RELATIONSHIP BETWEEN WORKING CAPITAL MANAGEMENT AND PROFITABILITY – EMPIRICAL EVIDENCE FROM VIETNAMESE LISTED FIRMS

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Abstract.

This paper is aimed at investigating relationship between working capital management and profitability by using Generalized Least Square (GLS) and Fixed Effect Model (FEM) on a panel data of 208 companies listed on the both Ho Chi City Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) for the period from 2006 to 2012. We found significant negative relationships between cash conversion cycle, receivable period, inventory period and payable period and gross operating profit. This means that board of management can improve the firm profitability by shortening receivable period, inventory period or cash conversion cycle to an optimal level. The results of industry analysis suggested the effect of economic sector on relationship between working capital management and profitability.

Key words: working capital management, cash conversion cycle, profitability, Vietnam.

1 INTRODUCTION

Net working capital is defined as difference between current assets and current liabilities. In any operating cycle, working capital transforms from the form of cash to inventory, account receivable and then back to the form of cash. With that transformation, net working capital management takes a lot of time and efforts of the firm managers. Main objectives of net working management is to maintain normal daily operational activities for the firms in order to increase the firm's performance and to reduce the firm's liquidity risk. A shortage of working capital can cause problems on the firm daily activities which will inversely affect to the firm's profitability while overinvestment on working capital can increase opportunity cost, especially when the firm has to use external funds to finance its working capital.

Managing working capital management, which includes of current asset and current liability management is one of important functions of corporate financial management, and company executives have to make this decision on a daily basis (Ross, Westerfield, Jordan, 2010). Working capital relate to account receivable, inventory, account payable, which are key components of operating activity.

The direct effect of working capital management on profitability and liquidity position of firms also refers the importance of working capital management (Nobanee, Abdullatif, & Al Hajjar, 2011). Managers can improve firms' profitability by shortening receivable conversion period and inventory conversion period (Mansoori and Muhammad, 2012). Besides, firms may face to bankruptcy if they select and use improper working capital strategies, even though they experience positive profitability (Samiloglo & Demirgunes, 2008).

This paper contributies another evidence of impact of net working management on profitability in Vietnamese firms as a developing country as well as how managers affect the firm's profitability by managing working capital efficiently. The remainder of this paper is organized as follows: Section 2 presents a brief review of the literature presents the hypotheses for empirical testing. Sections 3 discuss data and models to be estimated. Empirical results is presented in Sections 4 and Section 5 Concludes.

2 LITERATURE REVIEW

The impact of working capital management on a firm's profitability has been the subject of numerous studies and empirical theories for many years in many different countries. Many researches on relationship between cash conversion cycle and profitability show that longer cash conversion cycle will tend to reduce profitability (Samiloglu and Demirgunes, 2008). That means reduced investment in working capital will impact positively on the profitability of the company by reducing the proportion of short -term assets in total assets. Most research in this field shows that the company can increase its profitability by shortening the cash conversion cycle because they have found a high significantly negative relationship between these two variables.

In Europe and North America, Shin and Soenen (1998) used Net Trade Cycle (NTC[i]) as a measure of net working capital management in their study and they found a negative relationship between marginal net operating cycle of the company and profitability. Deloof (2003) used cash conversion cycle (CCC) as a measure of working capital management for a sample of 1,009 Belgian non- financial companies in the period 1992-1996 and have also found negative relationships between gross profit and operating receivables collection period, inventory period and payable period. Lazaridis and Trifonidis (2006) also found a negative relationship between CCC and the gross profit margin on a sample of 131 companies listed on the Athens stock market in the period of 2001-2004. Garcia, Martins and Brandao (2011) studied 2,974 non-financial companies listed on 11 stock markets in Europe for 12 years from 1998 to 2009. By using GLS and OLS regression they found that there was a reverse relation between the CCC and the gross operating profit, meaning that companies can increase profitability by reducing the period of holding working capital. Enqvist, Graham, and Nikkinen (2012) used a panel data sample consists of 1,136 Finnish enterprises listed on the Nasdaq OMX Helsinki Stock Exchange from 1990 to 2008. They asserted that efficient working capital management is necessary and played an important role in corporate governance activities and therefore it should be included in the financial plan of the company.

In Asia, Nobanee, Abdullatif and Al Haijjar (2009) in Japan or Azhar and Noriza (2010) in Malaysia also found the similar relationship between cash conversion cycle and profitability of the company. Vijay Kumar (2011) studied in India or Mansoori and Muhammad (2012) also found similar results.

