IMPACT OF WORKING CAPITAL MANAGEMENT ON FIRM'S PERFORMANCE: 2007-2011 EVIDENCE FROM STEEL INDUSTRY IN INDIA

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ABSTRACT

Working capital management (WCM) is of particular importance when it comes to financial management of any firm. In this research paper, I have focused tried to find out the relationship between working capital management and firm's profitability (through Return on Total Assets)for the steel industry in India. The aim of this paper is to establish a relationship that is statistically significant between profitability measured through Return on Total Assets (ROTA)which is the dependent variable and the independent variables like Cash Conversion Cycle (CCC) and its various components that is No. of days of Account Receivable (A/R), No. of days of Accounts Payable (A/P), No. of days of Inventory (Inv_Days) together with some other exogenous variables like gearing ratio and sales. A sample of 100 steel companies listed on Bombay Stock Exchange (BSE) has been taken for a period of 5 years (2007-2011) that is a total of 500 firm-year observations.

Key words: Working Capital Management, Profitability, Cash Conversion Cycle, A/R days, A/P days, Inventory days, BSE

1. INTRODUCTION

Working capital management is of prime importance for every firm. WCM has direct linkage with firm's profitability and liquidity. It is most important for every firm to meet its working capital requirements at all points of time to maintain liquidity and at the same time to keep optimum level of current assets and current liabilities in place so as not to impact profitability.

Gitman (1974) argued that the cash conversion cycle was a key factor in working capital management. Actually, decisions about how much to invest in the customer and inventory accounts, and how much credit to accept from suppliers, are reflected in the firm's cash conversion cycle, which represents the average number of days between the date when the firm must start paying its suppliers and the date when it begins to collect payments from its customers. Previous studies have used measures based on the cash conversion cycle to analyze whether shortening this cycle has positive or negative effects on the firm's profitability. Empirical evidence relating working capital management and profitability in general supports the fact that aggressive working capital policies enhance profitability (Jose et al., 1996; Shin and Soenen, 1998; for US companies; Deloof, 2003; for Belgian firms; Wang (2002) for Japanese and Taiwanese firms). The lesser requirements of working capital leads to less

need for financing and less cost of capital, which in turn, increases the availability of cash for shareholders (Ganesan, 2007). This suggests that reducing working capital investment is likely to lead to higher profits. In this study, I will try to find out the impact of working capital management on profitability (measured through ROTA) for the Indian Steel Industry for the period from 2007-2011 to understand this relationship.

2. THEORETICAL BACKGROUND

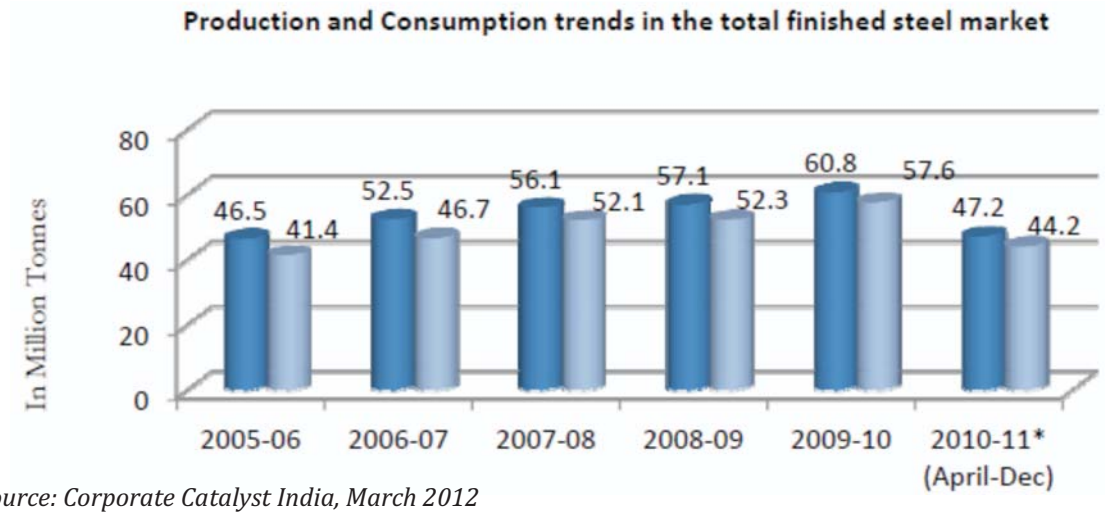
The study and the related literature on working capital management and steel industry would help in building understanding about the working capital management in steel industry in India and also the studies that have been done previously to understand the relationship between profitability and working capital management. This will help to understand how similar or different the present study is as compared to them.

