

# Working Capital Requirements and the Determining Factors in Pakistan

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*Literature on corporate finance has traditionally focused on the study of long-term financial decisions. Researchers have examined, in particular, the investment decisions, capital structure, dividends or company valuation decisions, among other topics. However, short-term assets and liabilities are important components of total assets and need to be carefully analyzed. Management of these short-term assets and liabilities warrants a careful investigation because working capital management plays an important role in a firm's profitability as well as its value (Smith, 1980). The optimum level of working capital is determined, to a large extent, by the methods adopted by the management. Continuous monitoring is required to maintain optimum levels of various components of working capital, such as cash receivables, inventory and payables. In line with the studies of Afza and Nazir (2007 and 2008), the present study examines the factors that determine the working capital requirements of the firms. For this purpose, a study of 132 manufacturing firms from 14 industrial groups that were listed on Karachi Stock Exchange (KSE) between the period 2004-2007 was undertaken. While the working capital requirement was used as the dependent variable, various financial and economical factors, such as operating cycle of the firm, level of economic activity, leverage, growth of the firm, operating cash flows, firm size, industry, return on assets and Tobin's q, were used as the determining factors of working capital management. Regression analysis was carried out on the panel data for 132 non-financial firms over a period of nine years. Finally, the study suggests some policy implications for the managers and investors of Pakistani markets.*

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## Introduction

The corporate finance literature has traditionally focused on the study of long-term financial decisions, particularly investments, capital structure, dividends or company valuation decisions. However, short-term assets and liabilities are important components of total assets and need to be carefully analyzed. Management of these short-term assets and liabilities warrants a careful investigation, since the working capital management plays an important role in a firm's profitability and risk as well as its value (Smith, 1980). Efficient management of working capital is very essential in the overall corporate strategy in creating shareholder value. Firms try to maintain an optimum level of working capital that maximizes that value (Deloof, 2003; Howorth and Westhead, 2003; and Afza and Nazir, 2007).

In a broader spectrum, from the perspective of a Chief Financial Officer (CFO), working capital management is a simple and straightforward concept of ensuring the ability of the organization to fund the difference between short-term assets and short-term liabilities (Harris, 2005). However, a 'total approach' should be followed which covers all the activities

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of the company relating to vendors, customers and products (Hall, 2002). In practice, working capital management has become one of the most important issues in organizations, where many financial managers are finding it difficult to identify the important drivers of working capital and the optimum level of working capital (Lamberson, 1995). Consequently, companies can minimize risk and improve their overall performance if they can understand the role and determinants of working capital. A firm may adopt an aggressive working capital management policy with a low level of current assets as percentage of total assets, or it may also be used for the financing decisions of the firm in the form of high level of current liabilities as percentage of total liabilities. Excessive levels of current assets may have a negative effect on a firm's profitability, whereas a low level of current assets may lead to lower levels of liquidity and stockouts, resulting in difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2004).

The main objective of working capital management is to maintain an optimal balance among each of the working capital components. Business success heavily depends on the ability of the financial managers to effectively manage receivables, inventory, and payables (Filbeck and Krueger, 2005). Firms can reduce their financing costs and/or increase the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Most of the financial managers' time and efforts are consumed in identifying the non-optimal levels of current assets and liabilities and bringing them to optimal levels (Lamberson, 1995). An optimal level of working capital is the one in which a balance is achieved between risk and efficiency. It requires continuous monitoring to maintain the optimum level of various components of working capital, such as cash receivables, inventory and payables.

In general, current assets are considered as one of the important components of total assets of a firm. A firm may be able to reduce its investment in fixed assets by renting or leasing plant and machinery, whereas the same policy cannot be followed for the components of working capital. The high level of current assets may reduce the risk of liquidity associated with the opportunity cost of funds that may have been invested in long-term assets. The current study explores the various determinants of working capital management by taking into consideration different economic and financial variables relating to the industry. The study is expected to contribute to better understanding of the financial and non-financial firm-related factors that shape the working capital requirements of firms, especially in emerging markets like Pakistan.

## **Literature Review**

Many researchers have studied financial ratios as a part of working capital management; however, very few of them have discussed the working capital policies in specific. Studies by Gupta (1969) and Gupta and Huefner (1972) examined the differences in financial ratio averages among industries. The findings of both the studies were that differences do exist in mean profitability, activity, leverage and liquidity ratios among industry groups. Johnson (1970) extended this work by finding cross-sectional stability of ratio groupings for

both retailers and primary manufacturers. Pinches *et al.* (1973) used the factor analysis to develop seven classifications of ratios and found that the classifications were stable for the period 1951-69.

