Relationship Between Working Capital and Profitability: with Special Reference to Dr. Reddys Laboratories Limited

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Abstract

Maintaining the smooth and continuous flow of business is the challenging task for each organization, for this management needs the availability of each and every component of four M i.e. Man, Machine, Money and Material. Routine management of these four components is known as "Working Capital Management". Working capital management is an important task for any business house as it maintains the uninterrupted flow. Decisions relating to the working capital are taken on each day based on the circumstances. Working capital is very important component of corporate finance because it directly affects the liquidity and profitability of the company. Working capital is the base for any organization especially for manufacturing organization. Management of DR REDDEYS LABORATORIES LIMITED has maintained a better relationship between Working Capital and Profitability during the study period of ten years 2007-08 to 2016-17. Researchers have used Financial Ratios for the present study as well as some very important statistical tools such as Karl Pearson Correlation, Spearman Rank Correlation, Regression Analysis, One Way Anova Test. Motaals Test is also used to determine the liquidity and profitability score.

Keywords : Working Capital, Profitability, ROCE, Liquidity Analysis and Motaals Comprehensive Test.

JEL Classification : G 11, L 22, M 31.

1. INTRODUCTION

Working Capital Management plays a very important role in Corporate Financial Management. It is the association between current assets and current liabilities. Management of working capital is significant to carry the day to day activities of a firm. The purpose following working capital management is to certify stability in the operations of a firm and that it has sufficient funds to satisfy both maturing short-term debts and recent operational overheads. It mainly involves management of inventories, accounts receivables, accounts payables and cash conversion cycle. Working capital management is concerned with the problems that arise in attempting to manage the current assets and current liabilities the relationship that exists between both of them. The term current assets refer to those assets which are in usual course of business actions can be, or will be easily converted into cash within short term period without undergoing a decreasing in value and without disrupting the operation activities of the firms. Examples are cash, marketable securities, account receivables and inventory. On the other sides, current liabilities are those liabilities which are intended, at their inception to be paid

in the casual course of business in a period out of current assets or income of the concern. The basic current liabilities are account payables, bills payable, bank overdraft and outstanding expenses. Efficient handling management of working capital is a key part of the overall corporate strategy to create and improve shareholders' value.

A firm most required area is effective management of working capital. Working Capital Management manage all decisions makings actions that usually influence the size and usefulness of the working capital. It is anxious with the various courses of action of working capital sources and the purpose of proper levels of the current assets and their uses. It is pointed to the supervision of current assets, current liabilities and the associations that exist between them. Proper administration of working capital leads to a material savings and ensures financial returns at the most favourable level even on the minimum level of capital in employment. Both adequate and inadequate working capital is destructive for a firm. Extreme working capital leads to Unproductive use of limited funds. On the other hand, insufficient working capital usually interrupts the regular operations of a business and impairs productivity.

2. IMPORTANCE OF WORKING CAPITAL

Working capital is one of the important measurements of the financial position. The words of H. G. Guthmann, (1953) clearly explain the importance of working capital. "Working Capital is the life-blood and nerve centre of the business." In the words of Walker, (1935) "A firm's profitability is determined in part by the way its working capital is managed." The object of working capital management is to manage firm's current assets and liabilities in such a way that a satisfactory level of working capital is maintained. If the firm cannot maintain a satisfactory level of working capital, it is likely to become insolvent and may even be forced into bankruptcy. Thus, need for working capital to

run day-to-day business activities smoothly can't be overemphasized.

Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand. (Eljelly, 2004).

Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinarily within a year and such temporary investment as may be readily converted into cash upon need. Firms may have an optimal level of working capital that maximizes their value. Large inventory and a generous trade credit policy may lead to high sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying. (Deloof and Jegers, 1996).

3. LITERATURE REVIEW

· Kumar, Srivastava & Sinha (2014), in their study describe that its one of the important measurement of the financial position of the business organization. The concept and nature of working capital or current assets denotes that "Investment in current assets is turned over many times in a year. Investment in current assets such as inventories and book debts (accounts receivable) is realized during the firms operating cycle which is usually less than year." Therefore measurement liquidity has its own important. The performance of liquidity can be judged by investment in working capital, short-term creditors, and efficiency in working capital. Thus above analysis describe that the need for efficiency in working capital to rub day-to-day business activities can't be over emphasized.

