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Does Cash Conversion Cycle Affect Corporate Performance? Evidence from Manufacturing Sector of Pakistan

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Abstract
While devising working capital policy, cash conversion cycle (CCC) is central to management deliberation particularly in manufacturing concern. Because CCC impact firm's profitability and liquidity. In the past, business literature has documented ample evidences related to cash conversion cycle and firm's profitability but the results are mixed and not definite to generalize it into different business settings and environment. the purpose of this study is to investigate the phenomena of cash conversion cycle in relation to firm's probability of manufacturing sector of Pakistan. The study used Causal co relational research design for 56 manufacturing firms listed at Pakistan stock exchange covering a period from 2014-2017. Using descriptive statistics, correlation and regression analysis, it is concluded that longer the duration of turnover in days of the cash conversion cycle, less capital will be employed in short-term assets and ultimately capital investment will be more in hand which will lead towards the firm's higher level of profitability. The findings of this study will provide useful intuition and insights to policy makers, debt holders, managers, owners and academic researchers. This study support the findings of Lyroudi and Lazaridis (2000),Gill et al. (2010),Sharma and Kumar (2011) and Abuzayed (2012).
Keywords: Cash conversion cycle, Return on assets, Working capital management.

1. Introduction

Financial management play a pivotal role in any business. Better financial management is important for endurance and development of business. For growth and sustainability of a business, effective financial management serves as a landmark, which mainly comprises of three sections: capital budgeting, capital structure and working capital management. Keeping in view the significance of liquidity in evaluating profitability of firms, it is of utmost need to study working capital policy. According to Filbeck and Krueger (2005), working capital management is "*the difference between cash and readily convertible into cash resources and commitments of firm for which cash is required*"

Liquidity is an important factor in working capital policy. Corporate liquidity can be measured by using conventional tools such as current and quick ratios which are fixed and static and gives information at specific point in time not providing broad information about the efficiency of the elements of WCM. Due to drawback of using these conventional liquidity ratios, many studies suggested the use of concurrent/ongoing liquidity measures which is cash conversion cycle CCC (Richards and Laughlin, 1980, Kamath, 1989).

CCC is very important consideration as it provides sufficient information about the amount of funds invested in the short-term asset. CCC of a single firms & collective cycle of industry shows how firms are running their business and it also point out weak zone of firms where further improvement is required (Hutchison et al., 2007). For the purpose of determining surplus cash and deficit cash, the consideration of cash inflows and outflows are pivotal before devising firm's business and investing strategies. Cash management depend upon cash conversion cycle and it is perceived as a key factor which improve firms profitability because it show how a firm is efficient in their collection of payment, selling of inventory and payment of bills (Abdul, 2012).

Moss and Stine (1993) defined cash conversion cycle as *"the length of time between cash payment for purchase of resalable goods and collection of accounts receivable generated by sale of these goods"***.** According to Laughim (2005), CCC is a fundamental tool which can be used to evaluate & measure the performance of the firms. CCC is the net time interval when firms' purchases raw material, convert raw material into finished goods, sells it on credit and receives cash from product sales which was made on credit. CCC is mainly concerned with the management of three components which includes: account receivable, inventory and accounts payable. CCC management is essential as it impact firms return, risk and thereby firms values. Financial managers can have a better control over a firm short-term investment if CCC is managed efficiently (Peel et al., 2000, Ebben and Johnson, 2011).

CCC helps in measuring the efficiency of WCM because it is an indicator of how fast a firms convert its current assets into cash (Yazdanfar and Öhman, 2014). The average cash conversion cycle can be computed by totaling average collection period (ACP) to inventory turnover in days (ITID) and deducting average payable period (APP).

CCC = ACP + ITID – APP

2. Objectives of the Study

- To evaluate working capital Polices.
- To know the relationship between CCC and firm's profitability.
- To analyse the influence of WCM practices on the profitability of firms in Pakistan manufacturing firms.