Filbeck and Krueger (2005) highlighted the importance of efficient working capital management by analyzing the working capital management policies of 32 non-financial industries in the US. Their findings reveal that significant differences exist among industries in working capital practices over time. Moreover, these practices, themselves, change significantly within industries over time. Similar studies were conducted by Gombola and Ketz (1983), Long *et al.* (1993), Soenen (1993) and Maxwell *et al.* (1998).

However, Weinraub and Visscher (1998) have discussed the issue of aggressive and conservative working capital management policies of the US firms by using quarterly data for the period 1984-93. Their study examined 10 diverse industry groups to analyze the relative relationship between their aggressive/conservative working capital policies. The authors concluded that the industries had distinctive and significantly different working capital management policies. Moreover, the relative nature of the working capital management policies exhibited a remarkable stability over the 10-year study period. The study also showed a high and significant negative correlation between industry asset and liability policies. It was found that when relatively aggressive working capital asset policies are followed, they are balanced by relatively conservative working capital financial policies.

In literature, there is a long debate on the risk/return tradeoff between different working capital policies (Pinches, 1991; Brigham and Ehrhardt, 2004; Gitman, 2005; and Moyer *et al.*, 2005). More aggressive working capital policies are associated with higher return and higher risk, while conservative working capital policies are concerned with lower risk and return (Gardner *et al.*, 1986; and Weinraub and Visscher, 1998). Working capital management is important because of its positive effects on the firm's profitability and risk, and consequently its value (Smith, 1980). The greater the investment in current assets, the lower the risk, and also the lower the profitability obtained. Contrary to this, Carpenter and Johnson (1983) provided empirical evidence that there is no linear relationship between the level of current assets and revenue systematic risk of the US firms; however, some indications of a possible nonlinear relationship were found, which were not highly statistically significant.

Soenen (1993) investigated the relationship between the net trade cycle as a measure of working capital and return on investment in the US firms. The results of chi-square test indicated a negative relationship between the length of net trade cycle and return on assets. Furthermore, this inverse relationship was found to be different across industries. A significance relationship for about half of industries studied indicated that results might vary from industry to industry. Another aspect of working capital management was analyzed by Lamberson (1995) who studied how small firms respond to changes in economic activities by changing their working capital requirements and the level of current assets and liabilities. Current ratio, current assets to total assets ratio, and inventory to total assets ratio were used as a measure of working capital, while the index of annual average coincident economic

indicator was used as a measure of economic activity. Contrary to expectations, the study found that there is very little relationship between changes in economic conditions and changes in working capital.

In order to validate the results of Soenen (1993) on large sample and with longer time period, Jose *et al.* (1996) examined the relationship between aggressive working capital management and profitability of the US firms, using the Cash Conversion Cycle (CCC) as a measure of working capital management, where a shorter CCC represents the aggressiveness of working capital management. The results indicated a significant negative relationship between the cash conversion cycle and profitability, indicating that more aggressive working capital management is associated with higher profitability. Shin and Soenen (1998) concluded that reducing the level of current assets to a reasonable extent increases the firms' profitability. Deloof (2003) analyzed a sample of large Belgian firms for the period 1992-96 and the results confirmed that Belgian firms can improve their profitability by reducing the inventories and the outstanding period of accounts receivables. Teruel and Solano (2005) also suggested that managers can create value by reducing the firms' outstanding period of accounts receivables, and inventories. Similarly, shortening the cash conversion cycle also improves the firm's profitability.

In the Pakistani context, Rehman (2006) investigated the impact of working capital management on the profitability of 94 Pakistani firms listed on the Islamabad Stock Exchange (ISE) for the period 1999-2004. He studied the impact of different variables of working capital management, including average collection period, inventory turnover in days, average payment period, and CCC on the net operating profitability of firms. His study concluded that there is a strong negative relationship between working capital ratios and profitability of firms. Furthermore, managers can create a positive value for the shareholders by reducing the CCC up to an optimal level. Similar studies on working capital and profitability include: Smith and Begemann (1997), Howorth and Westhead (2003), Eljelly (2004), Ghosh and Maji (2004), and Lazaridis and Tryfonidis (2006).