a)Steel Industry in India

India is among the top producers of all forms of steel in the world. Easy availability of low cost manpower and presence of abundant reserves make India competitive in the global setup. According to a March 2012 report on Iron and steel Industry in India by Corporate Catalyst India, India's consumption of stainless steel is much higher at 14 percent, compared to global consumption of 6 percent in the last 15 years.

The following graph shows the production and consumption pattern in India from 2005-06 to 2010-2011. It is estimated that the world steel consumption will double in next 25 years. Quality improvement of Indian steel combined with its low cost advantages will definitely help in substantial gain in export market.

In the past, India has been importing around 1.5 million tonnes annually. Advance Licensing Scheme allows duty free import of raw materials for exports.



Source: Corporate Catalyst India, March 2012

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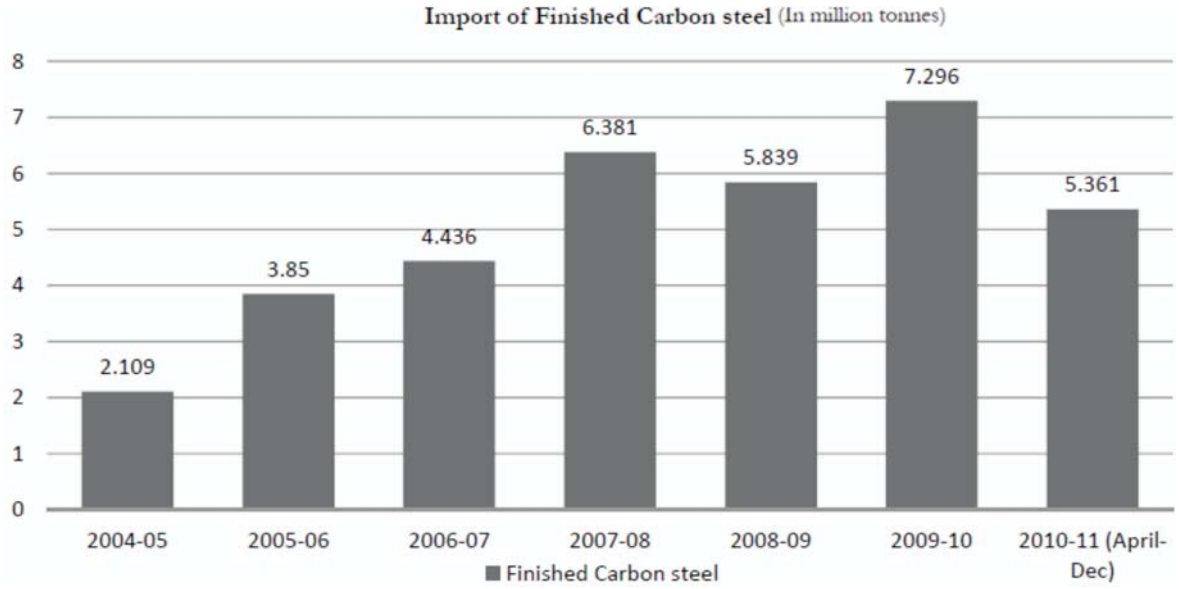

Source: Corporate Catalyst India, March 2012

b) Working Capital Management and Profitability

Soenen (1993) used approximately 2,000 firms from 20 different industries for a period of 1970-1989 and found a negative relationship between company's net trade cycle and its profitability as measured by the return on total assets. Soenen explains that cash conversion cycle provides a valid alternative for measuring corporate liquidity and that the length of the cash conversion cycle is important in determining the degree to which a firm must rely on external financing.