3. Literature Review

3.1 Empirical studies

Soenen (1993) conducted a pioneer study on US firms about the link, involving working capital which is measured by cash conversion cycle and company return measured by return on asset (ROA). The results of Chi-Square test demonstrate a negative association between net trade cycle (NTC) and profitability (ROA) for 8 industries out of 20 industries. The relation between NTC and ROA diverge from one industry to another depending on the type of industry. During 1975-1994 a study was conducted in 58,985 US manufacturing firms by Shin and Soenen (1998) on WCM & its link with profitability. The study used regression and correlation techniques for analysis. From the study, it is concluded that there exists an inverse association between net trade cycles (CCC multiply by 365/sales) and corporate profitability. Furthermore, the results of the study suggested that corporate performance can be boost by dropping CCC to an optimal level, increasing firm's profitability by minimizing investment in current asset to make sure that liquid cash in the business is not maintain for a longer period.

Lyroudi and Lazaridis (2000) analyzed the association between liquidity, leverage ratio and profitability using a sample of 82 firms which was listed on Athens Stock Exchange. The results found a positive connection between CCC & corporate profitability which is calculated by ROA. Wang (2002) established a study for finding the relationship between management of current asset and corporate performance using a sample of 379 Taiwanese and 1,555 Japanese companies for a period of 1985-1996. The results showed that although there is differences in structural characteristics and financial system, still there is inverse linkage between CCC and return on equity & CCC and return on asset. Wang (2006) Suggested that if managers want to create value for shareholder CCC must be kept shorten. A research conducted by Deloof (2003) on the impact of working capital practices over a corporate profitability for 1009 Belgian firms for 5 years period from 1972 to 1996. The study used length of CCC as efficiency tool. Deloof (2003) Find out that longer the length of CCC leads to greater investment in WC but longer the length of CCC has positive impact on corporate return, the reason is that it results in higher sales. Furthermore, the study showed negative association between inventory turnovers in days, average collection and payable period with firm's profitability. The findings suggested that by reducing the length of CCC the managers can increase shareholder value.

Eljelly (2004) Examine liquidity and profitability trade-off in Saudi Arabia by sampling 29 joint stock Saudi companies. Conducting analysis through regression and correlation tools the results showed that there exists an inverse correspondence between liquidity and firms return. The results of study suggested that if managers want to reduce the chances/risk of inability of meeting short-term obligation or to avoid higher investment in current asset they need to properly control the short-term assets and liabilities of the firms. Shah and Sana (2005) established a study for finding the correlation between management of working capital and corporate performance using a sample size of 7 Oil & Gas sectors firms, covering a period from 2001-2005. The findings of study demonstrated that managers can create shareholder value through proper management of working capital (WC). Padachi (2006) conducted a study using data of 58 small Mauritian manufacturing firms on the trends in WCM & its resulting effect on profitability of the firms for period of 1998-2003. The study used return on asset (ROA) as profitability measures, results indicate that if firms make high investment in its receivable and inventory then its profits will go down. The study further suggested that for the firm to create value, account receivable and inventory must be keep at optimum level.

During 1999-2004 a study was conducted on 94 Pakistani firms by Raheman and Nasr (2007), on components of working capital management (WCM) and its link with corporate performance. For analysis, ordinary least square (OLS) model was applied. It is found that there exists an inverse correspondence between components of working capital management and corporate return. Samiloglu and Demirgunes (2008) conducted a study about the WCM practices and its resulting influence on firm's performance for a data set including manufacturing firms listed at Istanbul Stock Exchange covering a period from 1998-2007. The results indicates an inverse linkage between receivable period, inventory period and financial leverage with firms returns while positive association of sale growth with profitability.Uyar (2009) Examine seven manufacturing and merchandising sector of Turkey. From Istanbul Stock exchange using a sample of 166 listed companies. The results showed that manufacturing industries have greater CCC as compared to merchandising industries because manufacturing industry are mainly concerned with the production of goods and sell them on longer credit period. The study found that there exists an inverse correspondence between CCC & firm size and CCC & corporate return.

Another research conducted by Gill et al. (2010) to study the correlation between WCM & firms

profitability on American firms listed on New York Stock Exchange (NYS) covering a period from 2005-2007. In this study, working capital was measured by CCC. The results found inverse linkage between ACP & firms' profitability and positive association of CCC with firms' profitability. The finding of the study suggested that managers can enhance firms profit by keeping ACP at optimal level and by properly handling CCC. Sharma and Kumar (2011) conducted a research to examine the influence of working capital on the productivity of Indian firms using a data set of 5000 non-financial firms registered at Bombay Stock Exchange (BSE) for a period of nine years from 2000 to 2008. In results, it is found positive association between WCM which is measured by length of CCC and profitability. In the study of Abuzayed (2012) on the topic of impact of WCM on firms' value for 52 firms listed at Amman Stock Exchange for the time frame of 2010 to 2012. Using a Panel structure database, the study found positive relationship between firms' profitability and WCM which was measured through the components of CCC. The study also suggested that higher earning firms are less motivated to manage their short-term investment due to the failure of financial market to punish higher earning firms because of its mismanagement of WCM.