Chiou and Cheng (2006) analyzed the determinants of working capital management from a different angle. Their study examined how working capital management of a firm is influenced by different variables, such as business indicators, industry effect, operating cash flows, growth opportunity for a firm, firm performance, and size of the firm. The study provided consistent results of leverage and operating cash flow for both net liquid balance and working capital requirements; however, variables such as business indicator, industry effect, growth opportunities, firm performance, and size of the firm were unable to produce consistent results for net liquid balance and working capital requirements of firms.

Finally, Afza and Nazir (2007) investigated the relationship between the aggressive/conservative working capital policies for 17 industrial groups and a large sample of 263 public limited companies listed on KSE for the period 1998-2003. Using ANOVA and LSD test, the study found significant differences among their working capital requirements and financing policies across different industries. Moreover, rank order correlation confirmed that these

significant differences were remarkably stable over the six-year study period. Finally, Ordinary Least Square (OLS) regression analysis found a negative relationship between the profitability of firms and the degree of aggressiveness of working capital investment and financing policies. The current study, following Chiou and Cheng (2006), analyzes the various factors that determine the working capital requirements of non-financial firms in Pakistan.

## Methodology

### Sample and Data

The sample included only non-financial firms listed on the KSE. The KSE has divided the non-financial firms into various industrial sectors based on their nature of business. The number of firms in these industrial sectors varies from 6 to 37, with the exception of textile composite and textile spinning sectors having 62 and 157 firms respectively. Only those firms which were doing business during the entire study period were included in the sample. Another criterion applied was that the firms should neither have been delisted by the KSE nor merged with any other firm during the study period. Incumbent firms during the study period were also not included in the sample. Furthermore, firms must have complete data for the period 2004-07, which reduced the final sample to 132 non-financial firms from 14 various industrial sectors. While the required financial data was obtained from the annual reports of the firms listed on the KSE, data regarding economic variables was collected from *The Economic Survey of Pakistan* published by the Federal Ministry of Finance.

### Variables and Model of the Study

The study examines the determinants of the working capital requirements of a firm. Working Capital Requirements (WCR\_TA) were included as a dependant variable, as used by Shulman and Cox (1985), as a measure of working capital management (cash and equivalents + marketable securities + inventories + accounts receivables) – (accounts payables + other payables). Working capital requirements are deflated by total assets to control the size effect. The independent variables include: Operating Cycle (OC), Operating Cash Flows (OCF\_TA), level of Economic Activity in the country (EA), Growth, Return on Assets (ROA), Tobin's  $q$  (Q), Leverage (Lev), Size and industry dummy (IndDum). The operating cycle is the sum of days in inventory and days in accounts receivables. Operating cash flows are the cash flows generated from the routine operations of the firm and obtained directly from the cash flow statement as well as deflated by total assets. Further, as changes in economic conditions may also affect the management efficiency of the firm (Lamberson, 1995), real annual GDP growth rate was taken as a measure of changes in the level of economic activity. Growth is firm's sales variability measured by changes in annual sales. Return on assets was measured by dividing the net income of the firm by the total assets. Tobin's  $q$  is a market measure of performance used as proxy for the stock market return. Q is measured as the sum of book value of total debt plus market value of equity divided by the book value of total assets of the firm. Leverage is total debt to total assets ratio for the firms. Size is the natural log of total assets of firm,

whereas IndDum is used as industry code. The study uses panel data for the period 2004-07 and an OLS regression model to estimate the determinants of working capital. The model is as follows:

$$WCR\_TA_i = \alpha + \beta_1 OC_i + \beta_2 OCF\_TA_i + \beta_3 EA_i + \beta_4 Growth_i + \beta_5 ROA_i + \beta_6 Q_i + \beta_7 Lev_i + \beta_8 LNSize_i + \beta_9 IndDum_i$$

where,

$WCR\_TA_i$  = Working capital requirements deflated by total assets for firm  $i$

$OC_i$  = Operating cycle in days of firm  $i$

$OCF\_TA_i$  = Operating cash flows deflated by total assets of firm  $i$

$EA_i$  = Level of economic activity, i.e., real GDP growth rate

$Growth_i$  = Sales Growth of firm  $i$

$ROA_i$  = Return on assets for firm  $i$

$Q_i$  = Tobin's  $q$  of firm  $i$

$Lev_i$  = Leverage as measured by debt to total assets ratio of firm  $i$

$LNSize_i$  = Natural log of total assets as proxy for the size for firm  $i$

$IndDum_i$  = Industry Dummy for firm  $i$

### Descriptive Analysis

Table 1 reports some descriptive statistics of the sample of the study. The working capital requirements variable has a mean value of Rs. 66.19 mn which is the highest in 2004 and the lowest in 2006. The positive and high values of WCR indicate that companies are maintaining a relatively loose policy regarding their working capital management. In the prosperous period of high GDP growth and economic activity, the working capital ratio is quite high as compared to the ratios in other years. Operating cash flows are negative during the year 2005 in which

