

Impact of Working Capital Parameters on the Profitability of Various Industries

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Abstract

Working capital refers to the funds required by any company or firm to carry on its day to day activities. It also helps in analyzing the liquidity of the company & working capital manager's main task is to create a swapping between liquidity and profitability. The objective of the paper is to measure the effect of working capital management on the profitability of the company. The methodology adopted was by way of analyzing the data from the year 1985-2015 for six industries namely, Automobile, Construction, Electronics, FMCG, Pharmaceutical and Steel. This data was first framed by way of ratio analysis and Multiple Regression modeling was used to analyze the relationship between variables of working capital indicators and profitability indicators. Results suggested that net profit seems to be the better indicator of profitability as compared to return on net worth in majority of the industries.

Keywords: Working capital, Liquidity, Return on Net worth, Regression

Introduction

Working capital management is the part & parcel of financial management. Financial management is concerned with management of finance which starts from procuring finance, then buying assets (or putting it to best use) and lastly doing follow up on the overall management of finance. Thus, this management is done by various tools & techniques of financial management i.e. capital budgeting, ratio analysis, working capital management, which includes receivables management, cash management etc. The major component of financial management is working capital management which also affects the profitability of the company which in turn affects the shareholders wealth; thus its management is the key concern for every finance manager.

Working Capital Management

Working capital is defined as difference between current assets & current liabilities. Major portion covered by working capital is raw material & finished goods i.e. it is actually the delay in between the collection of finished goods sales & expenditure done on raw material purchases. If the firm has less current assets as compared to current liabilities then it will face problem in servicing the obligations & there will be liquidity crunch and on vice-versa, if the current assets are much more than current liabilities than it shows that cash is lying idle in the company, it is not efficiently managed & thus affecting the profitability in adverse manner. Thus there is always a conflict between profitability & liquidity, which need to be managed by efficient working capital management.

Working capital management refers to the management of working capital i.e. management of current assets & current liabilities, so that there is adequate liquidity in the organization & smooth working of day to day operations can be ensured. It is a frequent, repetitive & time consuming task in every business. As it is already said, that working capital management is vital for creating shareholders wealth as it affects profitability as well as liquidity of the company which are having direct impact on the creation of the value for shareholders. In most of the companies, current assets form a major portion or sometimes even accounts for more than half of total assets, thus they require effective management at almost every point & on day to day basis managers have to spend considerable time in managing these short lived assets so that liabilities which have to be paid in timely manner can be paid off easily because if assets are in excess then it will affect its profitability due to their inefficient use & if they are few then it will create problems for firm's smooth running. Thus, working capital ensures that neither unnecessary nor inadequate funds are locked up in the firm.

Relationship between Working Capital Management & Profitability

Working capital holds a positive as well as negative relationship with the profitability which in turn has the same effect on the value creation for shareholders. The main purpose of the business is to earn profit so that they maximize shareholder's wealth which is their primary objective. But company also has to maintain adequate liquidity in the business so that working of the business doesn't get affected.

Thus there should be balance between both liquidity & profitability because if profit is ignored then business won't be able to survive for long or earn goodwill etc. and if company ignores the liquidity but just focusing on profits then it won't be able to work smoothly & may enter the phase of insolvency due to cash crunch. Thus, working capital manager's main task is to create a swapping between liquidity and profitability with the help of this working capital management and also to analyze the important variables which act as substitutes for working capital management. Few variables considered for this purpose are:

- Liberal trade policy & large inventory leads to increasing sales, as stock will be available every time & maximum sales are done on credit, thus in turn increasing the total sales for the company. But this can harm company liquidity also as too much cash will be tied up in inventory & too much sales on credit can lead to more risk of bad debts & cash crunch problem.
- Delay in accounts payable helps in getting easy & flexible source of finance for the company but on the other hand this strategy can be fatal for company as well and can prove expensive also when there is a discount facility available on early payment of debts.