The influence of cash conversion cycle (CCC) on firms profitability was studied by Yazdanfar and Öhman (2014) in Sweden for 13,797 SMEs exercising in four industries: wholesales, restaurant, retail and metal spanning. The results pointed out that as the average account receivable and inventory turnover in day's increase this will lead to higher firms return and vice versa. Furthermore, positive linkage was found between firm size and their return, as larger companies are more productive than younger companies. Yazdanfar and Öhman (2014) suggested that managers can create better value for firms by optimizing its CCC.

3.2 Research theory and Significance

By analyzing critically, the literature review, previous studies showed mixed results about the relationship between CCC and corporate profitability. In addition, these studies have used different methods of sample selection and have been conducted on different business environment. The business, political, legal and economic structure of Pakistan is quite different from other countries that lead to the question about the relationship between CCC and profitability in Pakistani manufacturing companies. There is exists very little evidence in Pakistan regarding such relationship. In order to increase the generalizability of the previous findings, this study attempt to extend the previous studies and provides intuition and insights to corporate firms (Particularly operating in Pakistan) about the relationship of CCC and firm profitability.

3.3 Hypothesis of the study

The objectives of the study can be achieved by the following hypothesis.

H_1: Length of Cash Conversion Cycle significantly affects firms' performance.

3.4 Conceptual Framework

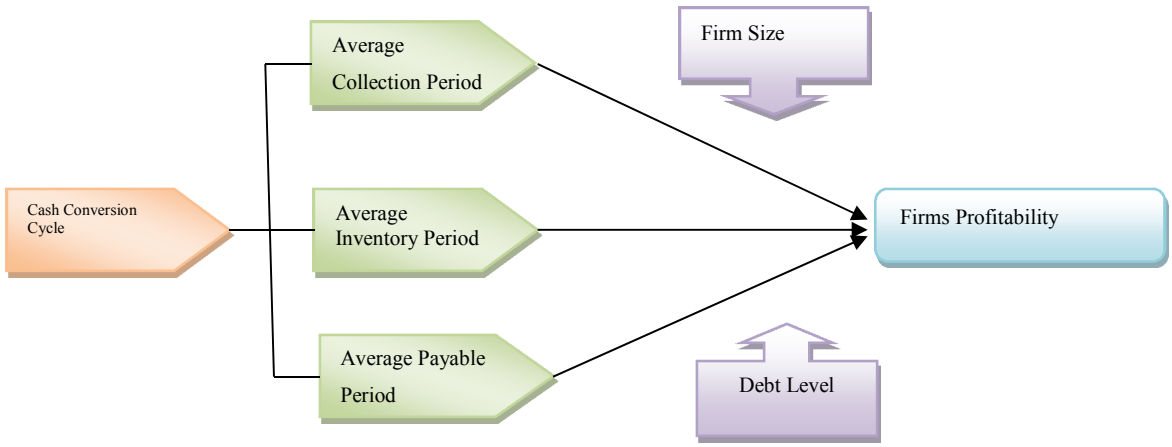

Figure: 1

4. Methodology

This study has taken secondary data of 56 manufacturing firms listed at Pakistan Stock Exchange covering a period from 2014 to 2017 employing causal co-relational research design. The population is consists of 394 companies, sample size represents up to 14% of the total population (Table 1), that is supported by the argument of Gay and Airasian (2000) who mentioned that a sample size of 10% is sufficient for a statistical inference. For best fitting of data and reliability of results, regression assumptions have been satisfied namely auto correlation, multicollinearity, heteroscedasticity and finally Hypothesis has been tested using T-Test, F-Test and P-Value.

Table 1: The details are given in the table below.