· Vijayalakshmia and Srividyab, (2015) explained that the financial health plays a significant role in the successful management of a company. The analysis practically reveals that working capital turnover ratio, working capital to

net worth, net working capital to current liabilities, and net sales to net worth, have significant effect on the net profit ratio of the selected pharmaceutical companies during the study period. However, the working capital of the selected pharmaceutical companies in India during the study period is satisfactory. During the period of study there were a few ups and downs in the working capital but it did not affect the operations of the company to a great extent. If the Pharmaceutical Industry has to perform well, it has to invest more capital and has to do more sales, only then it will improve its performance level.

· Pandey, Sugumari and Azhagaiah (2016), clarified in their study while examining and evaluating the WC efficiency of the pharmaceutical industry, the study used 33 listed sample firms from the total of 128 firms listed on BSE. The results of the study show that there is a significant effect of WCM in respect of selected predictor variables viz QR, WCTR, DTR, FATR, PR, CA_PF, and SR on P of Pharmaceutical Industry in India for the study period. The most commonly used tools are financial ratios, mean, standard deviation, compound annual growth rate, and multiple regression analysis.

· Barot Haresh, (2012), made it clear that working capital refers to the firm's investment in short term assets. The management of working capital is important to the financial health of business of all sizes. The amounts invested in working capital are often high in proportion to the total assets employed and so it is vital that these amounts are used in an efficient way. Working capital management therefore aims at maintaining a balance between liquidity and profitability while conducting the day to day operations of business concern. The study aimed to provide empirical evidence about the effects of working capital management on profitability performance of CNX Pharmaceutical companies listed on National Stock Exchange of India. The study used different working capital measurements for a sample population of Indian firms.

· JOSHI & GHOSH, (2012), revealed significant positive trend growth in most of the selected performance indicators. Further, the selected ratios show satisfactory performances during the study period. Motaals test also indicates significant improvement in liquidity performance during the study period. Finally, there exists significant negative relationship between liquidity and profitability, which indicates that Cipla Ltd. has maintained post optimal level of liquidity (i.e., excess liquidity) during the period under study.

· Qurashi and Zahoor, (2017), investigated working capital determinants for the UK Pharmaceutical companies that are the constituents of FTSE 350 index. Secondary data is collected through annual reports and DataStream database for the UK Pharmaceutical firms since 2009 to 2014. Panel data method is used and OLS is employed as an estimation tool. Working capital is the dependent variable while firm size, profitability, leverage, operating cycle, growth and level of economic activity are independent variable. The result of multiple regression show highly significant results. Working capital is negatively linked with firm size while positively linked with growth and level of economic activity for UK Pharmaceutical firms. Furthermore, insignificant results of working capital with operating cycle, profitability and leverage are observed.

· Raheman & Nasr, (2007) the Paper focus on Working Capital Management has its effect on liquidity as well on profitability of the firm. In this research the effect of different variables of working capital management including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio on the Net operating profitability of Pakistani firms. Debt ratio, size of the firm (measured in terms of natural logarithm of sales) and financial assets to total assets ratio have been used as control variables.

· Jain P. K. and Yadav Surendra S. (2007) study the different facets of working

capital management. The issues addressed include relationship between CAs and CLs, the financing of working capital, and ways of dealing with excess or shortage of working capital. The study is based on an analysis of a thirteen year period data from 1991 to 2003 covering 137 public sector enterprises. In a nutshell, it is reasonable to contend that the sample PSEs (Public Sector Enterprises) are faced with long duration of net working capital cycle (time necessary to complete the following three events: 1. Conversion of cash into inventory 2. Conversion of inventory into debtors and 3. Conversion of debtors into cash less credit available from creditors) necessitating substantial working capital to be carried by them, eventually affecting their profitability in adverse manner.