Shin and Soenen (1998) found out that corporate's WCM is dependent on the Net Trade Cycle and found a strong negative relation between the length of the firm's net-trade cycle and its profitability.

Anand& Gupta (2001) studied three financial parameters for this purpose - CCE, DOC and DWC by using data of 427 companies over the period 1998-99 to 2000-01 for each company and found that the presence of these three in the overall working capital performance criterion not only helps in performance evaluation but also will capture the dynamics of risk-return tradeoff.

Deloof (2003) in Does Working Capital Management(WCM) Affect Profitability of Belgian Firms investigated the impact of WCM on corporate profitability by taking 2000 most important Belgian firms for the period 1991-1996 and found that Gross operating income negatively and significantly impacted by number of days accounts payable, number of days inventories, number of days accounts receivable but positively and significantly impacted by firm size (measured by the natural logarithm of sales), sales growth and fixed financial assets, and decreases with financial debt.

Mukhopadhyay (2004) in Working capital management in heavy engineering firms studied the effectiveness of working capital management of a firm with particular reference to its short term liquidity and solvency and impact on commercial operations of the organization and found that Gross working capital is significantly positively related with Inventory, Debtors and Receivables, Loans and Advances, Other current Assets and Net working capital and significantly and negatively related with current Liabilities and provision. The study also found significantly negative relation with current liabilities and provisions.

On the contrary, Filbeck (2005) in An Analysis of Working Capital Management Results Across Industries found that Significant differences exist between industries across time with respect to measures of working capital measures and that working capital measures for a given firm are not static, and significant differences in these measures exist across time.

Moussawi et al (2006) in Corporate working capital management: Determinants and Consequences mainly focused on determining the relevance of the core factors to the efficiency of a firm's Working capital management. According to their findings, Working Capital efficiency positively and significantly impacts firm size, executive compensation, future firm sales growth, the proportion of outside directors on a Board, industry practices and it negatively and significantly impacts CEO share ownership.

They also found that Working Capital efficiency unrelated with industry concentration.

Padachi (2006) in Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms examined the impact of accounts receivables days, inventories days, accounts payable days and CCC on Return on Total Assets (ROTA) for a sample of 58 small manufacturing companies for the period of 1997-98 to 2002-03 and found that ROTA is significantly positively and significantly affected by Operating Profit Margin and capital-turnover ratio, but negatively and significantly impacted by the measures of WCM.

Another important findings by Lazardidis and Tryfonidis (2006) in Relationship between working capital management and profitability of listed companies in the Athens stock exchange on the relationship between working capital management and profitability of listed companies in the Athens stock exchange for a sample of 131 companies listed on Athens stock exchange for a period of 2001-04 also found that CCC is significantly negatively related with profitability.

The above findings were also supported by Raheman and Nasr (2007) in Working Capital Management And Profitability - Case OfPakistani Firms and they also found that Net Operating profitability is significantly negatively impacted by measures of elements of WCM i.e. Average Payment Period, Inventory turnover in days, Average Payment Period and Cash Conversion cycle.

Bhunia (2012) examined the relationship between the working capital management and profitability of Indian private sector small-medium steel companies over the period from 2003 to 2010 and found that a small relationship between WCM including working capital cycle and profitability.

3. NEED/IMPORTANCE OF THE STUDY

WCM has got a lot of emphasis in financial management of the firms. A greater extent of profitability of a firm is determined by the components of working capital management like Accounts Receivable, Accounts Payable and Inventory and Cash Conversion Cycle. Thus, it is very important to understand the relationship between working capital management and its impact on profitability of the firm. The given study will measure the impact of WCM on profitability of steel firms to understand the dynamics of liquidity management on profitability.