S. no	Sector name	No. Of Companies	%age in Total Population	Sample	%age of sample in Total Population
1	Auto Mobile Assembler	12	3.05%	4	1.02%
2	Auto Mobile Parts & Acc	9	2.28%	2	0.51%
3	Cable & Electrical Goods	8	2.03%	2	0.51%
4	Cement	22	5.58%	4	1.02%
5	Chemicals	28	7.11%	3	0.76%
6	Engineering	18	4.57%	3	0.76%
7	Fertilizer	7	1.78%	2	0.51%
8	Food & Personal Care Product	21	5.33%	3	0.76%
9	Glass & Ceramics	11	2.79%	3	0.76%
10	Jute	3	0.76%	1	0.25%
11	Oil & Gas Exploration Comp	4	1.02%	2	0.51%
12	Paper & Board	9	2.28%	2	0.51%
13	Pharmaceuticals	9	2.28%	2	0.51%
14	Power Gen & Distribution	19	4.82%	2	0.51%
15	Refinary	4	1.02%	2	0.51%
16	Sugar & Allied Industries	35	8.88%	3	0.76%
17	Textile Composite	56	14.21%	5	1.27%
18	Textile Spinning	87	22.08%	5	1.27%
19	Textile Weaving	24	6.09%	3	0.76%
20	Tabacco	3	0.76%	2	0.51%
21	Vanaspati & Allied Industries	5	1.27%	1	0.25%
	TOTAL =	**394**	**100%**	**56**	**14%**

2.1 Variables

Table 2: Variables and Its Measurements

Variables		Measurements	Abbreviation
Dependent Variable	Return on Assets	Net profit/total assets	ROA
Independent Variables	Cash Conversion Cycle	ACP+ITID-APP	CCC
	Average collection period	Account receivable/Net sales*365	ACP
	Inventory turnover in days	Inventory/CGS*365	ITID
	Average payment period	Account payable/CGS*365	APP
Control Variables	debt level	Total Debt/Total Assets	DEBT
	Firm size	Natural log of sales	NLOS

2.2 Regression Model

$ROA_{it} = \alpha + \beta_1 Size + \beta_2 DEBT + \beta_3 CCC + E_{it}$

Table: 3 descriptive statistics of variables for manufacturing sector.

Variables	N	Minimum	Maximum	Mean	Std.Deviation
ROA (%)	224	-47.7	114.4	5.0487	14.20877
CCC (in days)	224	-402.8	666.4	39.1415	128.9525
SIZE (ln)	224	9.8	19.4	15.8536	1.85036
DEBT(%)	224	12.4	475.3	68.8295	51.05785
Valid N (listwise)	224				
Note: **ROA is return on asset, CCC is cash conversion cycle, SIZE is the natural logarithm of sale, debt is the debt level, N is the number of observation**					

The above table No.3 shows the characteristics of the data in which the mean value shows the average value while standard deviation shows the dispersion from the mean. Firm performance is measured by ROA, have a mean value of 5.04 percent meaning that manufacturing firms provide Rs 5 for each Rs 100 invested in assets by investor and standard deviation is 14.20 percent meaning that each observation is deviating from the mean up to 14.20%. Manufacturing firms has a minimum CCC is -402 meaning that manufacturing firms take 402 days when purchases raw material, convert raw material into finish goods, sell it on credit & receive cash from product sales which was made on credit. The negative CCC (-402) means that firms had already receive cash from their customer before paying its short-term obligation toward creditors (expressed in days) and

manufacturing firms has a maximum 666 days and average CCC of manufacturing firms is 39 days with a standard deviation of 128.9. On the basis of CCC, manufacturing firms mean values are disperse, as shown by high standard deviation. Selected firms in the sample belonging to different sectors. Each sector having its own rules/regulations, policy and characteristics, causing different variation within the firm's variables.

