Journal of Advances in Science and Technology

Vol. VI, Issue No. XI, November-2013, ISSN 2230-9659

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AN INTERNATIONALLY INDEXED PEER REVIEWED & REFEREED JOURNAL

www.ignited.in

Journal of Advances in Science and Technology
Vol. VI, Issue No. XI, November-2013, ISSN 2230-9659

A Study on the Impact of Working Capital Management Practices on Firms Profitability

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Abstract – Working capital management is a very important aspect of corporate Finance. The study has been undertaken to examine the management of finance playing a crucial role in the growth. It is concerned with examining the structure of liquidity position and profitability position of ten top computers –software companies in India such as TCS, Wipro, Infosys, HCL Techno, and Techno. Mahindra, Oracle Fin Service, Mind tree, Polaris Tech., L&T InfoTech., Persistent. The research design followed for this study is descriptive research of the working capital management of the above sectors. For analyzing the data, an in depth research analysis and various statistical tools and techniques were used. The data for analysis is collected from the financial statements published in the annual reports. It was found that the study of working capital management of the company is very effective and also the firm has to maintain the liquidity and solvency position to repay its obligations in time.

The purpose of this paper is to examine the trends in working capital management and its impact on firms' profitability. The dependent variable, return on total assets (ROTA) is used as a measure of profitability and the relation between working capital management is investigated for a sample of 10 computer-software companies data analysis for the period 2009-2013.

Key words: working capital management, inventory, profitability, corporate finance.

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INTRODUCTION

The real world fact is characterized by considerable amount of uncertainty regarding the demand, market price and availability of suppliers. There are transaction costs for purchasing or selling goods or securities. Information is costly to obtain and is not equally distributed. There are spreads between the borrowing and lending rates for investments and financing of equal risk. Similarly each organization is faced with its own limits on the production capacity and technology it can employ. There are fixed as well as variable costs associated with producing goods. Above problems necessitate the requirement for working capital.

Working capital management is the functional area of finance that covers all the current accounts of the firm. Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. A firm is required to maintain a balance between liquidity and profitability while conducting its day to day operations. Liquidity is a precondition to ensure that firms are able to meet its short-term obligations and its continued flow can be guaranteed from a profitable venture. The importance of cash as an indicator of continuing financial health should not be surprising in view of its crucial role within the business. The goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and upcoming operational expenses. The management of working capital involves managing inventories, accounts and accounts payable and cash.

The basic objective of financial management is to maximize shareholders wealth. This objective can be achieved when the company earns sufficient profits. The amount of profits largely depends on the magnitude of sales. But, sales do not convert into cash instantly. There is a time lag between the sale of goods and the receipt of cash. Working capital is required to purchase the materials, pay wages and other expenses in order to sustain sales activity. The time gap between the sale of goods and realization of cash is called operating cycle.

A firm can be very profitable if it can translate the cash from operations within the same operating cycle, otherwise the firm would need to borrow to support its continued working capital needs. Thus, the twin of profitability and liquidity must be synchronized. Investments in current assets are inevitable to ensure delivery of goods or services to the ultimate customers and a proper management of same should give the desired impact on either profitability or liquidity. If resources are blocked at the different stage of the supply chain, this will prolong the cash operating cycle. Although this might increase profitability (due to increase sales), it may also adversely affect the profitability if the costs tied

up in working capital exceed the benefits of holding more inventory and/or granting more trade credit to customers.

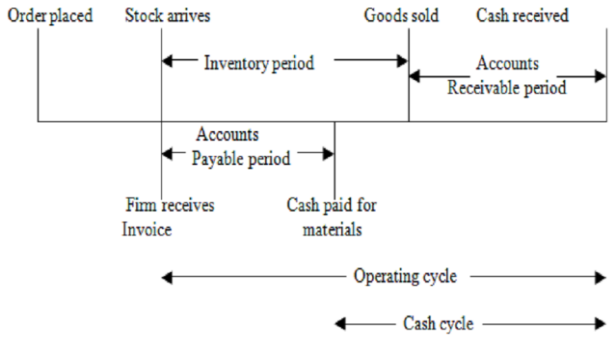

Figure 1: Working capital cycle

1.1 Objectives of the Study:

The study objectives are to examine the working capital management of sample firms, and in particular:

1. To study the combined effect of the ratios relating to working capital management.

2. To analyze the relationship between the WCM efficiency and firm's profitability and liquidity.

The organization of paper is as follows: Section 2 looks briefly at the relevant literature. The methodological part and the explanatory variables used for the analysis part are dealt in Section 3. The data analysis is discussed in Section 4 and Section 5 concludes on the results.

