Can Working Capital Cycle or Cash Conversion Cycle be Factored in Economic Performance of Pakistani Corporate Firms?

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Abstract

This study works to examine the working capital factors that may enhance economic performance of corporate firms in Pakistan. This performance is measured by sales and accounts payable in days, accounts receivable in days, inventory turnover in days and cash conversion cycle represents working capital. The study is conducted on 64 non-financial firms listed on Karachi stock Exchange for a period of 12 years, from 2003 to 2014. Account receivables and payables along with cash conversion cycle have significant positive relationship with performance of firms. Inventory turnover has a significant negative relationship with sales. The result of this study shows that the role of managing working capital is vital for firms. If account receivable in days and accounts payable in days are increased, it will lead to increased sales of the firms. The study shows that if management can master the art of efficiently managing the working capital and keep it at optimum level, they will enhance the economic performance of the firm.

Keywords: Working Capital Cycle; Cash Conversion Cycle; Economic performance

Introduction

The role of working capital management (WCM) is vital in the field of corporate finance. If WCM is not tackled with the needed consideration, it will push the firm towards insolvency and even bankruptcy. As discussed in the literature review that the findings of earlier researches vary, and the variation is brought by changes in time or the place where the study is conducted. Looking at this situation it may not be possible to say anything about the results of the study, but we can expect that WCM will affect performance of firms'.

The study will be beneficial for both academic as well as practical use. This study covers all the firms for a period of 12 years from 2003 to 2014. This study can be more widened by using more current data or using other companies as sample. Managers can use it for analyzing their current way to managing WCM and change it accordingly this may increase performance of their firm. The paper

comprises of five sections, Section-1 covers the Introduction, Section-2 is the Literature Review, Section-3 is Methodolgy and Section-4 outlines the stock of data analysis. Section-5 summarizes the conclusions.

Literature Review

There is ample literature on how firms manage the daily operations of a firm. Several authors have explored the multiple dimensions of firms in this regard. These dimensions include the internal and external factors that affect the economic performance of firms. In a very recent study by Cetenak, Vural and Sokmen (2017) an attempt is made to look beyond internal factors that determine working capital for business firms. This study took data from 14 emerging markets and reported that at industry-country level there is a positive relation between working capital and HHI index (used for competition), exchange rate, rule of law, and Lerner Index.

Pais and Gama (2015) find in their study for Portuguese firms that business firms earn better economic profits if they pay their commercial liabilities a little longer and receive their cash receivables earlier. Yazdanfar and Ohman (2014) studied that how cash conversion cycle affects economic performance of Swedish firms and found that cash conversion has a significant impact on business profits. Similar findings are reported by the study of Iqbal, Ahmad and Riaz (2014) which was conducted for listed Pakistani business firms. Napompech (2012) reports after analyzing data for Thai listed firms that in addition to the measures of working capital, industry characteristics also have an impact on the gross profits of firms. There are numerous studies that build relationships between economic performance and measures of working capital.

Alipour (2011) after analyzing data for Iranian firms asserts that cash conversion cycle is the most important efficiency measure for working capital. This study finds that if firms get their receivables longer, they are less profitable and if they convert their inventories faster their economic performance is going to be better than their competition. The study also finds that if firms improve their cash conversion cycle, they will be well-off in terms of profits. Similar findings are reported by other researchers like the finding of an inverse relation between cost of financing and cash conversion cycle of companies with higher leverage, more potential industry by Baños- Caballero et al. (2010) shows the affiliation of WCM and profitability and this study was moderately in consistence with earlier studies about the need of working capital across different industries. It was also found that longer CCC is maintained by older firms and firms having greater cash flow, where as highly leveraged with more opportunity for growth and return on assets preserve more aggressive policies of working capital, and this recommends that cost of supporting has an adverse effect on firm's cash conversion cycle.

Furthermore, investment in capital may increase if access to capital markets is easy.

Mathuva (2010) conducted a study for Kenyan firms and found that firms who pay their payables longer, receive their receivables earlier and have significant inventory for production are more profitable than firms who does not have the stated strategy. The study performed by Dong and Su (2010) uncovers the link between WCM with liquidity. The study was carried out on firms listed on Vietnam Stock Exchange. The study upholds the previous work that shows a significant negative relation between profitability of a firm and efficient WCM. It is also in line with the findings of Lazaridis and Tryfonidis (2006), which show the positive affiliation between the of disbursement of accounts due and profitability, an adverse relationship of profit in gross form with accounts receivables and inventory turnover days indicate that the management can enhance its company worth for their stock holders by adjusting the value of these variables to an optimum level. The research also shows that firms with high profitability wait longer for payment to their creditors. Baños- Caballero et al. (2012) studied SME's operating in Spain. They explained that SME's are more dependent on short-term debt as compared to long term debt and usually their assets are short-term, so the need for short term capital is higher. This study shows a negative relationship between the performances of firms in the sample and WCM, but accounts payable days' effect on ROTA was not conformed. Mehmet and Eda (2009) conducted their study on WCM in relation to size of the firm and the industry it is operating in.