In Vietnam, Dong, Huynh Phuong and Jyh-tay Su (2010) studied the relationship between cash conversion cycle and profitability, as measured by the ratio of gross profit activities on a 130 sample companies listed on the Vietnam stock market during the period 2006-2008. The authors have also found a strong relationship between profitability and cash conversion cycle, indicating that the board of management can increase shareholders' value by identifying the appropriate cash conversion cycle and maintain each component of this cycle at the optimal levels.

In summary, all these studies tend to indicate that working capital management has a negative impact on the profitability of the company.

3 RESEARCH METHODOLOGY

In order to investigate the impact of net working capital management on the firm's performance, we use correlation analysis and regression analysis with Generalized Least Square (GLS) and Fixed Effect Model (FEM) on a panel data of 1,456 firm-year observations.

3.1. Data and Sample

The sample is based on data obtained from Vietstock database which consists of financial statements of listed companies in both Ho Chi Minh City Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) for the period of 2006- 2012. From the list of all companies listed on the two exchanges in this research period, all financial firms, including insurance, banking, securities companies and funds were excluded from the sample because their nature are not appropriate for our research purpose. Companies with missing data and/or having different financial year for the research period as well as observations with illogical values as known as outliners were also removed from the sample.

In order to investigate the industry impact, we exclude the sector having less than 10 firms. Our final sample consisted of 1,456 firm -year observations that include the observation of 208 firms for the 7 years from 2006 to 2012. The sample includes firms in 8 different sectors[ii] as shown in the Appendix, in which,

[i] Net Trade Cycle = (Account Receivable + Inventory – Account Payable)* 365/Net Sales

[ii] Industry classification is based on the sector having greatest contribution to sales and follow the Vietnam's Standard Industry Classification (VSIC)

Manufacturing sector is the biggest one with 87 firms while Mining is the smallest sector with 10 firms.

Then, the different accounting variables needed for the study were extracted, by year and by company to calculate our research variables as stated below.

3.2. Variables

The table below summarizes all the variables that were used this paper:

TABLE 1: **Variable Formulas and Abbreviations**

Variable	Abbreviation	Formula
Gross Operating Profitability	GOP	(Net Sales – Cost of Goods Sold)/(Total Assets – Financial Assets)
Receivable Period	RP	(Account Receivable/Net Sales)*365
Inventory Period	IP	(Inventory/Cost of Goods Sold)*365
Payable Period	PP	(Account Payable/Cost of Goods Sold)*365
Cash Conversion Cycle	CCC	RP + IP – PP
Firm Size	SIZE	Natural Logarithm of total assets
Financial Leverage	LEV	Total Debt/Total Assets
Financial Asset Ratio	FAR	Financial Assets/Total Assets
Current Ratio	CR	Current Assets/Current Liabilities

To investigate the relationship between working capital management and firm's profitability, gross operating profit (GOP), which is calculated as the gross operating profit divided by total operating assets (total assets minus total financial assets), was used as the dependent variable. We use this variable instead of earnings before interest, tax, depreciation and amortization (EBITDA) or earning before tax or after tax (EBIT) because gross profit is the primary indicator of firm's operating "success" or "failure" regardless of financial activities. Moreover, this variable has a close relation with other operating variables such as cash conversion cycle. Several studies have used GOP as a proxy for firm's profitability such as Deloof (2003), Raheman and Nasr (2007), Dong, Huynh Phuong and Jyh -tay Su (2010), Garcia, Martins and Brandao (2011). Furthermore, it is also the reason why financial assets are subtracted from the total assets (Lazirdis and Tryfonidis, 2006).

One of measures of effectiveness of net working management is Cash Conversion Cycle (CCC) which is first used by Richards and Laughlin (1980). This measure refers the period between the point of purchasing inventory, transforms it to finished products, selling them and the point of collecting the account receivable. The firm with shorter cash conversion cycle has to invest less in working capital, so its financing cost is normally lower, and profitability is better (Deloof -2003). Cash Conversion Cycle (CCC) equals Receivable Period (RP) plus Inventory Period (IP) minus Payable Period (PP).

Firm's size (SIZE) as measured by natural logarithm of total assets, Leverage (LEV) as measured by debt ratio, Financial Asset Ratio (FAR) as measured by total financial assets over total assets, Current Ratio (CR) as measured by current assets over current liabilities were used as control variables because they have certain impacts on firm's profitability.