4. STATEMENT OF THE PROBLEM

1.To study the impact of the various components of working capital like account receivable, account payable, inventories days & cash conversion cycle, and log sales, gearing ratio on return on total assets (ROTA).

2.To understand the trends in working capital needs of the steel firms.

5.OBJECTIVE

1.To examine the impact of various components of working capital like account receivable, account payable, inventories days and cash conversion cycle on return on total assets (ROTA)

2.To examine the impact of firm size measured by natural log of sales on return on total assets (ROTA)

3.To examine the impact of leverage measured by Debt/Equity ratio on return on total assets (ROTA)

4. To analyze the trend in working capital needs of the firms in steel sector

6. HYPOTHESIS

1. H0: Cash Conversion Cycle does not significantly impacts the ROTA of steel firms listed on Bombay Stock Exchange
2. H0: Accounts Receivable days does not significantly impacts the ROTA of steel firms listed on Bombay Stock Exchange
3. H0: Accounts Payable Days does not significantly impacts the ROTA of steel firms listed on Bombay Stock Exchange
4. H0: Days Inventory does not significantly impacts the ROTA of steel firms listed on Bombay Stock Exchange
5.H0: Firm Size does not significantly impacts ROTA of steel firms listed on Bombay Stock Exchange
6. H0: Higher leverage does not significantly impacts the ROTA of steel firms listed on Bombay Stock Exchange

7. RESEARCH METHODOLOGY

The primary objective of this paper is to investigate the impact of Working Capital Management (WCM) on profitability of Indian Steel Industry. This is achieved by using the similar empirical framework as used by Shin and Soenen (1998), Deloof (2003) and later by Padachi (2006).

The study is descriptive in nature and uses secondary data to analyze and interpret the results. The empirical study is based on the sample of 100 firms in steel industry that are listed on Bombay Stock Exchange (BSE) and have their annual reports filed with BSE for the period of 5 years from 2007-2011 in the study. This gives the set of 500 firm-year observations for a sample of 100 firms. The data has been collected from CMIE (Prowess) database and company annual reports.

8.DATA COLLECTION

The study is based on secondary data and uses a sample of 100steel companies listed on Bombay Stock Exchange. The data has been collected for a period of 5 years from 2007 to 2011. The data set has been filtered for the non-availability of information on key parameters. Hence out of the total approximately 118 firms listed on BSE, we have got a sample of 100 firms. The total firm-year observation thus stands at 500. The yearly data on the parameters mentioned above have been taken from Financial Statements obtained from CMIE database (prowess).

9.DATA ANALYSIS, FINDINGS & INTERPRETATION

This section presents the descriptive statistics and the results of regression analysis and correlation analysis to understand the relationship between working capital management on profitability. The interpretation and explanations of the empirical findings are also reported in this section. The model used for the regressions analysis is adopted from Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms by Kesseven Padachi.

The relationship of WCM with profitability will be measured through two models:

1. The first one takes into account individual elements of WCM (ivn_days, ARdays and APdays) and control variables like ln_sales (Natural log of sales), Debt-Equity ratio, Current Asset/Total Assets (CA/TA), Current Liabilities/Total Assets (CL/TA) , Current Asset Turnover Ratio (CA_Turn).
2. The second equation replaces individual elements with Cash Conversion Cycle.