Thus both pros & cons are attached to various variables of working capital, so company should carefully plan & manage all the variable of working capital so that profitability as well as liquidity can be ensured at the same time.

The paper discusses few working capital variables i.e. Debtors velocity (Average Collection Period), Creditors velocity (Average Payment Period), Inventory Turnover ratio, Debtor Turnover ratio, Current Ratio, Current Assets to Fixed Assets, Fixed Assets to Total Assets & Working Capital, to study their relationship with the profitability parameters i.e. Net profit & Return on Net worth with respect to six industries.

Literature Review

Joshi & Ghosh (2012) in their paper examined the performance of working capital of Cipla Ltd. for a period of 5 years i.e. 2004-05 to 2008-09. To measure the working capital performance, financial ratios were applied while behavior of the selected ratios was assessed using statistical and econometric techniques. Most of the selected performance indicators showed a significant positive trend growth and the performance was also satisfactory. Motaals test was used to measure the liquidity performance which indicated a significant improvement during the sample period. However, during the period of study, results depicted a relationship that was significantly negative between profitability and liquidity as, Cipla maintained excess liquidity.

Padachi (2006) in the paper examined the working capital management trends and how it impacted the performance of the firm. Also, different industries were examined in relation to their working capital needs and firm's profitability to identify the differences in these industries and causes for the same. Return on total assets (the dependent variable) was used as a profitability measure and panel data analysis for the period 1998 – 2003 was used on a sample of 58 small firms in the manufacturing sector in order to study the relationship between management of working capital and corporate profitability. The regression results showed that increasing investment in receivables and inventories would have lead to a lower profitability. The major variables taken into consideration while performing the analysis were inventories days, accounts receivables days, accounts payable days and cash conversion cycle. Analyzing the liquidity, profitability and operational efficiency of different companies belonging to five industries showed changes were significant amongst these industries. The findings also discovered the fact that the working capital financing in the short term was increasing.

Raheman & Nasr (2007), carried their research during 1999-2004, using a sample of 94 Pakistani firms listed on Karachi Stock Exchange, to study how the Net operating profitability of the firms is effected by different working capital management variables like Inventory turnover days, Average collection period, Cash conversion cycle, Average payment period, and Current ratio. Firm size was measured in terms of sales, Debt ratio and financial assets to total assets ratio were used as control variables. For the purpose of analysis, Pearson's correlation, and regression analysis were used. As per the results, it was observed that the firm's profitability and variables of working capital management were strongly related in a negative manner which implied that as the cash conversion cycle increased, it lead to a decrease in the firm's profitability, so reducing the cycle of cash conversion to a certain minimum level, could create a positive value for the shareholders. Profitability had a significant negative relationship with liquidity and the debt used by the firm and a positive relationship with the size of the firm.

Agha (2014), in her research work for the period 1996-2011, empirically tested the impact of management of working capital on the profitability of the firm by using secondary data for Glaxo Smith Kline pharmaceutical company registered on Karachi stock exchange. Variable of return on assets ratio was used to measure the profitability of company while for working capital management, variables like account receivable turnover, inventory turnover, current ratio and creditor's turnover were used. The research results depicted a significant relation between working capital management and profitability of company, thus, by minimizing the inventory turnover, account receivables ratio and by decreasing creditors turnover ratios, managers may would have enhanced the profitability of their firms. However, firm's profitability was not affected by the current ratio. So, the results indicated that in order to increase the profitability, companies had to manage their working capital properly.

Mohamad & Saad (2010), using Bloomberg's database for 172 companies that were listed on the stock exchange of Malaysia for the period 2003-2007 to empirically analyze how a firm's profitability and market valuation were impacted by the working capital management. The components of the working capital i.e. current ratio (CR), cash conversion cycles (CCC), current liabilities to total asset ratio (CLTAR), current asset to total asset ratio (CATAR) and debt to asset ratio (DTAR) were used to study the performance of the firm by observing the value of the firm i.e Tobin Q (TQ) and profitability i.e. return on asset (ROA) and return on invested capital (ROIC). Multiple regression and correlation analysis were applied which depicted that working capital variables and performance of the firm have a significant negative association. Thus, management of working capital requirements should form a part of the strategic and operational planning as it will help to improve the market value and profitability which will lead to efficient and effective operation of the firm.