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3.3. Research Hypothesis and Model Specification

With the objective of investigating effect of net working management on firm's operating profitability, following hypothesis was assumed for our research:

H0 (Null Hypothesis): There is no relationship between working capital management and Vietnamese firms' operating profitability.

This hypothesis is studied by following four models, based on the research of Garcia, Martins and Brandao (2011):

- Model (1):

$$GOP = \beta_0 + \beta_1(RP_{it}) + \beta_2(SIZE_{it}) + \beta_3(LEV_{it}) + \beta_4(FAR_{it}) + \beta_5(CR_{it}) + \varepsilon \quad (1)$$

- Model (2):

$$GOP = \beta_0 + \beta_1(IP_{it}) + \beta_2(SIZE_{it}) + \beta_3(LEV_{it}) + \beta_4(FAR_{it}) + \beta_5(CR_{it}) + \varepsilon \quad (2)$$

- Model (3):

$$GOP = \beta_0 + \beta_1(PP_{it}) + \beta_2(SIZE_{it}) + \beta_3(LEV_{it}) + \beta_4(FAR_{it}) + \beta_5(CR_{it}) + \varepsilon \quad (3)$$

- Model (4):

$$GOP = \beta_0 + \beta_1(CCC_{it}) + \beta_2(SIZE_{it}) + \beta_3(LEV_{it}) + \beta_4(FAR_{it}) + \beta_5(CR_{it}) + \varepsilon \quad (4)$$

Where the subscript i refer to companies, t represents years, and ε is the error term. The variables are defined as in the Table 1 above.

The Model (1), Model (2), Model (3) tries to investigate the relationship between Receivable Period, Inventory Period, Payable Period and operating profit while Model (4) studies the relationship between Cash Conversion Cycle and the operating profitability.

After testing multi-collinearity, heteroskedasticity, autocorrelation violation, Generalized Least Square (cross-section weight) which was used by Gill et al. (2010) and Raheman & Nasr (2007) was chosen to fix heteroskedasticity.

Fixed effects estimations (FEM) are also used in addition with our panel data because Hausman test indicated that fixed effects is more appropriate than random effects model. Fixed effect model assumes that slope of regression is fixed and invariant among companies while intercepts are variant to time or companies. So, different intercepts can be considered different effects of unobserved factors on different companies. Besides, dummy variables were also used to investigate industry impact of net working capital management on profitability.

4 EMPIRICAL RESULTS

4.1. Descriptive analysis

TABLE 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GOP	1,456	0.2356662	0.2188438	-0.41	5.01
RP	1,456	64.56806	69.72859	0	888.13
IP	1,456	160.216	470.8759	0.01	9095.38
PP	1,456	43.44091	73.9821	0	1530.9
CCC	1,456	181.3431	478.6156	-429.57	9080.77
SIZE	1,456	12.59609	1.298317	9.63	16.8
LEV	1,456	0.4962775	0.2239026	0	1.04
FAR	1,456	0.0924863	0.1308129	-0.01	0.92
CR	1,456	2.300261	3.194769	0.11	67.95

Table 2 presents the descriptive statistics for all variables, which used in this research. The total number of observations is 1,456 firm-years. The average operating profit over total operating assets for the whole sample is 23.56% in which the lowest number is -41% and the highest one is 501%. In average, it takes companies 65 days to collect their bills, 160 days to sell their inventory and they have to wait 43 days to pay their bills. The companies in the sample have average cash conversion cycle of 181days, average current ratio of 2.3 with a standard deviation of 3.19. Besides, they financed haft of their assets with debt in average.

4.2. Pearson Correlation Analysis.

Table 3 presents Pearson correlation between variables. From this table, we see that gross operating

profit has a negative relations with all explanatory variables RP, IP, PP and CCC as well as other controlling variables at high significance at α=1% level. This relation indicates that if management can reduce inventory days, receivable days and payable days meaning that more efficient net working capital management, they can increase company's operating profit.