ROTA = f (ln sales, gear, cata, clta ,turnca, invdays, ardays, apdays)
ROTA 1 = ?0 +?1 ln sales1+ ?2 gear+ ?3 cata+ ?4 clta+?5 turnca+ ?6 invdays+ ?6 ardays+ ?6 apdays +?n
ROTA 2 = ?0 +?1 ln sales1+ ?2 gear+ ?3 cata+ ?4 clta+?5 turnca+ ?6 CCC+?n

9.1 Descriptive Statistics

Table 9.1: Five year Means and Standard Deviations for the Variables

	Mean	Std. Deviation	N
Return on Total Assets	.0575	.39491	500
Natural Log of Sales	7.8635	6.3489	500
Debt equity ratio	6.0730	19.39355	500
Current Liabilities/ Total Assets	.3051	.19975	500
Current Assets/ Total Assets	10.8116	28.49633	500
Current Assets Turnover Ratio	3.2204	1.77002	500
Inventory days	1.0607E2	114.32840	500
Average Receivable days	77.3405	89.98817	500
Average Payable Days	93.6541	157.66039	500
Cash Conversion Cycle (days)	89.7517	98.38347	500

9.2 CORRELATION ANALYSIS

Table 9.2: Pearson Correlation Coefficients

		ROTA	Ln_Sales	D/E	CL/TA	CA/TA	CA_TURN	INV_DAYS	AR_DAYS	AP_DAYS	CCC
ROTA	Pearson Correlation	1.000	.006**	-.018	.159**	.024	.125**	-..031	-.058	-.060	.007
	Sig. (2-tailed)		.041	.353	.001	.309	.005	.260	.115	.106	.440
	N		500	500	500	500	500	500	500	500	500
Ln_Sales	Pearson Correlation		1.000	.160**	-.104**	-.042	-.059	.127**	-.114**	.038	-.018
	Sig. (2-tailed)			.000	.016	.194	.111	.004	.009	.217	.356
	N			500	500	500	500	500	500	500	500
D/E	Pearson Correlation			1.000	-.171**	-.057	-.122**	.102**	-.026	.026	.054
	Sig. (2-tailed)				.000	.118	.006	.017	.293	.298	.135
	N				500	500	500	500	500	500	500
CL/TA	Pearson Correlation				1.000	.024	-.013	.022	.062	.257**	-.329
	Sig. (2-tailed)					.310	.398	.323	.099	.000	.310
	N					500	500	500	500	500	500
CA/TA	Pearson Correlation					1.000	.155**	-.159**	-.025	-.052	-.124**
	Sig. (2-tailed)						.001	.000	.305	.144	.000
	N						500	500	500	500	500
CA_TURN	Pearson Correlation						1.000	-.407**	-.404**	-.296**	-.369**
	Sig. (2-tailed)							.000	.000	.000	.005
	N							500	500	500	500
INV_DAYS	Pearson Correlation							1.000	.407**	.665**	.469**
	Sig. (2-tailed)								.000	.000	.000
	N								500	500	500
AR_DAYS	Pearson Correlation								1.000	.731**	.216**
	Sig. (2-tailed)									.000	.000
	N									500	500
AP_DAYS	Pearson Correlation									1.000	-.161**
	Sig. (2-tailed)										.000
	N										500
CCC	Pearson Correlation										1.000

*(** significant at 0.05 confidence level)*
Source: Results of panel data from SPSS

Above Table presents Pearson correlation coefficients for the variables and they are used to assess the direction and extent to which one variable is linearly associated to another variable. Here we measure the impact of independent variables of working capital management on profitability, as measured by return on total assets (dependent variable).

ROTA is significantly positively correlated with ln_sales, CA turnover ratio, CL/TA but with the rest of the parameters like debt equity ratio, accounts receivable days, accounts payable days, inventory days and CCC, the correlation with ROTA does not come out be as significant. This positive relation for ROTA with CA turnover is consistent with the view that operational efficiency is directly related to profitability. The better the utilization of current assets in generating sales better are the prospects of profitability.

The positive correlation of sales with ROTA is obvious from the fact that higher the sales, higher the profits.

CL/TA also has positive correlation with ROTA which points to the fact that greater is the short term borrowing in the working capital of the firm, higher is the profit. This may be due to the fact that the steel companies are highly dependent on short term borrowings to meet their working capital needs. As the steel industry provides the primary basis for all the major type of manufacturing industries in India as steel is the basic ingredient in production for most of the industry. Hence, the creditors have to give loans to steel firms for larger period of time, so as to keep the production run smoothly.