2.3 Correlation Analysis

The following table shows the correlation analysis of the given data

Table 4: Correlation Matrix

		ROA	CCC	SIZE	DEBT
ROA	Pearson Correlation	1	.145*	.203**	-.318**
	Sig. (2-tailed)		0.03	0.002	0
	N	224	224	224	224
CCC	Pearson Correlation	.145*	1	-0.072	-0.071
	Sig. (2-tailed)	0.03		0.286	0.291
	N	224	224	224	224
SIZE	Pearson Correlation	.203**	-0.072	1	-.285**
	Sig. (2-tailed)	0.002	0.286		0
	N	224	224	224	224
DEBT	Pearson Correlation	-.318**	-0.071	-.285**	1
	Sig. (2-tailed)	0	0.291	0	
	N	224	224	224	224

The above table shows the correlation matrix in which CCC is positively correlated with ROA. Table shows a positive coefficient 0.145, with p-value (0.030) between CCC and ROA. It means that the results are significant at alpha = 5%. The positive coefficient means that the corporate return increase as the length of CCC increases. Furthermore, the positive association indicate that if the length of the of CCC increase it will lead to higher return for firms. In the table, there is a positive coefficient of 0.203 with a p-value (.002) between size of firms and ROA and result are significant at alpha = 1%. The positive coefficient meaning that as the size of firms increase it will generate higher return for firm. Between debt ratio and return on assets, there exists a significant negative relationship and the correlation coefficient for the two variables is -.318 with a p-value of (0.000) which is highly significant at alpha = 1%.

Table: 5 Panel data diagnostics

Test	Hypotheses	P-value	Decision
Chao	H0: Pooled	F(4,224)=17.1336	Fixed effects
	H1: Fixed Effect	with p-value 0.000	
Hausman	H0: Random effects		Fixed effects
	H1: Fixed Effect	0	
Bruesch Pagon	No need for this		
Wald test	H0: pooled OLS is approiate	No need to conduct	
	H1: Fixed Effect		

Table: 6 Hypothesis Testing

Variables	Coefficient	STD Error	T-Statistic	Prob.
C	118.8296	39.691	2.99387	0.003
SIZE	-7.037227	2.47083	-2.84812	0.005
DEBT	-0.055279	0.03278	-1.68619	0.094
CCC	0.04056	0.0106	3.82503	2E-04
		Model Summary		
R-Squared		**.587215**		
Significance		0.000		
Durbin Watson		1.926901		
F-statistic		4.046961		

For overall manufacturing sectors, the results of this study demonstrated that the length of CCC has a significant impact on corporate return. The above summary table shows significant values of CCC in relation to ROA. The resultant R^2 is almost 59% which shows that the explanatory variables CCC including control variables describe 59% variation in the criterion variable i.e. dependent variable. The coefficient of all variables include in regression model are significant. The overall F statistic shows the model overall fitness.

In the above table, regression analysis shows that CCC has positive coefficient 0.040560 with t-statistic 3.8

which means that CCC (in days) has positive relation with corporate return. This positive correlation coefficient between cash conversion cycle and ROA shows that increase in the length of CCC will lead to higher corporate return. The resultant coefficient of CCC is .04 which means that if there is one unit increase in CCC then ROA will be increased by .04% and 100 units increase in CCC will lead to 4% increase in firm's profitability, with corresponding p-value of 0.0002 showing a significant impact on ROA. The correlation coefficient between debt ratio and return on assets is negative which implies that increase in debt level will negative effect firms' profitability i.e. higher level of debt will reduce corporate return. Control variables include size of firms and debt which are significant.

Based on the finding of the regression it is highlighted that the length of CCC positively affects corporate performance. So, alternate hypothesis (H_1) is accepted and null hypothesis (H_0) is rejected.

3. Conclusion

The purpose of this study is to examine the impact of CCC on firm performance. Cash conversion cycle is a strong and effective measure for evaluating the extent to which the working capital of a manufacturing company is managed. CCC is vital for almost every manufacturing company (greater portion of assets are held in inventory which means greater of funds tied up in current assets). it provides assistance to the financial managers in finding out the inventory holding, average collection and payable durations. Based on the results it is stated that there is a positive relationship between lengths of CCC and corporate return. This means that the length of CCC has a significance positive effect on corporate return.

It is concluded that longer the duration of turnover in days of the CCC, less capital will be employed in short-term assets and ultimately capital investment will be more which will lead towards the firm's higher level of profitability. Interestingly in this study the findings show that, in terms of return on assets the profitability is significantly positively related with CCC. The positive relationship between CCC and firm profitability indicated that if the length of CCC increases it will positively affect corporate performance. The finding of this study is consistent with the studies of Lyroudi and Lazaridis (2000),Gill et al. (2010),Sharma and Kumar (2011) and (Abuzayed (2012)).