Table 1: Descriptive Statistics									
	WCR	OC	OCF	EA	Growth	ROA	Q	Lev	Size
<b>Total Sample</b>									
Mean	66.19	162.99	304.54	7.51	33.35	5.25	1.24	0.612	35,647.99
SD	1,996.3	449.85	11,581	0.89	324.79	11.27	0.53	0.188	58,468.86
<b>Means by Year</b>									
2004	184.91	136.41	747.45	7.48	11.90	5.95	1.25	0.609	5,412.132
2005	23.63	172.56	-1,116	8.96	29.20	6.01	1.35	0.615	6,163.30
2006	3.76	191.01	843.94	6.60	75.52	5.32	1.24	0.600	7,676.64
2007	52.43	151.97	742.90	7.00	16.77	3.72	1.13	0.598	1,23,339.91

working capital ratio was also quite low, whereas the performance of the industries in terms of ROA was the highest. This period indicates the efficient management of working capital. Firm size increased with the passage of time and registered an extraordinary increase in 2007—up to Rs. 123,339.91 mn. The market performance of firms (Tobin's *q*) also increased during the study period.

### Empirical Results

The OLS regression results, reported in Table 2, were obtained using Statistical Package for Social Sciences (SPSS). The *F*-value of the model is statistically significant at 1% level. The Durbin-Watson (D-W) value of 1.934 indicates less autocorrelation among the independent variables of the model. The OLS includes the dependent variable of working capital requirements being influenced by various economic and financial variables related to the firm. Industry effect, which is prevalent in Pakistan, is found significantly influencing the working capital management practices of non-financial firms operating in different sectors. The working capital requirements are different in different industries in Pakistan, and industries have distinctive working capital management policies as per their requirements. Operating Cycle (OC) was used to measure the working capital management efficiency of firms. The relationship between OC and WCR\_TA is positive and statistically significant at 5% level of significance. The higher the days of operating cycle, the more working capital would be required by the firm as operative necessity. If firms want to reduce their investment

Variables	Coefficient	<i>t</i> -values	Sig.
<i>Constant</i>	–	–1.637	0.102
<i>OC</i>	0.077	2.203	0.028**
<i>OCF_TA</i>	0.032	0.937	0.349
<i>EA</i>	0.027	0.790	0.430
<i>Growth</i>	0.024	0.683	0.495
<i>ROA</i>	0.136	3.532	0.000***
<i>Q</i>	0.093	1.951	0.093*
<i>Lev</i>	–0.524	–13.961	0.000***
<i>Size</i>	–0.025	–0.707	0.480
<i>IndDum</i>	0.101	2.604	0.009***
<i>N</i>	528		
<i>D-W</i>	1.934		
<i>R</i> <sup>2</sup>	0.396		
<i>F</i> -Value	37.77***		
<b>Note:</b> Dependent Variable: Working Capital Requirements ( <i>WCR_TA</i> ); *, ** and *** Significant at 10%, 5% and 1% levels respectively.			

in working capital, in order to capitalize some profitable projects, the operating cycle needs to be optimized.

Tobin's  $q$  is positively affecting the requirements of working capital of the firms, indicating that efficient management of working capital is associated with the stock market performance of the KSE. Investors in stock markets prefer firms which have more working capital requirements. These results are consistent with that of Afza and Nazir (2007) that investors are concerned with the firm's ability to repay its liabilities with higher working capital ratios. As the market value of a firm increases, the managers increase the working capital requirements to meet the investors' expectations about a more liquid firm. Return on Assets (ROA) has shown a positive relationship, confirming again our earlier study of Afza and Nazir (2008) and Wu (2001) that firms with higher profits are less concerned with efficient management of working capital.