Zariyawati et al. (2009) considered Malaysian firms for the study and ended up with a substantial opposite association between the business performance measured by profits of a firm and cash cycle. It was described that profitability can be achieved with a tradeoff between liquidity and profitability as better level of working capital can be only achieved with such a tradeoff. Falope and Ajilore (2009) explored the association between the WCM and profitability by studying a panel data of Nigerian firms. In the study profitability is indicated by the net operating profit and is taken as a profitability and ardays, invdays, apdays and ccc are used as proxy for WCM. The study found an increasing trend in the working capital of firms because of the reason that investment in short-term financing is large in this economy and this makes this result in conformation to the earlier studies of Deloof (2003) and Eljelly (2004) and other about the relationship.

The study of Raheman and Nasr (2007) has explicated the association between WCM and liquidity and company's profitability. The study of Afza and Nazir (2007) elucidated the affiliation among the measures used to represent working

capital, performance and risk of the firms. This study shows a negative association of working capital investment policy with economic performance of the firm. When the working capital investment policy is more aggressive, this will tend to decrease the profitability of the firm. The result of this study is in line with Carpenter and Johnson (1983) about the aggressive approach or the conservativeness policies of the firm regarding working capital and their financial and operating risk. The study carried out by Padachi (2006) on SME's of Mauritius shows the relationship of company's performance with WCM. This study reveals that a negative affiliation exists between profitability of a company and financing heavily in inventories and receivables. Different sectors of small and medium enterprises were considered in the study. The study shows different aspects of WCM along with their influence on profitability.

In a study on US corporations Kieschnick, Laplante and Moussawi (2006) explored the interdependence among the working capital factors and performance of corporations. The study elucidates that firms in US on average invest more in current assets as they anticipate expansion in sales in the future. Usually it is noticed that extra investment in current assets can result in reduction of value of the firm. To explore the link between profitability, WCM and company's performance Lazaridis and Tryfonidis (2006) have point out a substantial association between cash gap and profitability. The inverse correlation between profitability and receivable inflow show that a company should follow a different strategy to get its receivable quickly and to cut down the cash gap, particularly for companies with less profit. The findings of the study further support the results of previous studies such as Deloof (2003) and Shin and Soenen (1998).

Elijelly (2004) has examined connection between profitability of the firm and liquidity by using current ratio in order to find out relationship. According to this study, there is a significant inverse relation between the two variables. The study of Eljelly (2004) calculated current ratio to find out the association between business productivity and liquidity. It was found that that there is a major inverse association between the two variables. To improve the efficiency of the firm the management should employ different ingredients of working capital, which represents that working capital is well organized. Deloof (2003) has recommended in his research that many companies have spent huge amount money to accomplish its working capital requirement. Some research papers suggest an adverse association of business performance with working capital while other states that there is no relation between these two variables.

Theoretical Framework

Effective firms use their resources in such a way that they get the maximum advantage out of these. The role of WCM is very crucial in this regard. WCM is

the process of deploying the current liabilities and current assets of a firm in such a manner that it gets the benefit of maximum firm profitability without losing its credit worthiness (Brigham Eugene and Houston Joel, 2003). The model being used here will be multiple linear regression model. For all hypothesis regression will be used to find the relationship. The model used for the study is as follows:

$$Y_{it} = \beta_0 + \sum_{it}^{n} \beta_{it} X_{it} + \varepsilon_t$$

WhereY_{it} =$Sales$: Sales of ith firm at t time period; i=1, 2, 3…54 firms and t=1, 2…7.

$\beta 0$: Parameter known as intercept
βi: Parameter known as slope of the variable
X_{it}: The specific explanatory variables used for WCM for ith firm at time t.
ε_t : The error terms.

Methodology
The following subsections explain the main discussions of the methodology;

Data Set and Sample
The main source for collection of data is financial statement of the companies included in the sample. A random sample of 64 non-financial firms has been selected. Financial data have been gathered from two sources: the financial daily and websites of companies included in the sample. The major reason for selection of companies in the sample is availability and accessibility of data.