Napompech (2012) in the study also examined how management of working capital of a firm impacted its profitability, using the panel sample of 255 companies that were listed on the Stock Exchange of Thailand, for the period of 3 years i.e. 2007-2009. It was observed that gross operating profits were related to the receivables collection period and inventory conversion period negatively. Therefore, for profitability to increase, firms must reduce the receivables collection period and cash conversion cycle, however, the payables deferral period when lengthened, would not have increased the profitability. Also, it was observed that, the gross operating profits were impacted by the industry characteristics.

Korankye & Adarquah (2013) used panel data for 6 companies listed on the Stock Exchange of Ghana for the period 2004 to 2011, to analyze how profitability of the firm is impacted by the management of working capital. Working capital cycle was used as a proxy for working capital management while operating profit margin was used as a proxy for profitability. Pearson correlation, ordinary least squares regression analyses and descriptive statistics were used for analysis. Interest coverage and current assets to total assets ratios were used as control variables. The results revealed that profitability was significantly and negatively affected by the working capital cycle i.e. less profitable manufacturing firms listed on the exchange had a longer working capital cycle. Through correlation, it was found that account receivables collection period, inventory turnover period and account payables payment period each had a negative correlation with the profitability. Leverage was negatively and significantly related to profitability while current to total assets ratio and interest cover had significant positive relation with the profitability.

Mehrotra (2013) examined the working capital requirement of 5 Indian companies in the FMCG sector namely Nestle India Limited, ITC, P&G, Britannia Industries and HUL. The data was collected using the annual reports of the companies for a period of 5 years i.e. 2008-2012. Ratio analysis and traditional method of data analysis were used to determine the efficiency level of Working capital management. The author suggested that a firm should have a negative working capital with low inventory and accounts receivables else the company might face financial issues.

Kaur & Singh (2013) emphasized on managing the working capital efficiently as it increased the profitability and improved the value of the firm so the firm could avoid financial losses. Of the 200 companies that were listed on BSE, a sample of 164 manufacturing companies were used for the period 2000 to 2010 and Cash Conversion Efficiency, Days Operating Cycle and Days Working Capital values were used to calculate working capital score. Income to Average Total Assets and Income to Current Assets were used to study the relationship between profitability and score of working capital. The findings of the study supported the view that working capital management was significantly impacted by the profitability.

Chaklader, Sharma, Khatun, & Goel (2013) studied the relationship between working capital management and profitability of the FMCG companies listed on the BSE FMCG sector index for the

period 1991-2011. Return on total assets was used to measure profitability while average collection period, cash conversion cycle, average inventory turnover days and average payable period were used as various exogenous variables. Panel regression through random effect method was used. The results indicated that when the factor of average collection period was dropped, all the variables were significant, while, when cash conversion cycle was dropped; all factors except average inventory turnover days were significant. Thus, suggesting that profitability was affected by the working management policies that were more aggressive and conservative.

Objectives

The paper has following objectives:

- To analyze the Automobile, Construction, Electronics, FMCG, Pharmaceutical & Steel industries efficiency in management of working capital from the year 1985 - 2015.
- To analyze the effect of working capital management on profitability of Automobile, Construction, Electronics, FMCG, Pharmaceutical & Steel industry.

Research Methodology

Collection of data

Secondary data was used in the research which was extracted from Moneycontrol.com and Capitaline database. The data collected from these sources have been complied with due care as per the requirement of the paper. Data of six industries was used, namely Automobile, Construction, Electronics, FMCG, Pharmaceutical & Steel.