2. LITERATURE REVIEW

Many researchers have studied working capital from different views and in different environments. The following are very interesting and useful for our research:

Smith and Begemann 1997 emphasized that working capital theory comprised of shared goals of profitability and liquidity. The problem was because the maximization of the firm's returns could seriously threaten its liquidity, and the pursuit of liquidity had a tendency to dilute the returns. The problem under investigation was to establish whether the more recently developed alternative working capital concepts showed improved association with return on investment to that of traditional working capital ratios or not. Results indicated that there were no significant differences amongst the years with respect to the independent variables. The study conducted by De Chazal Du Mee (1998) revealed that 60% enterprises suffer from cash flow problems. The pioneer work of Shin and Soenen (1998) and the study of Deloof (2003) have found a strong significant relationship between the measures of WCM and corporate profitability. Their findings suggest that managers can increase profitability by reducing the number of day's accounts receivable and inventories. This is particularly important for small growing firms who need to finance increasing amounts of debtors. Narasimhan and Murty (2001) stress on the need for many industries to improve their return on capital employed (ROCE) by focusing on some critical areas such as cost containment, reducing investment in working capital and improving working capital efficiency. S.K. Khathik & P.K.Singh (2003) made a study on working capital management in Indian Farmers Fertilizer Cooperative Limited. For this, they employed several statistical tools on different ratios, to examine the effective management of working capital. It was concluded that the overall positions of the working capital of IFFCO are satisfactory but there is a need of improvement in inventory. Ghosh and Maji, 2003 In this paper made an attempt to examine the efficiency of working capital management of the Indian cement companies during 1992 – 1993 to 2001 – 2002. For measuring the efficiency of working capital management, performance, utilization and overall efficiency indices were calculated instead of using some common working capital management ratios. Findings of the study indicated that the Indian Cement Industry as a whole did not perform remarkably well during this period. Eljelly, 2004 elucidated that efficient liquidity management involves planning and controlling current assets and current liabilities in such a manner that eliminates the risk of inability to meet due short-term obligations and avoids excessive investment in these assets. The relation between profitability and liquidity was examined, as measured by current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in Saudi Arabia using correlation and regression analysis. The study found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. Kesseven Padachi (2006) in his study found that high investment in inventory and receivables was associated with low profitability. It was also found that a strong significant relationship existed between working capital management and profitability of Mauritian small manufacturing firms. Vishnani and Shah (2007) from their study on Indian consumer electronic industry discovered that profitability for the overall industry had no recognized relationship with liquidity, but majority of the companies belonging to this industry showed a positive association for profitability and liquidity. F. Samiloglu and K. Demirgunes (2008) in their study analyzed the effect of working capital management on firm profitability. In accordance with this aim, to consider statistically significant relationship between firm profitability and the components of cash conversion cycle at length, a sample consisting of Istanbul Stock Exchange (ISE) listed manufacturing firms for the periods of 1998-2007 has been analyzed under a multiple regression model empirical findings of the study show that the accounts receivables periods, inventory period and leverage affect firm profitability negatively while growth (in sales) affects firms profitability positively. Uyar (2009) analyzed a

sample of 166 Turkish companies to predict the nature of relationship of profitability and size of the firms with Cash Conversion cycle. The result demonstrated that profitability and size of the firms both are negatively related with Cash Conversion Cycle. Hasan Agan Karadumam et.al. (2010) in the study found that the return on asset was increased by the efficient management of receivable. It also found positive effect of companies' size on profitability and negative effect of debt ratio on profitability of select companies in Istanbul Stock Exchange. Melita Stephnou Charitou et al. (2010) found that the cash conversion cycle and all its major components of working capital of firms listed in Cyprus Stock Exchange were positively associated with profitability. Amalendu Bhunia and Islam Uddin khan (2011) found lower degree of association between working capital management and profitability of Indian steel industry.