Variables
The study will take different variables that are being used for the measurement of working capital as independent variables or explanatory variables. These variables are: accounts collectables, average outstanding, and inventory turnover in days with cash cycle.

Explanatory variables
This study will make use of the following the explanatory variables. These variables have been used by Deloof (2003) and Padachi (2006) in their studies and shows that these variables are the best to elucidate the relation between WCM and evaluation of firm's performance

- Accounts Receivables in Days is being used as an explanatory variable. It represents that a firm's strategy for collection of receivables. Accounts receivables is obtained as following:

$$Accountsreceivableinrdays = \frac{accountsreceivable}{Sales} \times 365$$

- Inventory Turnover in Days ($ivndays$) is a measure used to find the number of days a firm uses to convert its raw materials into sales. It is obtained by:

$$Inventoryturnoverindays = \frac{inventory}{costofgoodssold} \times 365$$

- Average Payable in Days is the number of days a firm takes, to pay their supplier the due amount. The following formula will be used for calculations:

$$Accountspayableindays = \frac{accountspayable}{costofgoodssold} \times 365$$

- Cash Conversion Cycle (ccc) will be calculated by the addition of "ardays" and "ivndays" and subtracting the value of "apdays". The use of Cash conversion cycle is representation of short-term capital.

$$\begin{aligned} CashConversionCycle \\ &= (inventoryturnoverindays) \\ &+ (accountreceivableindays) \\ &- (accountpayableindays) \end{aligned}$$

Dependent Variable

Sales: is used as our dependent variable. It is the value of all the sales of company in a financial period, and stated in the income statement. The study will be conducted by using the sale figure, extracted out of the income statements for the selected period.

Hypotheses

The objective of this study is to examine the relationship between effective WCM and performance of the firm.

H_{01}: High value of Accounts Receivables in Days decreases sales.
H_{02}: High Inventory Turnover in Days decreases sales of the firms.
H_{03}: High Average Payable in Days increases the firms' sales.
H_{04}: High Cash Conversion Cycle of the firm decrease sales.

Data Analysis

The Table 1 represents the descriptive analysis of all the non-financial firms included in the sample. The mean of accounts receivables in days is 34.04 days and its standard deviation is 40.11days. This means that firms, on average, take

34.04 days for the collection of accounts receivable with a variation of 40.11. When looking at the figure of skewness i.e. 2.855, it was found that the data is positively skewed. Data regarding accounts receivable in days is leptokurtic and has a value of 11.441. The mean value of inventory turnover in days is 85days with a standard deviation of 58 days. When the value of skewness is noticed in the table, it is found to be positively skewed with a value of 0.75 days. The value of Kurtosis in case of this variable is 1.295 days, which is less than 3 and can be classified as platycurtic. The next variable in the table 1 is accounts payable in days. The mean of this variable is observed to be 45 days and its standard deviation is 42 days. The value in the column of skewness in this case is 1.023 and can be stated as positively skewed. The value of kurtosis in the case of this variable is 1.296 and this makes the data platycurtic.

When looking at the figures of CCC it shows that it has a mean value 51 day and its standard deviation is 26 days. Data regarding this variable is also positively skewed with a value of 2.872 and is leptokurtic as shown by the value of 11.219. In this study Pearson Correlation Model has been employed for the measurement of association among the different variables in order to know how efficient does a firm manage its working capital and performance of the firm in terms of sales.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic
Log of Sales	1.097923	1.9297682	3.480	14.754
Ardays	34.04336	40.1096604	2.855	11.441
Ivndays	85.1937	57.69747	1.023	1.296
Apdays	45.1825	41.96321	1.750	5.112
CCC	51.14347	26.0599045	2.827	11.219

Table 2 shows the degree of association among different variables that are being used in this study for the measurement of working capital and sales. The association of sales with each variable representing WCM is explained here. In the table 2, it can found that sales and accounts receivables in days are positively correlated with a value of 0.113 and the level of significance is 0.18 in this case. Though these two variables are positively correlated, the value of correlation shows that change in accounts receivable days brings very little change in sales of a company and hence H_{01} is rejected. Inventory turnover in days show that its relation with sales in negative. The value of correlation is -0.332 with significance of 0.000. This show the relationship is highly significant. If inventory turnover in days is increase this will decrease the sales of a firm. The value of correlation is small in this study which indicated that increase in

inventory turnover in days brings a small change in sales of firms and hence H_{02} is accepted.

