management on Firms Profits-Evidence from the Pharmaceutical Sector. International Journal of Management and Social Sciences Research, Volume 3, No. 1, January 2014

Sharma, A.K. & Kumar, S. (2011). Effect of Working Capital Management on Firm Profitability: Empirical Evidence from India. Global Business Review, 12(1), pp. 159 – 173

Vural, G. Sokmen, A.H., &Cetenak, E.H. (2012). Affects of Working Capital Management on Firm's Performance: Evidence from Turkey. International Journal of Economics and Financial Issues, 2(4), 488-495

Zariyawati, M. A., Annuar, M. N., & Abdul-Rahin, A. S. (2007). International Journal of Commerce and Mgt 14(2) 48-61.

APPENDICES

Appendix- I

Table A2. Companies name and sectors.

S.no	Company Name	Sector	S.no	Company Name	Sector
1	Ferozeson Laboratories Limited	Pharmaceutical	14	ICI Pakistan Ltd	Chemical
2	Glaxo Smith Klin	Pharmaceutical	15	Leiner Pak Galetine Ltd	Chemical
3	High noon Laboratories Ltd	Pharmaceutical	16	Sitara Chemical Industries Ltd	Chemical
4	Wyeth Pakistan Limited	Pharmaceutical	17	Linde Pakistan Ltd	Chemical
5	Abbott Laboratories	Pharmaceutical	18	Wah Nobel Chemical Ltd	Chemical
6	Sonafi Aventis Pakistan Limited	Pharmaceutical	19	Pakarab Fertilizer Ltd	Chemical
7	Otsuka	Pharmaceutical	20	Biafo Industries Ltd	Chemical
8	Searl	Pharmaceutical	21	Bawanyair Products Limited	Chemical
9	Berger Paints Pakistan Limited	Chemical	22	Ghani Gases Limited	Chemical
10	Buxly	Chemical	23	Clariant Pakistan Limited	Chemical
11	Dynea	Chemical	24	Descon Oxychem Limited	Chemical
12	Fuji Fertilizer Bin Qasim Ltd	Chemical	25	Nimir Industrial Chemical Limited	Chemical
13	Fuji Fertilizer company Ltd	Chemical			

Source: Compiled by author

Table A3. Variables of the study and methods of calculations.

Variables	Method of Calculation
CCC	Operating Cycle (in no. of Days) – Days Payable Outstanding
OC	DSO + DIO
DIO	(Average Inventory / Cost of Goods Sold)*365Days
DSO	Account Receivables/Total credit Sales*365Days
DPO	Average Accounts Payable/ (Cost of Goods Sold/365 Day)
ROA	Net Income/Average Total Assets
ROE	Net Income/ Average Shareholder's equity

Appendix- II

Table A4. Descriptive analysis Summary.

Variables	Obs	Mean	Std. Dev.	Min	Max
CCC	150	50.128	98.251	-465	550.125
OC	150	142.257	82.547	50.14	604.258
DIO	150	92.154	68.254	12.578	334.258
DSO	150	47.258	52.214	10.524	285.214
DPO	150	90.368	85.021	0	265.255
ROA	150	11.247	12.587	-12.658	62.157
ROE	150	18.159	36.809	-144.221	165.154

Table A5. Correlation Analysis ROA with Independent Variables.

	ROA	CCC	DPO	OC	DIO	DSO
ROA	1.0000					
CCC	-0.1140*	1.0000				
DPO	0.0612*	-0.5123*	1.0000			
OC	-0.2876*	0.6575*	-0.0917*	1.0000		
DIO	-0.2462*	0.5849*	-0.1563*	0.8903*	1.0000	
DSO	-0.1235*	0.4233*	0.0966*	0.5707*	0.2059*	1.0000

*, **, *** Significant Statistically at level 10% and 5% and 1%, respectively

Table A6. Correlation Analysis ROE with Independent Variables.