Leverage of a firm is strongly and negatively related to the working capital management of a firm, indicating that with a rising debt to total assets ratio, the firms are supposed to pay more attention to efficient management of working capital to avoid much capital being tied up in accounts receivables and inventories. So, companies with an increasing debt to total assets ratio (high leverage) show lower working capital requirements. That is in accordance with the Pecking Order theory. The other variables included in the regression models were: Operating Cash Flows (OCF\_TA), Economic Activity (EA), and Growth and Size (LNSize). Contrary to the findings of Chiou and Cheng (2006), OCF\_TA is positively associated with the working capital requirements, though it is not statistically proved. Level of economic activity is not found to have any significant effect on working capital management practices of firms in Pakistan, which is consistent with Lamberson (1995), who proved that the response of the firms to change their working capital requirements with changes in economic conditions is not significant. Further, the study is unable to find any statistically significant relationship between the working capital requirements and size of the firms and sales growth.

## Conclusion

Working capital management is highly important in firms as it is used to generate higher returns for the stakeholders; however, it has not elicited much attention from researchers and practitioners. When the working capital requirements are not properly managed and are allocated more than required, it renders the management inefficient and reduces the benefits of short-term investments. On the other hand, if the working capital is too low, the company may miss a lot of profitable investment opportunities or suffer short-term liquidity crisis, leading to the degradation of company credit, as it cannot respond effectively to temporary capital requirements. There may be various external and internal factors that may induce the firms to strike a balance between meeting unforeseen capital requirements and avoiding inefficient management of capital. The present study uses some of those external and internal factors to explore the determinants of working capital requirements of a firm. The study used operating cycle, operating cash flows, leverage, size, ROA, Tobin's  $q$  and growth as internal company-related factors, and Industry dummy and level of economic activity as external



macroeconomic factors. The study finds that operating cycle, leverage, ROA and Tobin's  $q$  are the internal factors which are influencing the working capital requirements significantly. The working capital management practices are also related to the industry, and different industries are following different working capital requirements. These results are in accordance with the earlier studies of Lamberson (1995), Chiou and Cheng (2006), and Afza and Nazir (2007 and 2008). A few of the findings of the present study are in contradiction to some of the earlier studies on the issue. This phenomenon may be attributed to the developing market of Pakistan. Future research could further explore the reasons for this contradiction. ▲

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## References

1. Afza T and Nazir M S (2007), "Is it Better to be Aggressive or Conservative in Managing Working Capital?", *Journal of Quality and Technology Management*, Vol. 3, No. 2, pp. 11-21.
2. Afza T and Nazir M S (2008), "Working Capital Management Policies of Firms: Empirical Evidence from Pakistan", *Pakistan Journal of Commerce and Social Sciences*, Vol. 1, No. 1, pp. 25-36.
3. Brigham E F and Ehrhardt M C (2004), *Financial Management: Theory and Practice*, 11<sup>th</sup> Edition, South-Western College Publishers, New York.
4. Carpenter M D and Johnson K H (1983), "The Association Between Working Capital Policy and Operating Risk", *Financial Review*, Vol. 18, No. 3, pp. 106-106.
5. Chiou J R and Cheng L (2006), "The Determinants of Working Capital Management", *Journal of American Academy of Business*, Vol. 10, No. 1, pp. 149-155.
6. Deloof M (2003), "Does Working Capital Management Affect Profitability of Belgian Firms?", *Journal of Business, Finance and Accounting*, Vol. 30, Nos. 3-4, pp. 573-587.
7. Eljelly A M A (2004), "Liquidity-Profitability Tradeoff: An Empirical Investigation in an Emerging Market", *International Journal of Commerce and Management*, Vol. 14, No. 2, pp. 48-61.
8. Filbeck G and Krueger T (2005), "Industry Related Differences in Working Capital Management", *Mid-American Journal of Business*, Vol. 20, No. 2, pp. 11-18.
9. Gardner M J, Mills D L and Pope R A (1986), "Working Capital Policy and Operating Risk: An Empirical Analysis", *Financial Review*, Vol. 21, No. 3, p. 31.
10. Ghosh S K and Maji S G (2004), "Working Capital Management Efficiency: A Study on the Indian Cement Industry", *Management Accountant*, Vol. 39, No. 5, pp. 363-372.
11. Gitman L A (2005), *Principles of Managerial Finance*, 11<sup>th</sup> Edition, Addison Wesley Publishers, New York.