All the above studies provide us a solid base and give us idea regarding working capital management and its components. They also give us the results and conclusions of those researches already conducted on the same area for different countries and environment from different aspects. On the basis of these researches done in different countries, we have developed our own methodology for research.

3. RESEARCH METHODOLOGY:

The primary aim of this paper is to investigate the impact of WCM on corporate profitability of Indian top computers-software companies. The data has been collected from the financial statements of the sample firms having a legal entity and have filed their annual return to the Registrar of Companies. Data for 5 years from 2009 – 2013 has been considered.

3.1 Data Set & Sample: (Variables)

This study undertakes the issue of identifying key variables that influence working capital management of Indian computer companies. Choice of the variables is influenced by the previous studies on working capital management. The variables used in the study are:

(i) Current ratio establishes the relationship between Current assets and Current liabilities. Normally, high current ratio is considered to be a sign of financial strength. It is the indicator of the firm's ability to promptly meet its short term liabilities. Bankers in India have used a norm of1.33.

(ii) Quick ratio establishes a relationship between quick or liquid assets and current Liabilities. An asset is liquid if it can be converted into cash immediately or reasonably soon without a loss of value. Cash is the most liquid asset. It is also known as acid test Ratio.

(iii)Net Current assets to total assets ratio establishes a relationship between current assets and total assets. This ratio indicates the extent of total funds invested for working capital purpose.

(iv) Working capital turnover ratio represents how effectively the working capital is utilized. Working capital turnover ratio is relationship between cost of sales and net working capital.

(v) Inventory turnover ratio is the number of times inventory turned over in a year. It is the relationship between cost of goods sold and average inventory at cost.

(vi) Cash position ratio is the relationship between absolute liquid assets and current liabilities. The purpose of preparing this ratio is to find out the absolute liquidity position. The standard norm is 0.5: 1

(vii) Return on total assets [ROTA] Profitability is measured by Return on Total Assets (ROTA). It is the ratio which measures company's earnings before interest and taxes (PBIT) against its total net assets. The ratio is considered as an indicator of how effectively a company uses its assets to generate earnings before meeting contractual obligations. The greater the company's earnings in proportion to its assets, the more effectively the company is said to be using its assets.

The formulae for calculating all the above variables are listed in Appendix 1

3.2 Correlation Analysis: Correlation analysis attempts to determine the degree and direction of relationship between two variables under study. In a bivariate distribution, if the variables have the cause and effect relationship, they have high degree of correlation between them. The coefficient of correlation is denoted by "r". The correlation is studied using Karl Pearson's correlation formula and Spearman's rank correlation

(Karl Pearson's correlation formula)

$$r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{N\sum X^2 - (\sum X)^2} \times \sqrt{N\sum Y^2 - (\sum Y)^2}}$$

(Spearman's rank correlation)

$$R = 1 - \frac{6\Sigma D^2}{N(N^2-1)}$$

DATA ANALYSIS AND INTERPRETATION

TABLE 1: Comparison of Components of Current Assets and liquidity ratios for various computers companies between periods 2009 and 2013