Period of study

Paper covers the period of 31years from 1985 – 2015

Techniques of Analysis

Data collected was compiled into working capital indicators & profitability indicators. Quantitative analysis was used to achieve the objectives of the paper, which is done first by calculation of various appropriate ratios & second by modeling the data into Multiple Regression analysis among the various working capital & profitability indicators, by way of E views. Various indicators were selected on the basis of their importance in working capital management, their potentiality to be responsible for profitability changes as well as the availability of data related to them. The final list includes nine variables of working capital & three variables of profitability, which were as follows:

Working Capital Indicators:

- DTR = Debtor Turnover Ratio = Sales / Average Debtors
- ITR = Inventory Turnover Ratio = COGS/ Average Stock
- DRV = Debtor Velocity = 365/ DTR
- CRV = Creditor Velocity = 365/CTR
- CR = Current Ratio = Current Assets / Current Liabilities
- CA/FA = Current Assets / Fixed Assets
- FA/TA = Fixed Assets / Total Assets
- WC = Working Capital = Current Asset – Current Liabilities

Profitability Indicators:

- NPR = Net Profit ratio = (Net Profit / Sales)*100
- RONW = Return on Net Worth = Net Profit after preference dividend / shareholders equity

As already stated in the introduction that working capital effect profitability in a positive as well as negative way i.e. profitability move in tandem with some factors & with some it shares a negative relationship. This relationship was proved by way of analyzing the relationship between these variables for six industries under consideration from the year 1985 – 2015.

Limitations of the study

- Simple random sampling was used to select these 6 industries, so results may vary, if different industries were included.
- Yearly data was used.
- Sample was selected from a universe of industries i.e. considering only six sectors, thus limiting the research's scope & analysis to only companies belonging to these industries.

Analysis & Findings

Analysis & findings form a major part of any study. Table 1 - 6 below depicts the financial performance of 6 sectors i.e. Automobile, Construction, Electronics, FMCG, Pharmaceutical & Steel by way of working capital. As already explained that working capital management is all about current assets & current liabilities i.e. in terms of problems that arise in trying to manage them as well as their inter relationship. Working capital indicators as well as profitability indicators were checked for Stationary in each model for each sector by way of Augmented Dickey Fuller Test. All the indicators became stationary at first difference. Then the models were tested for absence of serial correlation as well as heteroskedasticity. 5% significance level was chosen to check the variables for significant impact (* shows the significant variable at 5% significance level in each table)

Table 1 shows the results of Multiple Regression analysis of Automobile sector. Dependency of two profitability parameters i.e. Return on net worth (RONW) & Net profit were regressed on other working capital parameters. In both the models, creditor velocity came positively significant in impacting the profitability of the sector. Debtor velocity & current ratio both had a negative relation with return on net worth, i.e. if either of the variable was increased the profitability of the sector decreased. Current ratio is the measure of liquidity same as working capital. It measures how much current assets are available with the company for every 1 of the current liability. Generally 2:1 is considered ideal ratio in the business. Here in automobile sector it can be seen that as the current assets of the company increase, i.e. more funds blocked in stock or more sales done on credit, then its return on equity decreases by - 3.56.

Dependent variable	D(RONW)	D(NET_PROFIT)
Independent variable	coefficient	coefficient
C	8.810495	190.5041
D(CA_FA)	147.6247	1628.100
D(FA_TA)	302.3460	-3052.987
D(CRV)	0.026276*	0.178630*
D(DRV)	- 0.014799*	-0.052053
D(CR)	- 3.556172*	-4.108549
D(DTR)	0.052896	1.957372*
D(ITR)	-0.117868	0.608444
D(WC)	-0.013967	-0.396218*
R-squared	0.811736	0.705718
Adjusted R-squared	0.740016	0.593611
F-statistic	11.31818	6.295026
Prob(F-statistic)	0.000004	0.000335
Durbin-Watson stat	2.119858	2.491586

Now if the profitability was measured by reported yearly net profit of the industry, then change in working capital is negatively impacted while debtor turnover ratio had a significant positive impact. Net Current assets or Working capital is nothing but excess of current assets over current liabilities. It shows that how much current assets are available with the company to pay off its current obligations on time as well as in ensuring the smooth working of the organization. Among the two profitability models, RONW model has a predictability of 74%.