The next variable in the table 2 is accounts payable in days. Values in the correlation table shows that there is a momentous affirmative association between accounts payable in days and sales of a firm. The value of significance is 0.335 and value of correlation between the two variables is 0.046. This result also shows that higher value of accounts payable in days will increase sales of company and H_{03} is accepted.

Table 2 Correlations

		Log of sales	ardays	ivndays	apdays	CCC
sales	Pearson Correlation	1	.113*	-.332**	.046	.108*
	Sig. (2-tailed)		.018	.000	.335	.024
ardays	Pearson Correlation	.113*	1	.021	.140**	1.000**
	Sig. (2-tailed)	.018		.658	.003	.000
ivndays	Pearson Correlation	-.332**	.021	1	.271**	.033
	Sig. (2-tailed)	.000	.658		.000	.499
apdays	Pearson Correlation	.046	.140**	.271**	1	.132**
	Sig. (2-tailed)	.335	.003	.000		.006
ccc	Pearson Correlation	.108*	1.000**	.033	.132**	1
	Sig. (2-tailed)	.024	.000	.499	.006	

The last variable mentioned in the table is the cash conversion cycle. As the figure suggests, it has a positive significant relationship with sales of a firm. The value of correlation is 0.108 and the level of significance is 0.024. This suggests that increase in the cash conversion cycle also bring increase in the sales of a firm or it can be said that higher the cash conversion cycle higher will be sales. This is against the statement in H_{04} and it will be rejected. It is worth mentioning hereby, that the value Cash Conversion Cycle is perfectly correlated with Accounts receivable in days and the value of correlation is 1.000 that is why it has been excluded in the calculation as evident from table 6. Multiple linear regression is used as the intention was to check the effect of four different variables (accounts receivable in days, inventory turnover in days, accounts payable in days and Cash Conversion Cycle) on the firm performance, represented by sales in this case.

Table 3 and 4 represent the model summary in the regression analysis. The model being used has an adjusted value of 13.5%, which shows the degree of variation shown by firms' performance with changes in WCM. ANOVA (see table 4)

shows a value 0.000 in the significance column which means that the model is highly significant.

Table 3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.375[a]	.141	.135	1.7952746

a. Predictors: (Constant), ccc, ivndays, apdays

Table 4 ANOVA

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.266	3	0.742	230.220	.000[a]
	Residual	1.386	430	0.003223		
	Total	3.652	433			

a. Predictors: (Constant), ccc, ivndays, apdays

In table 5, B value shows a negative relation between inventory turnover in days and firms' sales. The value of B is -1.242 and this relation is significant as shown by the figure i.e. 0 and the hypothesis H_{02} is accepted.

Table 5 Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	Constant	1.584	1.944		8.147	.000
	Ivndays	-1.242	1.553	-.371	-7.995	.000
	Apdays	5.361	1.884	.133	2.846	.005
	CCC	4.945	2.173	.103	2.276	.323

a. Dependent Variable: sales

The relationship between accounts payable in days and sales is positive with a value of 5.361, which shows that delay in firm accounts payable will increase in increased sales of the firms and H_{03} will be accepted.

Cash conversion cycle also has a positive significant relationship with sales. The value of B in this situation is 4.945 and significance column shows a value of 0.323 and H_{03} is rejected. Accounts receivable has been excluded from the calculation, as shown by the table 5.

Table 6 Excluded Variables

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Ardays	.[a]	.	.	.	.000

a. Predictors in the Model: (Constant), ccc, ivndays, apdays

b. Dependent Variable: sales

The main reason for the exclusion of this variable is its perfect correlation with cash Conversion Cycle. We can infer that accounts receivable has relation with sales of a company, same as that of Cash Conversion cycle and proves that H_{01} will be rejected.

Conclusion

As firms invest a huge amount in working capital, it is expected that if working capital is efficiently managed, will enhance the performance of the firms. The study found that inventory turnover in days has a negative relation with sales of the firms, while accounts payable in days, accounts receivable in days and cash conversion cycle have a positive relation. Result of the study shows that in order to increase sales, firms must plan to increase the time for collection of accounts receivable to an optimum level. Secondly, manager should focus on the inventory turnover in days. Reduction in the time taken for converting its raw materials to sales will greatly increase the sales of the firm. Ultimately, increase in the time period for payment of dues to their suppliers, without deteriorating their credit worthiness, will also increase the sales of firms. The study also suggests that if companies take more time in their cash conversion cycle, their sales will be increase. If managers are successful in effective implementing working Capital in such a manner, they will increase sales of their firms. The data has been taken for the period of 12 years from 2003 to 2014. The study suggest that research may be further conducted on analyzing the companies listed on KSE and include all those firms which represent Karachi Stock market during the entire period of the study. The sample size of the study will increase as a result of this action and represent the KSE listed companies in its original condition. Similarly, further study may include other constituents of WCM like cash and marketable securities and the study.