4. PROFILE OF THE COMPANY –

DR. REDDYS LABORATORIES LIMITED

Dr Reddy's began as an active pharmaceutical ingredients (API) manufacturer in 1984, producing high-quality APIs for the Indian domestic market. In 1987, the company started its formulations operations and, after becoming a force to reckon with in the Indian formulations market, went international in 1991.

Dr Reddy's today is more than a 200-million dollar venture with presence in almost all major therapeutic areas. The company is committed to providing affordable and innovative medicines for healthier lives. Through its three businesses – Pharmaceutical Services and Active Ingredients, Global Generics, and Proprietary Products, Dr Reddy's offers a portfolio of products and services including APIs, custom pharmaceutical services, generics, biosimilars and differentiated formulations. The company's major therapeutic focus is on gastrointestinal, cardiovascular, diabetology, oncology, pain management and anti-infective. Major markets for Dr Reddy's include India, USA, Russia - CIS and Europe, apart from other select geographies within emerging markets.

Recently, Dr Reddy's deepened its focus into the rural markets in India to ensure the expansion of its reach. In this initiative, the company collaborated with its CSR wing, Dr Reddy's Foundation to reach the millions who are still away from effective treatment and availability of the right medicines.

5. OBJECTIVES OF THE STUDY

To study the impact of working capital ratios on ROCE of the Dr Reddys Laboratories Limited.

To compare the liquidity position of the company from year to year by applying Motaal's comprehensive test.

To examine the linear relationship between liquidity and profitability with the help of simple and multiple regression equation fitted on the basis of least-squares principles.

To measure the extent of relationship between ROCE and risk associated with it.

6. HYPOTHESIS OF THE STUDY

Null Hypothesis (Ho): There is no significant relation between working capital ratios and profitability; and

Alternative Hypothesis (H1): It is assumed that there is significant relationship between working Capital ratios and Profitability.

7. RESEARCH METHODOLOGY

The purpose of this research is to contribute towards a very important aspect of financial management known as working capital management with reference to Dr Reddys Laboratories Limited. The relationship is tested in this paper between working capital management components and its effects on Return on Capital Employed (ROCE) from the year 2007-01 to 2016-17.

The study is based on secondary data collected from the audited Profit & Loss A/c and Balance Sheet associated with schedules and annexure available in the published annual reports of Dr Reddys Laboratories Limited. For the purpose of the study, public enterprise

survey reports, government publications etc. have been used. Journals, conference proceedings and other relevant documents have also been consulted to supplement the data. The study covers a period of 10 years (i.e. from 2007-08 to 2016-17). The available data have been analyzed by using various financial ratios as a managerial tool as well as some simple statistical tools like Arithmetic Mean, Standard Deviation, Co-efficient of Variation, Correlation and Regression etc. Various statistical tests viz. t-test and One Way Anova test have been applied for the purpose of testing in this study.

8. DATA ANALYSIS

The purpose of this research paper is to study the effect the impact of Working Capital Management (WCM) policies on the profitability of Dr Reddys Laboratories Limited. This section describes the analytical frame work of data analysis, which describes financial result of Dr Reddys Laboratories Limited and the variables included in this work, the distribution patterns of the data and applied statistical techniques like Correlation and Regression in investigating the relationship between WCM and profitability.

Table - 1

Motaal's Comprehemsive Test Ranking in Order of Liquidity

Year	NWC to CAR	Rank 1	Inventory to Car	Rank 2	LA to Car	Total Rank	Ultimate Rank
2007-05	6496.53	10	1008.70	10	6701.30	30	10
2008-09	9313.10	8	1567.39	9	10269.61	26	9
2009-10	12276.13	6	2452.60	8	14440.40	22	8
2010-11	7477.43	9	7578.65	4	18458.35	20	7
2011-12	11577.00	7	8251.42	3	22371.58	16	6
2012-13	15595.18	5	9420.30	1	31310.70	11	4.5
2013-14	22139.96	3	7353.35	5	33788.65	11	4.5
2014-15	25233.00	1	7046.28	7	35640.72	10	2.5
2015-16	25024.64	2	7305.00	6	36583.00	9	1
2016-17	21482.74	4	8966.58	2	33613.42	10	2.5