Regression analysis of Construction industry was shown in table 2 with respect to RONW & NPR. Creditor velocity & debtor turnover ratio were positively significant in impacting the return on net worth. Debtor turnover had a greater per unit impact on RONW as compared to average payment period. Among these, model with Net profit ratio (NPR) has more explanatory power as well as five of the variables were significant, thus making the model better. It can also be said that net profit ratio is the more appropriate profitability indicator in the Construction industry. Average collection period (DRV) & working capital has a negative relation with net profit ratio. With change of Rs. 1 in working capital, NPR reduces by -0.66 and if the collection period reduces by 1 day then profitability reduces by -0.03. Profitability was positively dependent on creditor velocity, debtor turnover ratio & inventory turnover ratio.

Table 2: Regression Analysis of Construction Industry

Dependent variable	D(RONW)	D(NPR)
Independent variable	Coefficient	Coefficient
C	8.500697	-2080.789
D(CA_FA)	-580.0124	-1069.971
D(FA_TA)	-3262.921	4258.458
D(CRV)	0.030754*	0.047633*
D(DRV)	-0.000789	-0.030341*
D(CR)	0.779782	-0.706586
CR(-1)	-	1.674082
D(DTR)	2.542127*	2.727148*
D(ITR)	0.202174	1.162269*
D(WC)	-0.071991	-0.663498*
R-squared	0.714441	0.721085
Adjusted R-squared	0.580060	0.564196
F-statistic	5.316539	4.596132
Prob(F-statistic)	0.001872	0.003966
Durbin-Watson stat	2.048097	2.457689

Electronic industry has almost same results as the construction industry. Net profit again was the better profitability measure in the industry. Model was able to explain 98% of variations in the profitability. Table 3 explains working capital negatively impact the return on equity i.e. as working capital increases, return on equity decreases by approx. Rs. 1, as if working capital increases so does liquidity increases & thus increases the ideal cash, making the company inefficient in working which in turn is clearly shown on return generated by company for its shareholders (which decreases with increase in working capital). Net profit was seen positively dependent on creditor velocity, debtor turnover ratio & working capital. Debtor velocity and inventory turnover ratio negatively affect the net profit.

Table 3: Regression Analysis of Electronics Industry

Dependent variable	D(ROA)	D(ROE)
Independent variable	Coefficient	Coefficient
C	0.275195	0.169866
D(CA_FA)	5.747743	1.246073
D(FA_TA)	50.01014	15.88092
D(CRV)	-0.001467	0.002174*
D(DRV)	0.226748*	-0.010395*
D(CR)	3.209033*	0.105576
D(DTR)	0.427312	0.244183*
D(ITR)	0.002470	-0.041958*
D(WC)	-0.984056*	0.182103*
D(NPR)	2.346120*	-
R-squared	0.978185	0.993095
Adjusted R-squared	0.964161	0.989413
F-statistic	69.75109	269.6822
Prob(F-statistic)	0.000000	0.000000
Durbin-Watson stat	1.445024	2.467390

For Fast Moving Consumer Goods (FMCG) industry (table 4), better profitability indicator was return on equity or return on net worth. But the model has only 40% explanatory power as compared to model with net profit which has 78% predictability. FMCG sector net profit has high explanatory power even with two variables only i.e. debtor turnover ratio (negative impact) and working capital (positive impact). Return on net worth was negatively affected by creditor & debtor velocity as well as debtor turnover ratio and net profit ratio. Current ratio & inventory turnover ratio positively affect the return on net worth. But the impact of change in current ratio was more as compared to other indicators.