9.3 REGRESSION ANALYSIS

Regression equation 1:
ROTA= -0.272 + 2.508x1- 0.031x2- 0.229x3+ 0.009x4+ 0.171x5+0.151x6+0.142x7-0.275x8
Regression equation 2:
ROTA= -0.272 + 2.508x1- 0.028x2- 0.218x3-0.012x4+ 0.187x5+0.149x6
Table 9.4: Regression of Profitability on Working Capital Variables
Dependent Variable: Return on Total Assets
Regression Model: 1 2

Ln Sales	2.508** (0.000)	2.508** (0.000)
Gearing ratio	0.031 (0.533)	0.028 (0.561)
CL/TA	0.229** (0.000)	0.218** (0.000)
CA/TA	0.009 (0.851)	0.012 (0.808)
CA_TURN	0.171** (0.003)	0.187** (0.000)
INV_DAYS	0.151** (0.036)	
AR_DAYS	0.142** (0.047)	
AP_DAYS	-0.275** (0.005)	
CCC		0.149** (0.007)
Adjusted R^2	0.043	0.046

*(** significant at 0.05 confidence level)*
Source: Results of panel data from SPSS

The second model of regression explains the variability slightly better than the first Model as the value of adjusted R2 is 0.046 as against 0.043 in first model where all the three individual elements of cash conversion cycle have been used. In case of second model, the three elements of Working Capital have been replaced by cash Conversion Cycle.

The Durbin-Watson statistic is also close to 2 (at 2.034) in both the models which imply that the successive values of estimated residuals are not dependent on each other and that there is no autocorrelation problem in the estimated model.

The F- Ratio is significant in both the models at 3.408 in model 1 and 4.403 in model 2 which shows that both the models are good significant in explaining the impact of Working capital elements on profitability.
The Ln_salesis significant and positively related to ROTA which shows that as the firms' sales increases; profitability of the firm also increases.

The positive and significant correlation of CL/TA with ROTA also points towards the fact that the steel companies are highly dependent on short term borrowings to meet their working capital needs. The steel industry is debt ridden and therefore the profitability is heavily impacted by both short and long term debt.

The positively and significantly related CA turnover ratio also indicates that the Current Assets are fast moving and not stagnant and higher the current asset movement with respect to sales more is the efficiency of production and higher is the profitability.

The Inv_days, AR days, AP days and ultimately CCC in the two regression models respectively shows that these variables have significant impact on WCM profitability. All the four elements of WCM except AP days show significant positive correlation. On the basis of P-value of 0.000, we reject the null hypothesis that the elements of working capital management (CCC, AR days, AP days, Inv_days) have no statistical significant effect on the profitability. The positive correlation observed for AR days, Inventory days and hence the CCC with ROTA for steel industry is different from the results obtained from multiple regression analysis for other industries like cement, automobile etc. This can be attributed to the higher stocking of inventory of raw iron and steel, other raw material used in production. One reason could be inflationary pressures on raw materials leading the costlier production. So, the steel firms prefer to stock huge quantity to lower prices to avoid undue impact of rising prices on its profit margins.

The positive and significant correlation of AR days may be attributed to the fact that the steel industry provides the primary basis for all the major type of manufacturing industries in India as steel is the basic ingredient in production for most of the industry. Hence, the major customers to steel firms are also major industries like automobile, aviation, infrastructure having high gestation period. Therefore, steel firms need to have a larger collection time period so that the production cycle of main industries can run smoothly and efficiently leading to higher profitability.