TABLE 3: Pearson Correlation Analysis

	GOP	RP	IP	PP	CCC	SIZE	LEV	FAR
RP	-0.2576***							
IP	-0.1320***	0.3117***						
PP	-0.1535***	0.4370***	0.2719***					
CCC	-0.1436***	0.3848***	0.9872***	0.1766***				
SIZE	-0.0682***	-0.0756***	0.1473***	-0.0518***	0.1419***			
LEV	-0.2951***	0.0613**	0.0822***	0.1768***	0.0625**	0.2261***		
FAR	0.2396***	-0.0004	0.0222	-0.0616**	0.0313	0.0951***	-0.3428***	
CR	0.1167***	0.0036	0.0016	-0.0984***	0.0173	-0.1408***	-0.5071***	0.2081***

*, **, and *** denote significance at 10%, 5% and 1% levels, respectively. Number in parenthese is t-stat.

4.3. Regression analysis

4.3.1. Whole sample regression

As mentioned above, we applied GLS and FEM (with robust option for fixing heteroskedasticity) for our regression.

TABLE 4: Relationship between net working management and profitability (2006 – 2012): FEM and GLS with cross-section weights estimations

	Dependent Variable: GOP							
	Pooled OLS				GLS			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
SIZE	-0.0448***	-0.0443***	-0.0467***	-0.0439***	-0.00915***	-0.00539**	-0.00716***	-0.00511**
	(-4.83)	(-4.63)	(-5.00)	(-4.56)	(-5.61)	(-3.28)	(-4.55)	(-3.09)
LEV	-0.0722	-0.0782	-0.0644	-0.0808	-0.222***	-0.257***	-0.237***	-0.257***
	(-1.09)	(-1.16)	(-1.01)	(-1.20)	(-18.03)	(-20.71)	(-18.81)	(-20.88)
FAR	0.501	0.496	0.502	0.496	0.133***	0.113***	0.112***	0.114***
	-1.64	-1.62	-1.65	-1.62	-5.34	-4.53	-4.44	-4.59
CR	-0.00172	-0.00191	-0.00196	-0.00189	-0.00429***	-0.00466***	-0.00492***	-0.00457***
	(-1.70)	(-1.52)	(-1.58)	(-1.52)	(-3.50)	(-3.75)	(-3.95)	(-3.70)
RP	-0.000381***				-0.000572***			
	(-8.11)				(-16.46)			
IP		-0.0000228*				-0.0000404***		
		(-2.34)				(-7.68)		
PP			-0.000121*				-0.000325***	
			(-2.25)				(-8.80)	
CCC				-0.0000263**				-0.0000465***
				(-2.62)				(-8.34)
_cons	0.818***	0.795***	0.819***	0.791***	0.477***	0.417***	0.436***	0.415***
	-6.42	-6.12	-6.28	-6.06	(22.47)	(19.94)	(21.74)	(19.69)
N	1456	1456	1456	1456	1456	1456	1456	1456

*, **, and *** denote significance at 10%, 5% and 1% levels, respectively. Number in parenthese is t-stat.

As seen in the table 4, estimation results for the both methods are fairly consistent with each other: highly negative relationship between GOP and RP, IP, PP and CCC ($\alpha = 1\%$).

All Model (1), Model (2) and Model (3) show a high significant negative relationship between RP, IP, PP and GOP for both FEM and GLS methods. The results for GLS method are -0.000572, -0.0000404, -0.000325 respectively while the equivalent numbers of FEM are -0.000381, -0.0000228, -0.000121 and also at significant levels of 10% to 1%. These results imply that managers can increase firm's operating profitability (0.0572%, 0.004% and 0.0325% for GLS estimation and 0.038%, 0.0023% and 0.012% for FEM estimation) by reducing one day in length of receivable period, inventory period and payable period respectively. As Mathuva (2010) explained that the sooner customers make payment, the more cash the companies get to reinvest in inventory, consequently they get higher sales which leads to higher profit. Deloof (2003) proved that low profitable firms had to wait longer to pay their bills.

Model (4) also offers a negative and highly significant relationship ($\alpha = 5\%$ for FEM and $\alpha = 1\%$ for GLS method) between cash conversion cycle and gross operating profitability (-0.0000263 and -0.0000465 for FEM estimation and GLS estimation respectively). So the management board can improve the company's operating profit by about 0.005% by reducing 1 day in cash conversion cycle. In brief, the results mean that management policies with regard to account receivables, inventory and account payable can serve as tools to improve corporation's performance.

The both method results also showed the high significant negative relationship between firm's size and firm's profitability with regression coefficients respectively for the 4 models. These results can be explained that an increase in firm's size as measured by natural logarithm of total assets will decrease GOP which was measured by gross operating profit divided by total operating assets.