Table 4: Regression Analysis of FMCG Industry

Dependent variable	D(ROA)	D(ROE)
Independent variable	Coefficient	Coefficient
C	155.5742	148.2493
D(CA_FA)	311.1765	75.23779
D(FA_TA)	3754.209	629.1692
D(CRV)	-0.006171*	0.000668
D(DRV)	-0.006186*	0.000116
D(CR)	4.952065*	0.217409
D(DTR)	-0.239708*	-0.025617*
D(ITR)	1.110685*	0.052492
D(WC)	-0.004028	0.136844*
D(NPR)	-0.284441*	-
R-squared	0.576660	0.841277
Adjusted R-squared	0.403475	0.786069
F-statistic	3.329740	15.23832
Prob(F-statistic)	0.010248	0.000000
Durbin-Watson stat	1.809849	2.061487

Table 5 shows the dependency of RONW & Net Profit on working capital indicators of Pharmaceutical & Steel industry. In both the industries current ratio negatively affects the net profit. In other words, it indicates if current ratio increases, the profitability decreases as more cash is lying ideal then. Pharmaceutical industry's return on net worth was impacted positively by current ratio, debtor turnover ratio & net profit ratio with 57% predictability. If same scenario is considered for steel industry then its profitability was better explained by net profit using only three variables that were influencing it. Debtor turnover ratio & working capital positively affect the net profit with how many times debtors turn into cash having more per rupee affect.

Table 5: Regression Analysis of Pharmaceutical Industry		Steel Industry	
Dependent variable	D(RONW)	D(NET PROFIT)	D(NET PROFIT)
Independent variable	Coefficient	Coefficient	Coefficient
C	108.1617	86.26220	3.144141
D(CA_FA)	-435.6215	188.9877	1357.038
D(FA_TA)	-680.6456	3269.426	4554.450
D(CRV)	0.005632	0.003864	-0.000909
D(DRV)	0.030565	-0.025415*	-0.051849
D(CR)	0.305396*	-0.140672*	-13.18340*
D(DTR)	1.660859*	-0.769908	2.131769*
D(ITR)	-0.714261	0.238536	0.935920
D(WC)	-0.083664	0.319279*	0.323882*
D(NPR)	0.063804*	-	-
R-squared	0.698323	0.841992	0.682974
Adjusted R-squared	0.574909	0.787032	0.567691
F-statistic	5.658404	15.32024	5.924355
Prob(F-statistic)	0.000439	0.000000	0.000424
Durbin-Watson stat	2.201961	1.895214	1.974303

Conclusion

If the company wants to sustain in the business profitably than it has to frequently & timely manage the most important part of financial management i.e. Working Capital. Working capital management is to be done in such a way that trade off can be achieved or attained between liquidity & profitability. Findings of the paper suggested that there exists a positive as well as negative relation between various working capital variables and profitability indicators. For the purpose of maximization of the wealth of the shareholders, each industry has to constantly work upon reducing their working capital cycles i.e. in other words maintaining the right mix of payment days, collection period & inventory held days, then only the profitability & liquidity can be ensured and at the same time creation of value for shareholders.

Overall, in all the industries net profit seems to be the better indicator of profitability as compared to return on net worth. But it cannot be completely said that creation of wealth is not important as this is the only long term variable of any company belonging to any industry or sector.

Major working capital parameters impacting in almost all the industries were current ratio, debtor turnover ratio, inventory turnover ratio and working capital itself. But the relationship of these variables with the return on equity & net profit were different in all the industries. None of the asset parameters i.e. Current asset to Fixed asset or Fixed asset to Current asset seems to be considered significant in impacting the profitability in any of the industries. Thus, it can be said that even the extent to which fixed assets of the company are financed by way of owner's equity didn't impact profitability.

Lastly, Regression modeling proves that all independent variables were together significant in explaining the change in dependent variable as their F statistics was significant at 5% significance level.

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