12. Gombola M J and Ketz J E (1983), "Financial Ratio Patterns in Retail and Manufacturing Organizations", *Financial Management*, Vol. 12, No. 2, pp. 45-56.
13. Gupta M C (1969), "The Effect of Size, Growth and Industry on the Financial Structure of Manufacturing Companies", *Journal of Finance*, Vol. 24, No. 3, pp. 517-529.
14. Gupta M C and Huefner R J (1972), "A Cluster Analysis Study of Financial Ratios and Industry Characteristics", *Journal of Accounting Research*, Vol. 10, No. 1, pp. 77-95.
15. Hall C (2002), "Total Working Capital Management", *AFP Exchange*, Vol. 22, No. 6, pp. 26-32.
16. Harris A (2005), "Working Capital Management: Difficult, But Rewarding", *Financial Executive*, Vol. 21, No. 4, pp. 52-53.
17. Howorth C and Westhead P (2003), "The Focus of Working Capital Management in UK Small Firms", *Management Accounting Research*, Vol. 14, No. 2, pp. 94-111.
18. Johnson C G (1970), "Ratio Analysis and the Prediction of Firm Failure: Comment", *Journal of Finance*, Vol. 25, No. 5, pp. 1166-1168.
19. Jose M L, Lancaster C and Stevens J L (1996), "Corporate Returns and Cash Conversion Cycle", *Journal of Economics and Finance*, Vol. 20, No. 1, pp. 33-46.
20. Lamberson M (1995), "Changes in Working Capital of Small Firms in Relation to Changes in Economic Activity", *Mid-American Journal of Business*, Vol. 10, No. 2, pp. 45-50.
21. Lazaridis I and Tryfonidis D (2006), "Relationship Between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange", *Journal of Financial Management and Analysis*, Vol. 19, No. 1, pp. 26-35.
22. Long M S, Malitz I B and Ravid S A (1993), "Trade Credit, Quality Guarantees, and Product Marketability", *Financial Management*, Vol. 22, No. 4, pp. 117-127.
23. Maxwell C E, Gitman L J and Smith S A M (1998), "Working Capital Management and Financial-Service Consumption Preferences of US and Foreign Firms: A Comparison of 1979 and 1996 Preferences", *Financial Practice and Education*, Vol. 8, No. 2, pp. 46-52.
24. Moyer R C, McGuigan J R and Kretlow W J (2005), *Contemporary Financial Management* 10<sup>th</sup> Edition, South-Western College Publication, New York.
25. Pinches G E (1991), *Essentials of Financial Management*, 4<sup>th</sup> Edition, HarperCollins College Division, New York.
26. Pinches G E, Mingo K A and Caruthers J K (1973), "The Stability of Financial Patterns In Industrial Organizations", *Journal of Finance*, Vol. 28, No. 2, pp. 389-396.
27. Rehman A (2006), "Working Capital Management and Profitability: Case of Pakistani Firms", Unpublished Dissertation, COMSATS Institute of Information Technology, Islamabad, Pakistan.

28. Shin H H and Soenen L (1998), "Efficiency of Working Capital and Corporate Profitability", *Financial Practice and Education*, Vol. 8, No. 2, pp. 37-45.
29. Shulman J M and Cox R A K (1985), "An Integrative Approach to Working Capital Management", *Journal of Cash Management*, Vol. 5, No. 6, pp. 64-68.
30. Smith K (1980), *Profitability versus Liquidity Tradeoffs in Working Capital Management, in Readings on the Management of Working Capital*, West Publishing Company, New York.
31. Smith M B and Begemann E (1997), "Measuring Association Between Working Capital and Return on Investment", *South Africa Journal of Business Management*, Vol. 28, No. 1, pp. 1-5.
32. Soenen L A (1993), "Cash Conversion Cycle and Corporate Profitability", *Journal of Cash Management*, Vol. 13, No. 4, pp. 53-58.
33. Teruel P J G and Solan P M (2005), "Effects of Working Capital Management on SME Profitability", *International Journal of Managerial Finance*, Vol. 3, No. 2, pp. 164-177.
34. Van Horne J C and Wachowicz J M (2004), *Fundamentals of Financial Management*, 12<sup>th</sup> Edition, Prentice Hall Publishers, New York.
35. Weinraub H J and Visscher S (1998), "Industry Practice Relating to Aggressive Conservative Working Capital Policies", *Journal of Financial and Strategic Decision*, Vol. 11, No. 2, pp. 11-18.
36. Wu Q A (2001), "The Determinants of Working Capital Management Policy and Its Impact on Performance", National Science Council Project, Taiwan, Project No. NSC 89-2416-H-224-028.

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