Source: Annual Reports

Table-2

Simple Correlation Analysis Between Selected Ratios Relating To Working Capital Management And Return On Capital Employed

Correlations Matrix

	ROCE	CR	WCTR	QR	CATA	ITR	DTR	CBTR
ROCE	1							
CR	-.584	1						
WCTR	.274	-.751	1					
QR	-.572	1.000***	-.766**	1				
CATA	-.462	.934**	-.811**	.938**	1			
ITR	.430	-.064	-.372	-.042	-.128	1		
DTR	-.349	.482	-.130	.470	.591	-.742*	1	
CBTR	-.153	-.355	.133	-.353	-.429	.185	-.584	1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

a)   Motaal's Comprehensive Test : In an attempt has been made to evaluate the overall liquidity position during the period under study more precisely by applying Motaal's comprehensive test. In this test, a method of ranking has been applied to reach at a more comprehensive assessment of liquidity in which four different ratios viz. net working capital to current assets ratio, inventory to current assets ratio, liquid assets to current assets ratio and loans & advances to current assets ratio have been computed and combined in a points score. A high value of net working capital to current assets ratio or liquid assets to current assets ratio shows greater liquidity and accordingly ranking has been done in that order. On the other hand, a low inventory to current assets ratio or loans & advances to current assets ratio indicates more favourable liquidity position and therefore, ranking has been done accordingly in that order. Ultimate ranking has further been done on the basis that the lower the total of individual ranks, the more favourable is the liquidity position of the concern and vice versa.

The above table-1 furnishes shows that in the year 2015-16 marked the most sound liquidity position and it was followed by the years 2014-15 & 2016-17 than 2012-13 & 2013-14, 2011-12, 2010-11, 2009-10, 2008-09 and 2007-08 respectively.

b)   Working Capital And Profitability - Correlation Analysis : The ratios which have been selected and computed for the study are: (i) Current Ratio (CR) (ii) Working Capital Turnover Ratio (WCTR) (iii) Quick Ratio (QR) (vi) Current Assets to Total Assets Ratio (CTTR) (v) Inventory Turnover Ratio (ITR) (vi) Debtors Turnover Ratio (DTR) (viii) Cash to Bank Turnover Ratio (CBTR) and For determining the sensitivity of ROCE to change in the level of working capital, the working capital leverage has been computed. All statistical computations have been done through SPSS.

The co-efficient of correlation between selected ratios relating to working capital management and ROCE are presented in Table 2. It is evident from the table the correlation coefficient between ROCE and CR is (-) 0.584. It indicated that there is a moderate degree of negative association between the profitability and the current ratio of the company. The value of the correlation coefficient is found to be not significant at 5 percent level. Similarly, the correlation coefficient between ROCE and WCTR is (+) 0.274 which is found to be significant at 0.05 levels. It reveals that there is also a lower degree of positive correlation between the two variables. It is evident from these two ratios that the amount of current and liquid assets increases risk as well as profitability. Thirdly, the coefficient of correlation between ROCE and QR is (-) 0.572 and CATA is (-) 0.462. It implies that there is a negative correlation between these two variables. Fourthly, the coefficient of correlation between ITR and ROCE is (+) 0.430 which is found to be moderate degree of positive association between the two variables. Fifthly, the correlation coefficient between ROCE and DTR is -0.485, which indicates again a moderate degree of negative correlation between these two variables. Sixthly, the co-efficient of correlation between ROCE and CBTR is found to be -0.153 it viewing a lower degree of negative correlation between the variables. It is found to be insignificant at both 0.05 and 0.01 level. Hence, the study of the impact of working capital ratios on ROCE viewed both negative and positive impacts.

c) Impact of Working Capital Ratios on Profitability – Multiple Regression Analysis : In order to understand influence on profitability, a linear multiple regression models were used. From the above table multiple regression techniques have been applied and impact of working capital on ROCE of the company. In this study (i) Current Ratio (CR) (ii) Working Capital Turnover Ratio (WCTR) (iii) Quick Ratio(QR) (vi) Current Assets to Total Assets Ratio (CTTR) (v) Inventory Turnover Ratio (ITR) (vi) Debtors Turnover Ratio (DTR) and (viii) Cash to Bank Turnover Ratio (CBTR) have been taken as the