For other control variables, leverage and liquidity has negative relationships with gross operating profit while gross operating profit increases with financial asset ratio. However, the all coefficients of control variables from GLS method are highly significant while insignificant with FEM except SIZE.

In conclusion, both estimation methods show pretty consistent results in terms of size, magnitude of regression coefficients and statistical significant levels in the context of Vietnamese firms. This also foster the conclusion that net working capital management has impact on operating profitability in Vietnam. So, board of managements can increase operating profit for their companies by managing cash conversion cycle effectively. More details, they can do it by reducing receivable, inventory and payable days.

4.3.2. Analysis for economic sector

Different economic sectors may have different requirements on working capital. As a results, they will have different working capital strategies because they have different operating cycle, so different policies in trade credits, or inventory investment (Weinraub & Visscher – 1998) and (Filbeck & Krueger - 2005). To investigate whether the effect of net working capital management as measured by cash conversion cycle on firm's profitability was different among economic sectors, both GLS and FEM methods were applied with dummy variables. The sectoral dummy variables are independent of the CCC variable. To introduce sectoral dummies allows the regression to recognize differences in GOP across sectors and makes the finding for CCC a stronger finding.

The sample includes 8 different economic sectors as classified by Vietnam Standard Industry Classification (VSIC). The Manufacturing sector was chosen as a reference one and we used dummy variable for the other 7 sectors. The Table 5 below summarized the regression results.

TABLE 5: Relationship between cash conversion cycle (CCC) and firm's operating profitability (GOP) _ Model (4)

	Dependent Variable: GOP	
	Fixed Effect Model FEM	**Generalized Least Squares GLS**
	Model (4)	**Model (4)**
CCC	-0.0000306**	-0.0000342***
	(-3.95)	(-3.40)
SIZE	-0.00167	-0.0025
	(-0.20)	(-0.67)
LEV	-0.189**	-0.197***

	(-5.58)	(-7.52)
FAR	0.349	0.196***
	-2.04	-4.97
CR	-0.00324	-0.00456**
	(-1.49)	(-3.01)
Agriculture, Aquaculture and Forestry (A)	-0.0219	-0.00364
	(-1.03)	(-0.18)
Mining (B)	0.0397*	0.0489*
	-2.65	-2.26
Durable Products (D)	-0.0809***	-0.0809***
	(-18.64)	(-3.89)
Construction (F)	-0.0968***	-0.0952***
	(-15.75)	(-6.85)
Wholesales and Retails (G)	-0.0470*	-0.0337*
	(-2.77)	(-2.07)
Transportation and Warehousing (H)	-0.0116	-0.0331*
	(-0.54)	(-2.04)
Real Estates (L)	-0.119**	-0.0999***
	(-5.73)	(-4.45)
_cons	0.364**	0.390***
	-4.11	-8.43
N	1456	1456

*, **, and *** denote significance at 10%, 5% and 1% levels, respectively. Numbers in parentheses are t-statistic.

As shown on the above Table 5, significant negative relationship between cash conversion cycle (CCC) and firm's operating profitability (GOP) were also found for all of sample sectors except Mining in the both approaches: GLS and FEM estimation, but at different magnitude.

Regression coefficients in Manufacturing sector are -0.0000342 (α = 1%.) and -0.0000306 (α =5%.) for GLS and FEM estimation respectively, meaning that in average, by reducing 1 day of cash conversion cycle the managers of manufacturing firm can increase its operating profitability by 0.003%. The FEM results show that by reducing one day of cash conversion cycle, in average, the Construction sector has GOP that is 9.68% lower than the Manufacturing sector, after accounting for CCC and control variables. This number of Durable Product sector is 8.09%. Both are at 1% level of significance. Real estates has the highest increase in average GOP while Transportation and Warehousing has the lowest in comparison with Manufacturing sector when reducing 1 day of CCC. Higher levels of average GOP for the both industries compared with manufacturing are 11.9% (α =5%) for Real Estates and 1.116% (α =5%) for the other. The number for Agriculture, Aquaculture and Forestry is 2.19% but at insignificant level.

All these mean that managers at different economic sectors can also improve net working capital management by reducing cash conversion cycle to increase the company's operating profitability. However, different firms should use different strategies because the impacts are different.