COMPANIES/RATIOS	C.R		Q.R		NCA/TA		NCA/NS		WCTR		ITR		CPR	
YEARS	2009	2013	2009	2013	2009	2013	2009	2013	2009	2013	2009	2013	2009	2013
TCS	1.83	2.85	1.83	2.88	0.59	0.31	0.19	0.4	5.34	2.47	1322	7638	1.27	1
Wipro	1.1	1.55	1.76	2.02	0.35	0.46	0.28	0.39	0.5	2.53	56.2	104	1.19	1.5
Infosys	4.71	4.75	4.67	4.69	0.69	0.72	0.61	0.71	0.64	1.41	-	-	0.54	3.55
HCL Techno	1.5	1.82	1.71	1.76	0.54	0.4	0.46	0.35	2.16	2.87	53.7	153	0.27	1.34
Techno Mahindra	1.9	0.95	1.88	1.32	0.42	0.14	0.18	0.12	5.56	8.2	3352	-	1.09	2.07
Oracle Fin Service	4.46	6.98	4.42	6.91	0.69	0.85	1.11	2.1	0.9	0.48	-	-	1.21	5.56
Mind tree	1.43	2.39	1.38	2.59	0.17	0.44	0.11	0.25	8.79	3.97	-	-	1.23	1.56
Polaris Tech	1.98	1.41	1.98	1.73	0.3	0.29	0.18	0.18	5.6	5.36	-	-	1.69	0.95
L & T Info Tech	2.58	3.89	3.09	3.88	0.47	0.53	0.59	0.59	1.67	1.68	-	-	1.1	2.9
Persistent	1.85	3.45	1.81	3.36	0.18	0.29	0.14	0.29	7.32	3.34	-	-	1.36	3.42

Source: Data collected and compiled from Annual Reports

FINDINGS:

From the analysis of each component of working capital, some interesting trends can be deduced.

- The ideal ratio for CR is 2:1. An increase in CR represents that there is improvement in liquidity position of the firm and has ability to meet its current obligations. Infosys, Oracle Fin. Ser., L&T Info Tech have high and desirable liquidity position. The CR of all companies has increased except Techno. Mahindra and Polaris Tech.

- The standard quick ratio is 1:1. It is comparatively high in all computers companies which show sound short term position to meet its short obligations.

- The NCA/TA ratio and NCA/NS ratio is almost stable for all companies over all the years.

- WCTR indicates the velocity of utilization of working capital. This ratio indicates the number of times the working capital is turned over in the course of a year. Higher ratio indicates efficient utilization of working capital and lower ratio indicates otherwise. Wipro, Infosys,HCL Techno, Techno. Mahindra have increased their WCTR while there is a downfall in other companies.

- ITR is very high in case of TCS, Wipro and HCL Techno. Indicating high efficiency of management, while other companies have relatively low ITR almost zero ITR.

- High CPR signifies that the liquidity is high and the company can meet its obligation. Infosys, techno .Mahindra, Oracle Fin Ser.,L&TInfo Tech. and Persistent have the high CPR, as these companies require high liquidity to meet the changing market demands. While remaining companies have a CPR relatively stable.

TABLE 2: The following table shows rank correlation between liquidity and profitability for selected companies.

COMPANIES	CURRENT RATIO(CR)		ROTA (%)		(R1-R2)	
	CR	RANK	%	RANK	D	D^2
TCS	2.85	5	50.5	1	4	16
Wipro	1.55	8	29.2	6	2	4
Infosys	4.75	2	36.9	3	-1	1
HCL Technologies	1.82	7	46.6	2	5	25
Tech.Mahindra	0.95	10	20.4	10	0	0
Oracle Fin. Ser	6.98	1	21.4	8	-7	49
Mind tree	2.39	6	36.38	4	2	4
Polaris Tech.	1.41	9	21.06	9	0	0
InfoTech Enterprises	3.89	3	27.54	7	-4	16
Persistent System	3.45	4	30.4	5	-1	1
					$\Sigma D^2 = 116$	

r = 0.2969

H0: *Null hypothesis*

There is no significant relationship between the ranked data of Current Ratio and ROTA, of different sectors towards measuring liquidity and profitability

H1: *Alternative hypothesis*

There is significant relationship between the ranked data of Current Ratio and ROTA, of different sectors towards measuring liquidity and profitability.

α= 0.05 level of significance for testing these hypothe

Student's t- distribution:

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

Calculated value of t=.879

Table value = 2.262

CONCLUSION: -

The computed value of t (.879) is less than the critical value of t (2.262). Hence the Null hypothesis is accepted which means *there is a no significant correlation between Liquidity and profitability among different selected companies.*

FINDINGS: -

This table shows the relationship between current ratio and ROTA. The relationship between liquidity and profitability is determined by computing rank correlation coefficient. An application is also been made to test whether the computed value of such correlation coefficient is significant or not, using **Student's'** test. The current ratio is considered as the liquidity indicator and the ROTA has been taken as

the profitability parameter. This relationship between two variables is represented as the correlation coefficient being 0.2969, and is a positive correlation. The t-test proves that the correlation coefficient between CR and ROTA is *statistically insignificant* because critical value is more than the actual calculated value i.e. .879<2.262. It is therefore concluded that the liquidity and profitability of the selected computers-software companies move in the same direction ,but does not influence one another to a greater degree.