The negative and significant correlation of AP days with ROTA points towards the fact that the steel companies are highly dependent on short term borrowings to meet their working capital needs. So, the creditors have to give

loans to steel firms for larger period of time, so as to keep the production run smoothly.
All the above reasons culminate into the fact that CCC has a positive and significant correlation with ROTA as explained by the model which rejects the null hypothesis that CCC has no impact on profitability. The results of the study are different from those observed in the previous studies where CCC was negatively and sig related to profitability.
The models also reject the null hypothesis that firm size has no statistically significant effect on the profitability and the positive sign of the coefficient points to the fact that as the firms' size increases, its profitability also increases.
The model does not reject the null hypothesis that gearing ratio (Debt-Equity ratio) does nothave a significant effect on the profitability. The use of long term funds in WCM of the firms as shown by gearing ratio does not come out as significant for steel industry. This might be due to the fact that the steel firms heavily use the long term funds to finance the working capital needs. One of the major reasons for the higher gearing ratio observed for the steel industry may be due to increasing overheads in steel production because of the rising prices commodity and higher prices of fuel and power used in its production.

9.5 TRENDS IN WORKING CAPITAL VARIABLES IN STEEL INDUSTRY

Table 9.5: Trends in Working Capital Variables in Steel Industry for the period (2007-2011)

Ratios	2007	2008	2009	2010	2011	5-year Average
ROTA	13%	15%	-10%	4%	11%	7%
Debt/ Equity	4.44	4.53	5.57	5.40	6.14	5.22
Current Ratio	3.52	3.55	3.33	5.27	4.89	4.11
Quick Ratio	2.40	2.44	2.20	3.40	3.42	2.77
Current Assets Turnover Ratio	3.00	3.05	2.96	2.78	3.59	3.08

The above table shows the trends in the various components affecting working capital needs of the steel industry. As can be noted in the above table, there has been a continuous rise in debt equity ratio from 4.44 in 2007 to 6.14 in 2011. The debt equity ratio is higher in the steel industry against the standard ratio of 2:1. This may be because of the huge demand of debt funds in this industry owing to larger Cash conversion cycle due to which short term financing is met from long term funds. Also, there is a continuous rise seen in current and quick ratio as well except for 2009 which can be attributed to rising level of inventory, accounts receivable and accounts payable. The current ratio is also higher as against the standards of 1:1 for Current ratio. The trends in ROTA level indicate an initial high in 2007 and 2008 after which there is a dip in 2009 and after that is showing rising trend in 2010 & 2011. 2009 may be a year of slack demand with rising inventory and Accounts receivable as is evident from higher levels of Current and Quick ratio and lower demand due to recessionary effects. The current asset turnover ratio is seen at an average of 3.08 during the five year period which shows that efficiency in production has been consistent without any major breakthrough in technology or production.
These trends authenticate the findings obtained from the regression analysis which shows a positive correlation and regression coefficients between various components of working capital like Inventory days, AR days, CCC and ROTA.

10. CONCLUSIONS & LIMITATIONS:

1.Working Capital elements (AP days, AR days, inventory days) significantly impacts the profitability of the automobile firms.

2. The higher the cash conversion cycle, higher is the profitability as measured by the ROTA and vice versa. This is an interesting finding as against the previous studies that showed negative relation between working capital elements and CCC.

3. As the size of automobile firm increases, the profitability also increases.

4. Gearing Ratio is not significantly related with ROTA.

5. The industry shows conservative policy in terms of managing working capital during the time period (2007-2011) as is evident from the high Current and quick ratios.

6. The industry is highly leveraged at least during the time period (2007-2011) in consideration with an average of 5.22 during the five years under consideration.This might be due to the fact that the steel firms heavily use the long term funds to finance the working capital needs. One of the major reasons for the higher gearing ratio observed for the steel industry may be due to increasing overheads in steel production because of the rising prices commodity and higher prices of fuel and power used in its production.

7. The returns generated by the industry aregenerallyconsistent during the period except for 2009 when there is a dip due to recessionary effect.

The limitations would include:

1. The data might not be available for certain parameters involved in the study.

2. Some specific sectors/ industries may be left out to be studied under this research.

3. The results and findings might not be true for smaller firms with less of capital and funds at hand.

4. Inflation could not be taken into contemplation in the present study. It was not possible to convert the relevant financial data into their present values because of non-availability of sufficient information required for the purpose.