3.1 Limitations & Further research

In this study, sample data of only 4 years was used i.e. from 2014-2017 therefore future research should focus on lengthy period to get better results about the impact of CCC on corporate return. Only manufacturing firms are covered under this study which are listed at Pakistan Stock Exchange.

Under this study, sample companies are taken randomly based on high market capitalization therefore the accuracy of result depends upon the sample units so if someone else used different sampling methods the result may be different.

The length of CCC is not only a single factor affecting corporate return, future research may look the influence of some other factors including competitor risks, financial risk, supply chain, technology etc. on corporate performance.

Reference

ABDUL, R. 2012. Analyzing The Working Capital Management And Productivity Growth Of Manufacturing Sector In Pakistan. COMSATS Institute of Information Technology, Islamabad.

ABUZAYED, B. 2012. Working capital management and firms' performance in emerging markets: the case of Jordan. International Journal of Managerial Finance, 8**,** 155-179.

DELOOF, M. 2003. Does working capital management affect profitability of Belgian firms? Journal of business finance & Accounting, 30**,** 573-588.

EBBEN, J. J. & JOHNSON, A. C. 2011. Cash conversion cycle management in small firms: Relationships with liquidity, invested capital, and firm performance. Journal of Small Business & Entrepreneurship, 24**,** 381-396.

ELJELLY, A. M. 2004. Liquidity-profitability tradeoff: an empirical investigation in an emerging market. International Journal of Commerce and Management, 14**,** 48-61.

FILBECK, G. & KRUEGER, T. M. 2005. An analysis of working capital management results across industries. American Journal of Business, 20**,** 11-20.

GAY, L. & AIRASIAN, P. 2000. Educational research: Competencies for analysis and experience. Upper Saddle River, NJ: Prentice-Hall.

GILL, A., BIGER, N. & MATHUR, N. 2010. The relationship between working capital management and profitability: Evidence from the United States. Business and Economics Journal, 10**,** 1-9.

HUTCHISON, P. D., FARRIS, M. & ANDERS, S. B. 2007. Cash-to-cash analysis and management. CPA journal, 77**,** 42.

KAMATH, R. 1989. How useful are common liquidity measures. Journal of Cash Management, 9**,** 24-28.

LYROUDI, K. & LAZARIDIS, Y. 2000. The cash conversion cycle and liquidity analysis of the food industry in Greece.

MOSS, J. D. & STINE, B. 1993. Cash conversion cycle and firm size: a study of retail firms. Managerial Finance, 19**,** 25-34.

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**,** 45-58.

PEEL, M. J., WILSON, N. & HOWORTH, C. 2000. Late payment and credit management in the small firm sector: some empirical evidence. International Small Business Journal, 18**,** 17-37.

RAHEMAN, A. & NASR, M. 2007. Working capital management and profitability–case of Pakistani firms. International review of business research papers, 3**,** 279-300.

RICHARDS, V. D. & LAUGHLIN, E. J. 1980. A cash conversion cycle approach to liquidity analysis. Financial management**,** 32-38.

SAMILOGLU, F. & DEMIRGUNES, K. 2008. The effect of working capital management on firm profitability: Evidence from Turkey.

SHAH, S. A. & SANA, A. 2005. Impact of working capital management on the pofitability of oil and gas sector of Pakistan. Editor-In-chief or e, 15**,** 301-307.

SHARMA, A. & KUMAR, S. 2011. Effect of working capital management on firm profitability empirical evidence from India. Global Business Review, 12**,** 159-173.

SHIN, H.-H. & SOENEN, L. 1998. Efficiency of working capital management and corporate profitability. Financial practice and education, 8**,** 37-45.

SOENEN, L. A. 1993. Cash conversion cycle and corporate profitability. Journal of cash Management, 13**,** 53-53.

UYAR, A. 2009. The relationship of cash conversion cycle with firm size and profitability: an empirical investigation in Turkey. International Research Journal of Finance and Economics, 24**,** 186-193.

WANG, J.-C. 2006. Corporate performance efficiency investigated by data envelopment analysis and balanced scorecard. Journal of American Academy of Business, 9**,** 312-318.

WANG, Y.-J. 2002. Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan. Journal of Multinational Financial Management, 12**,** 159-169.

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**,** 442-452.