TABLE 3: The following table shows simple correlation analysis between selected ratios relating to Working capital management and Profitability for 10 computer companies

		WCTR	CATNS	CATTA	ITR	CPR	ROTA
WCTR	Pearson	1					
	Correlation						
	sig.(2-tailed)						
	N	10					
CATNS	Pearson	-0.650*	1				
	Correlation						
	sig.(2-tailed)	2.419					
	N		10				
CATTA	Pearson	-0.824*	0.842*	1			
	Correlation						
	sig.(2-tailed)	4.113	4.414				
	N			10			
ITR	Pearson	-0.611	0.650*	-0.919*	1		
	Correlation						
	sig.(2-tailed)	2.182	2.419	6.59			
	N				10		
CPR	Pearson	-0.502	0.830*	0.722*	-0.951*	1	
	Correlation						
	sig.(2-tailed)	1.641	4.208	2.951	8.698		
	N					10	
ROTA	Pearson	-0.324	-0.236	-0.052	0.645*	-0.392	1
	Correlation						
	sig.(2-tailed)	0.968	0.686	0.147	2.387	1.205	
	N						10

*Correlation is significant at the 0.05 level (2-tailed)

FINDINGS: -

The above table shows the correlation coefficient between ROTA and WCR is (-) 0.324. It indicates that there is a lower degree of negative association between the profitability and the net working capital ratio of the company. The correlation coefficient is found to be insignificant at 5 percent level. When net working capital increases, the WCR decreases and therefore increasing ROTA.

The correlation coefficient between ROTA and CATNS is (-) 0.236. It reflects a lower degree of negative association between the two variables. Lower the current assets to sales ratio, the greater the efficiency of the working capital and wide scope of profitability. The correlation coefficient between CATTA and ROTA is (+) 0.052. It indicates that there is a lower degree of positive correlation between these two variables and the value of the correlation coefficient is found to be insignificant.

The correlation coefficient between ROTA and ITR is found to be 0.645. It is a moderate degree of positive correlation between these variables. Increase in inventory ratio indicates the higher efficiency of the management and also a decrease in ITR indicates inefficiency of the management in managing Inventory. The correlation coefficient between ROTA and CPR is (-) 0. 392. It indicates that there is a lower degree of negative association. With the increase in cash position, the firm can meet its current liabilities and excess of cash can be invested in marketable securities which can be liquidated easily in later stages.

5. CONCLUSION:

It is the duty of the finance manager to maintain working capital at the optimum level by maximizing the profitability without impairing the liquidity of the concern. Analyzing working capital trends brings out certain important trends in the working capital.

The ROTA equation shows that positive and negative influences of variations in the independent variables on the profitability of the company. Out of the seven ratios namely WCTR, CATNS, CATTA, ITR, CPR, CR, only ITR has positive influence on ROTA and the remaining has negative correlation with ROTA.

The study shows that there is disproportionate and inadequate increase in the profitability of the company for a decrease in working capital.

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APPENDIX - 1 - Explanatory variables – Financial Ratios

Formulae to calculate the variables:

1. Quick Ratio (QR) = (Current assets inventories)/Current liabilities

2. Current Ratio (CR) = Total current assets/Current liabilities

3. NCA / TA = (CATTA) = Net current assets/ Total assets

4. NCA / NS = (CATNS) = Net current assets/Net sales

5. Working Capital turnover Ratio = (Net sales)/Net working capital

6. Inventory Turnover Ratio = Net sales/inventory

7. Cash position Ratio = (Cash and bank balance + investments)/Current liabilities

8. Return on Total Assets ROTA (%) = PBIT/Total assets