Table - 3

MULTIPLE REGRESSION ANALYSIS

Variables in the equation ROC - $B_0 + b_1 CR + b_2 WCTR + b_3 QR + b_4 CATA + b_5 ITR + b_6 DTR + b_7 CBTR$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.898[a]	.806	.418	5.1691

a. Predictors: (Constant), CBTR, WCTR, ITR, CR, DTR, CATA

ANOVA[#]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	332.743	6	55.457	2.076	.293[b]
	Residual	80.157	3	26.719		
	Total	412.900	9			

a. Dependent Variable : ROCE
b. Predictors: (Constant), CBTR, WCTR, ITR, CR, DTR, CATA

Table-4
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-109.234	103.322		-1.057	.368	-438.050	219.582
CR	-6.378	3.401	-1.506	-1.875	.157	-17.202	4.445
WCTR	4.391	4.964	.870	.885	.442	-11.407	20.189
CATA	37.465	35.854	1.536	1.045	.373	-76.638	151.568
ITR	19.330	12.942	1.119	1.494	.232	-217856	60.517
DTR	3.035	7.067	.315	-430	.697	-19454	25.524
CBTR	-.020	0.52	-.167	-.390	.723	-.184	.144

a. Dependent Variable : ROCE

Excluded Variables[a]					Collinearity Statistics
Model	Beta In	T	Sig.	Partial Correlation	Tolerance
1 QR	-14.458[b]	-.357	.755	-.245	5.576E-5

a. Dependent Variable : ROCE

b. Predictors: (Constant), CBTR, WCTR, ITR, CR, DTR, CATA

explanatory variable and ROI has been used as the dependent variable.

For the purpose of selection of variable in this analysis, the correlation matrix representing the correlation coefficients between the explanatory variables has been constructed in the above table. The regression model used is this analysis is hereunder. ROCE = b0 + b1CR + b2WCTR + b3QR + b4CATA + b5ITR + b6DTR + b7CBTR, where b0, b1, b2, b3, b4, b5, b6 and b7 are the parameters of the ROCE line to be estimated. The pooled regression results of the models exhibiting the impact of working capital ratios on ROCE of the company are presented in the above table exhibiting the relationship between the dependent variable ROCE, and all the independent variables taken together and the impact of these independent variables on the profitability of the company. When CR increased by - 6.378 units which was statistically significant at 5 percent level. When WCTR increased by 4.391 unit, profitability of the company increased by 0.256 unit which was statistically insignificant both at 5 percent and 10 percent levels. When DTR increased by 3.035 unit, the ROI of the company stepped up by - 101.474 units, which was statistically significant at 0.05 and 0.5 levels. When increase in CTR, the company's profitability increased by 1.102 unit, which was significant at 0.5 level only. For one unit increase in MCTR, the ROI of the company increased by 9.361 unit, which was significant at 0.5 level and insignificant at 0.05 level. The multiple correlation coefficient of ROCE on CR, WCTR, QR, CQTA, ITR, DTR and CBTR is 0.898. It reveals that the profitability of the company was highly influenced CR, WCTR, QR, CATA, ITR, DTR and CBTR. It is also evident from the value of R2 that the independent variables CR, WCTR, QR, CQTA, ITR, DTR and CBTR contributed 81 percent of the variations in the profitability of the company.

Working capital management and ROCE of the company disclosed both negative and positive association. Out of the seven ratios selected for the study four ratios, namely CR, QR, CATA and CBTR registered negative correlation with the ROCE. The slopes of the ROCE equation depicted that positive and negative influence of variations in the independent variables on the profitability of the company. Out of the seven regression coefficients of the ROCE Line, only two coefficients which were associated with QR and CBTR revealed negative influence on the ROCE. The coefficient of multiple determination (R2) makes it obvious that 81 percent of the total variation in the ROCE of the company.