11. References

1. Anand, M. (2001): "Working Capital performance of corporate India: An empirical survey", Management & Accounting Research, 4(4), 35-65.

2.Berryman, J. (1983): "Small Business Failure and Bankruptcy: A survey of the Literature", European Small Business Journal, 1(4), 47-59.

3.Bhunia, A. and Das, A. (2012): "Affiliation between Working Capital Management and Profitability", Interdisciplinary Journal Of Contemporary Research In Business, 3(9), 957-968

4.Burns, R and Walker, J. (1991): "A Survey of Working Capital Policy among Small Manufacturing Firms",The Journal of Small Business Finance, 1 (1), 61-74.

5.Corporate Catalyst India Report on Indian steel Industry, March 2012.

6.Deloof, D. (2003): "Does Working Capital Management affect Profitability of Belgian Firms"? Journal of Business Finance and Accounting, 30 (3 & 4), 573 - 587.

7.Dunn, P. and Cheatham, L. (1993): "Fundamentals of Small Business Financial Management for Start-up, Survival, Growth, and Changing Economic Circumstances", Managerial Finance, 19(8), 1-13.

8.Fischer, E.O., R. Heinkel, and J. Zechner, (1989): Dynamic Capital Structure Choice: Theory and Tests, Journal of Finance, 44, 19-40.

9.Filbeck, G. and Krueger, T. M. (2005): "An analysis of working capital management results across industries", American Journal of Business, Vol. 20, Issue 2, pp. 11-18.

10. Gill, A., (2011): Factors that Influence Working Capital Requirements in Canada, Economics and Finance Review, 1(3), 30 - 40.

11. Ganesan, V. (2007): An analysis of working capital management efficiency in telecommunication equipment industry. Rivier Academic Journal, 3(2), 1-10.

12. Gitman, L. J. (1994): Principles of Managerial Finance, 7th Ed. Harper Collins, pp. 646-652.

13. Howorth C., P. Westhead (2003): 'The focus of working capital management in UK small firms', 'Management Accounting Research, Blackwell Publishing, 14, 97-111.

14. Jose, M. L., C. Lancaster, and J. L. Stevens, (1996):

Corporate Returns and Cash Conversion Cycles. Journal of Economics and Finance. 20(1), 33-46.
15. LazaridisIoannis, TryfonidisDimitrios (2006): "The relationship between working capital management and profitability of listed companies in the Athens Stock Exchange, Journal of Financial Management and Analysis, 19.
16. Myers, S., and N. Majluf (1984): "Corporate Financing and Investment Decisions when Firms Have Information Investors Do Not Have", Journal of Financial Economics, 13, 187-222.
17. Mukhopadhyay D. (2004): "Working capital management in heavy engineering firms-A case study." Management Accountant, 317-323.
18. Nazir, M.S. &Afza, T. (2009): Working Capital Requirements and the Determining Factors in Pakistan. IUP Journal of Applied Finance, 15(4), 28-38.
19. Padachi, K. (2006): Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms, International Review of Business Research Papers. 2(2), 45 - 58.
20. Ross, S., A. (1977): "The Determination of Financial Structure: The Incentive Signaling Approach", Bell Journal of Economics, 23-40.
21. Raheman A., Nasr M. (2007): "Working Capital Management And Profitability - Case Of Pakistani Firms', International Review of Business Research Papers, 3, No. 1, 279-300.
22. Shin, H.H. and Soenen, L. (1998): 'Efficiency of Working Capital and Corporate Profitability', Financial Practice and Education, 8(2),37-45.
23. Soenen, L.A. (1993): Cash conversion cycle and corporate profitability. Journal of Cash Management, 13(4), 53-58.
24. Wang, Y.J. (2002): Liquidity Management, Operating Performance, and Corporate Value: Evidence from Japan and Taiwan. Journal of Multinational Financial Management, 12, 159-169.

Webliography:

1. http://www.investopedia.com