	ROE	CCC	DPO	OC	DIO	DSO
ROE	1.0000					
CCC	-0.1237*	1.0000				
DPO	0.0074***	-0.5123**	1.0000			
OC	-0.3606*	0.6575*	-0.0917*	1.0000		
DIO	-0.3447*	0.5849**	-0.1563*	0.8903*	1.0000	
DSO	-0.1604 *	0.4233**	0.0966 *	0.5707*	0.2059**	1.0000

*, **, *** Significant Statistically at level 10% and 5% and 1%, respectively

Table A7. Regression Analysis: Between Effect Model (Regression on group means) for ROA.

R-sq: within = 0.0016			Observations =150		
between = 0.3869			Groups=25		
overall = 0.0826			Obs. per group: min=6		
			Avg. =6.0, Max=6		
Sd (u_i + avg(e_i.))= 8.01868			F (5, 19)=2.40**		
			Prob.> F=0.0759		

ROA	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]
CCC	.0886637*	.0455022	1.95	0.066	-.0065735	.183901
OC	3.923037	2.460841	1.59	0.127	-1.227563	9.073636
DIO	-42.33251**	16.09609	-2.63	0.016	-76.02202	-8.643004
DSO	19.78726*	9.658026	1.75	0.055	-.427224	40.00174
DPO	8.06417*	4.596693	1.75	0.095	-1.556819	17.68516
_cons	79.19207***	23.78274	3.33	0.004	29.41422	128.9699

*, **, *** Significant Statistically at level 10% and 5% and 1%, respectively.
P-value for Hausman test 0.6465 and F-value0.67 for the model-1. Between Effect Model used result of Hausman (1978) test. Time dummy variable's coefficient not reported here, but all variables significant.

Table A8. Regression Analysis: Between Effect Model (Regression on group means) for ROE.

R-sq:within = 0.00163			Observations =150		
between = 0.4173			Groups =25		
overall = 0.1375			Obs per group: min=6		
			Avg=6.0, Max=6		
Sd (u_i + avg(e_i.))=21.76131			F (5, 19)=2.72**		
			Prob.> F=0..511		

ROE	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]
CCC	1986126	.1234852	1.61	0.124	-.0598448	.45707
OC	7.120507	6.678296	1.07	0.300	-6.857328	21.09834
DIO	-59.795	43.68201	-1.37	0.187	-151.2225	31.63249
DSO	15.3078	26.21021	0.58	0.566	-39.5508	70.1664
DPO	5.33508	12.47463	0.43	0.674	-20.77462	31.44478
_cons	177.6036**	64.54225	2.75	0.013	42.51515	312.6921

*, **, *** Significant Statistically at level 10% and 5% and 1%, respectively. P-value for Hausman test 0.9854 and F-value0.13 for the model-1. Between Effect Model used result of Hausman (1978) test. Time dummy variable's coefficient not reported here, but all variables significant.

Table A9. Summary of Empirical Analysis and Findings.

	Correlation Analysis				
Dependent Variable	ROA				
Independent Variables	CCC	DPO	OC	DIO	DSO
Result	Negative (significant)	Positive (significant)	Negative (significant)	Negative (significant)	Negative (significant)
	Correlation Analysis				
Dependent Variable	ROE				
Independent Variables	CCC	DPO	OC	DIO	DSO
Result	Negative (Weak significant)	Positive (Strongly significant)	Negative (Weak significant)	Negative (Weak significant)	Negative (Weak significant)

Table A10. Summary of Empirical Analysis and Findings of between Regression.

Model - 1	Between regression (regression on group means)				
Dependent Variable	ROA				
Independent Variables	CCC	DPO	OC	DIO	DSO
Result	Positive (insignificant)	Positive (insignificant)	Negative (significant)	Positive (significant)	Positive (insignificant)
Model -2	Between regression (regression on group means)				
Dependent Variable	ROE				
Independent Variables	CCC	DPO	OC	DIO	DSO
Result	Positive (insignificant)	Positive (insignificant)	Negative (insignificant)	Positive (insignificant)	Positive (insignificant)