D)   Non-insurable Risk & Profitability : The lack of sufficient liquidity to meet its short term financial obligations may result in bad credit ratings, loss of creditors' confidence, high-cost emergency borrowing, unnecessary legal hazards or even closure of the company. At the same time, if the level of working capital is more than the adequate level, holding cost of current assets would be more in which profitability, i.e. the outcome of non-insurable risk and uncertainty bearing will be affected very badly. Thus, too high or too low level of working capital is dangerous to the firm. A well-managed optimum amount of working capital at a reasonable level of non-insurable risk is always expected for better profitability. This risk is generally measured with the help of financial ratios. It is to be noted that there are no prescribed accounting ratios for risk evaluation. However, some important financial ratios such as current ratio, acid test ratio, current assets to total assets ratio, current liabilities to total assets ratio etc. are popularly used for measuring the risk associated with the liquidity of the firm. Some specific index value methods are also followed to determine the risk. In this study we use the following formula for measuring non-insurable risk of Dr. Reddys Laboratories Limited.

The relation between profitability and risk of DRL over the period of 10 years is analyzed in Table-5. This relationship is established by using the rank correlation

Table - 2
Rank Correlation Between Unisurable Risk and Roce

Year	E	D	F	C	Risk t	Rank-1	ROCK	Rank-2	d	d^2
2007-05	48118	4623	12331	48987	0.825	1	10	9.5	-8.5	72.25
2008-09	52591	6403	16220	55515	0.770	2	16	8	-6.0	36.00
2009-10	59146	5632	20610	61811	.0715	3	18	6.5	-3.5	12.25
2010-11	650202	6395	56107	36527	0.287	10	18	6.5	+3.5	12.25
2011-12	67178	5605	54169	49237	0.378	9	247	4	+5.0	25.00
2012-13	77834	1326	53889	66002	0.383	8	28	1.5	+6.5	42.25
2013-14	93290	10649	56003	89078	0.538	6	28	1.5	+4.5	20.25
2014-15	110960	10754	60002	104399	0.591	4	26	3	+1.0	1.00
2015-16	120784	11180	73741	102111	0.570	5	23	5	+0.0	0.00
2016-17	116006	5886	78534	85938	0.505	7	10	9.5	-2.5	6.25
									$\sum$	**227.50**

Source: Annual Reports

Rank Correlation

	RISK	ROCE
RISK	1.000	-.391
ROCK	-.391	1.000

between the risk factor (Rt) and profitability measured in terms of ROCE of the enterprise. The risk factor is measured by using the following formula:

Formula = Rt= [(E+D)-F]/C

Were

Rt = Risk factor

E = Shareholders' equity

D = Long term debt capital

C = Current assets

F = Fixed assets at the period

With the help of SPSS 23 Spearman Rank Correlation is calculated. We obtained r = -.391 which indicates that there is a low negative correlation between uninsurable risk and ROCE of the company. To find out the significance of the above result test the hypothesis as under:

TESTING THE SIGNIFICANCE OF CORRELATION CO-EFFICIENT:

· Ho: Null hypothesis there is no correlation between the ranked data.

· H1: Alternative hypothesis there is a correlation between the ranked data of Dr.

Reddys Laboratories Limited.

Since computed value of t (1.202) is lower than the table value of t (i.e. 2.228 at 5% level and 3.169 at 1% level of significance), the null hypothesis, H0: = is rejected both at 5% and 1% level of significance and thus, the alternative hypothesis, H1: is accepted both at 95% and 99% level of confidence. Therefore, we may conclude that there is significant relationship between uninsurable risk and profitability of the firm under this study.

9. CONCLUSION

From the analysis so far it may be concluded that working capital management is very much useful to ensure better productive capacity, good profitability and sound liquidity of an enterprise, for managerial decision making regarding the creation of sufficient surplus for its growth and survival stability in the present competitive and complex environment. From our observation it is also clear that the overall financial health of an enterprise not only depends on the profitability of the concern but also it depends on the liquidity position of the firm. It is also observed that liquidity and profitability are two closely related concepts in financial management of a firm in the way of achieving its desired goals.

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