5 CONCLUSIONS

We studied the relationship between net working capital management and gross operating profitability on a sample of 208 firms listing on Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) for the period from 2006 to 2012. The research was conducted with both generalized least square (GLS) method and fixed effect method on a panel data of 1,456 firm-year observations. The research results in the both methods for Vietnamese firms proved that net working management measured by cash conversion cycle (CCC) had significant negative relationship with gross operating profitability. Significant negative relationship between receivable period (RP), inventory period (IP) and payable period (PP) with

gross operating profitability (GOP) were also found. This means that managers can increase the company's profitability by reducing these days. The research results are very much consistent with many prior researches, such as Deloof (2003), Garcia, Martins and Brandao (2011), and Mansoori and Muhammad (2012)…

Several policy implications would be derived from the findings of the study that financial managers can improve the company's performance by reducing cash conversion cycle. One side, reducing receivable period, inventory period and payable period will enhance company's liquidity and consequently bring positive effect on its financial position. On the other hand, effective net working capital management can access other financing channels because creditors, who look at and appraise the structure of balance sheet to make financing decision, will further invest in financially healthy companies as well as reduce its investment in non-healthy ones. Moreover, relationship between net working capital management and operating profitability in different sectors is different. So, the management should use an appropriate strategies to improve company's profitability./.

REFERENCES

[1] Azhar, N., & Noriza, M. (2010). ***Working Capital Management: The Effect of Market Valuation and Profitability in Malaysia***. International Journal of Business and Management, 5 (11), 140-147.

[2] Chatterjee (2010). ***Impact of Working Capital Management on the Profitability of the Listed Companies in the London Stock Exchange***. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1587429

[3] Deloof, M. (2003). ***Does Working Capital Management Affect Profitability of Belgian Firms?*** Journal of Business Finance & Accounting, 30 (3-4), 573-588.

[4] Dong, Huynh Phuong and Jhy-tay Su (2010), ***The Relationship between Working Capital Management and Profitability: A Vietnam Case***, International Research Journal of Finance and Economics, Issue 49, pp.59-67.

[5] Enqvist, Graham, Nikkinen (2012). ***The Impact of Working Capital Management on Firm Profitability in Different Business Cycles: Evident from Finland***. http://papers.ssrn.com/abstract=1794802

[6] Faulkender, M., & Wang, R. (2006). ***Corporate Financial policy and the Value of Cash.*** Journal of Finance (61), 1957-1997.

[7] Filbeck, G., Krueger, T., & Preece, D. (2007). ***CFO Magazine's Working Capital Survey: Do Selected Firms Work for Shareholders?*** Quarterly Journal of Business & Economics, 46 (2), 3-22.

[8] Garcia, Martins and Brandao (2011). ***The Impact of Working Capital Management upon Companies' Profitability: Evidence from European Companies***. FEP Working Papers, n.438, Nov. 2011.

[9] Gill, A., Biger, N., & Neil, M. (2010). ***The Relationship between Working Capital Management and Profitability: Evidence from the United States***. Business and Economics Journal, 10, 1-9.

[10] 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), 26-35.

[11] Mansoori and Muhammad (2012). ***The Effect of Working Capital Management on Firm's Profitability: Evidence from Singapore***. Interdisciplinary Journal of Contemporary Research in Business, Vol. 4. No 5, 472-487.

[12] Nobanee and AlHajjar (2009), ***Working capital management and Firm's Profitability: An optimal Cash Conversion Cycle***" home page, in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1471230

[13] Richards, V., & Laughlin, E. (1980), ***A Cash Conversion Cycle Approach to Liquidity Analysis***, Financial Management, 32-38.

[14] Samiloglo, F., & Demirgunes, K. (2008). ***The Effect of Working Capital Management on Firm Profitability: Evidence from Turkey***. The International Journal of Applied Economics and Finance, 2 (1), 44-50.

[15] Shin, H., & Soenen, L. (1998). ***Efficiency of Working Capital and Corporate Profitability***. Financial Practice and Education, 8 (2), 37-45.

[16] Teruel, P., & Solano, P. (2007). ***Effects of Working Capital Management on SME Profitability***. International Journal of Managerial Finance, 3 (2), 164-177.

[17] Vijaya Kumar, A. (2011). ***Cash Conversion Cycle and Corporate Profitability – An Empirical Enquiry in Indian Automobile Firms***. International Journal of Research in Commerce, IT & Management, 1 (2), 84-91.