References

Afza, T., & Nazir, M. S. (2007). "Is it Better to be Aggressive or Conservative in Managing Working Capital?" *Journal of Quality and Technology management*. 3 (2). Pp. 11-21.

Baños- Caballero, S., García- Teruel, P. J., & Martínez- Solano, P. (2010). "Working capital management in SMEs." *Accounting & Finance*. 50 (3). Pp. 511-527.

Baños-Caballero, S., García-Teruel, P. J., & Martínez-Solano, P. (2012). "How does Working Capital Management Affect the Profitability of Spanish SMEs?" *Small Business Economics*. 39 (2). Pp. 517-529.

Brigham Eugene, F., & Houston Joel, F. (2003). "Fundamentals of Financial Management." South-Western College Pub, 2003. P. 843-849.

Carpenter, M. D., & Johnson, K. H. (1983). "The Association between Working Capital Policy and Operating Risk." *Financial Review*. 18 (3). Pp. 106-109.

Çetenak, E. H., Vural, G., & Sökmen, A. G. (2017). "Determinants of Working Capital in Emerging Markets: Do Economic Developments Matter?" In *Global Business Strategies in Crisis*. Springer International Publishing. Pp. 385-397.

Deloof, M. (2003). "Does Working Capital Management Affect Profitability of Belgian Firms?" *Journal of Business Finance & Accounting*. 30 (34). Pp. 573-588.

Dong, H., & Su, J. T. (2010). "The Relationship between Working Capital Management and Profitability: a Vietnam Case." *International Research Journal of Finance and Economics.* 49. Pp. 59-67.

Eljelly, A. M. (2004). "Liquidity-profitability Tradeoff: An Empirical Investigation in an Emerging Market." *International Journal of Commerce and Management*. 14 (2). Pp. 48-61.

Falope, O. I., & Ajilore, O. T. (2009). "Working Capital Management and Corporate Profitability: Evidence from Panel Data Analysis of Selected Quoted Companies in Nigeria." *Research Journal of Business Management*. 3 (3). Pp. 73-84.

Kieschnick, R., Laplante, M., & Moussawi, R. (2006). "Corporate Working Capital Management: Determinants and Consequences." *International Journal of Managerial Finance*. 3 (2). Pp. 164-177.

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 (1). Pp. 17-25.

Mathuva, D. (2010). "The Influence of Working Capital Management Components on Corporate Profitability: A Survey on Kenyan Listed Firms." *Research Journal of Business Management*. 3 (1). Pp. 1-11.

Mehmet, D. E. N., & Eda, O. R. U. C. (2009). "Relationship between Efficiency Level of Working Capital Management and Return on Total Assets in ISE (Istanbul Stock Exchange)." *International journal of Business and Management*. 4 (10). Pp. 109-115.

Napompech, K. (2012). "Effects of Working Capital Management on the Profitability of Thai Listed Firms." *International Journal of Trade, Economics and Finance*. 3 (3). Pp. 227-233.

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). Pp. 45-58.

Pais, M. A., & Gama, P. M. (2015). "Working Capital Management and SMEs Profitability: Portuguese Evidence." *International Journal of Managerial Finance*. 11 (3). Pp. 341-358.

Raheman, A., & Nasr, M. (2007). "Working Capital Management and Profitability–case of Pakistani firms." *International Review of Business Research Papers*. 3 (1). Pp. 279-300.

Shin, H. H., & Soenen, L. (1998). "Efficiency of Working Capital Management and Corporate Profitability." *Financial Practice and Education*. 8. Pp. 37-45.

Yazdanfar, D., & Öhman, P. (2014). "The Impact of Cash Conversion Cycle on Firm Profitability: An Empirical Study Based on Swedish Data." *International Journal of Managerial Finance*. 10 (4). Pp. 442-452.

Zariyawati, M. A., Annuar, M. N., Taufiq, H., & Rahim, A. A. (2009). "Working Capital Management and Corporate Performance: Case of Malaysia." *Journal of Modern Accounting and Auditing*. 5 (11). P. 47.