

Impact of Working Capital Management in the Profitability - A Case Study of Oil and Natural Gas Corporation

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Abstract

Short term financing decisions are important financing decisions in the domain of a finance manager. A wrong decision in this regards will not only affect the ability of the business to pay obligations on time, also known as liquidity position of the business but also the ability of the business to earn profit, also known as profitability of the business. Hence, working capital decisions affect both liquidity and profitability position of the business. Working capital management implies managing the current assets and current liabilities of the business optimally. In this paper, an attempt is made to study how the working capital management affects the overall profitability of the business by taking an example of a leading company from oil and refinery sector in India, which is Oil and Natural Gas Corporation (ONGC). The study takes into account the some of the important working capital ratios like current ratio, quick ratio, working capital ratio, inventory turnover ratio, debtor turnover ratio, working capital to total assets ratio and how each one of them affect the profitability of the business which measured in terms of PBD divided by Owner's equity. The study is based on the data of five years from 2010-11 to 2014-15.

Key Words: *Liquidity, Profitability, working capital, current ratio, quick ratio.*

Introduction

As revealed by the economic survey of India for the year 2015-16, India achieved a robust economic growth rate of 7.2 per cent in 2014-15 and 7.6 per cent in 2015-16. This is despite worldwide recession and troubled monsoon in last few years, and hence India became one of the fastest growing major economies in the world. As per

the estimates of the International Monetary Fund (IMF), global average economic growth rate stood at 3.1 per cent in 2015, reflecting a decline from 3.4 per cent registered in 2014. While growth rate in advanced economies has been moderate since 2013, the emerging economies witnessed a consistently declining trend in growth rate ever since 2010 as per various estimates by the World Bank. It is in this context that the recent growth story of India assumes a very significance. Industrial sector in India, with a very significant role in realizing higher economic growth in the country, could register a higher

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growth during 2015-16 based on the performance of manufacturing sector. Higher FDI inflows, better performance of infrastructure sector, new landmark initiatives like Make in India, Ease of Doing Business, Start Up India, Digital India, and Smart Cities, etc. have further contributed to the better performance of industrial sector in India. The industrial sector is expected to be the key driver of economic growth in the country in time to come. The growth of the industrial sector comprising mining and quarrying, manufacturing, electricity, gas, water supply and other utility services, and construction is 5.9 per cent during 2014-15, as against 5.0 per cent during 2013-14. The growth is expected to strengthen further to 7.3 per cent for 2015-16 as per the advance estimates released by the CSO recently.

The oil and gas sector with a weight of above 10 per cent in IIP is among the eight core industries in India and plays a major role in influencing decision making for all the other important segments of the economy. The consumption of natural gas in India has been rising faster than any other fuel in the recent years. As per an estimate, demand for natural gas has been growing at the rate of about 6.5% during the last 10 years (<http://www.indiaenergyportal.org/>). Industries such as power generation, fertilizer, and petrochemical production are using more and more natural gas in recent years. India's natural gas consumption was met entirely through domestic production in the past. However, there has been a huge unmet demand of natural gas in India in last four or five years, mostly required for the core sectors of the economy. To fulfill this gap between demand and production, the import of LNG (liquefied natural gas) is being considered as one of the possible solutions for India's expected gas shortages apart from encouraging domestic production.

The Petroleum refining sector in India has come a long way since crude oil was discovered and the first Refinery was set up at Digboi in our country more than a century and decade ago. The present Mumbai Refinery of HPCL was the first modern Refinery set up. Since then, many refineries were established by the Government, Private sector and Joint sector. The refining industry of India has done well in establishing itself as a major player globally and today we are the 4th largest country in the world in terms of refining capacity after USA, Russian Federation and China. The present refining capacity in India is 230.066 Million Metric Tonnes Per Annum (MMTPA) comprising of 23 refineries - 18 under Public Sector, 3 under private sector and 2 in Joint Venture (JV).

Management of finances in business enterprises can be divided into two broad areas such as the management of long-term capital and the management of short-term funds or working capital. The management of working capital is a major area of decision-making for financial managers. It is a continuous activity which has a significant impact on the successful functioning of the enterprises. It is also referred to as the management of current assets and current liabilities. Effective management of working capital is an essential pre-requisite for the successful operation of a business enterprise and has a significant impact in improving its rate of return on the capital invested in short-term assets and thereby on the overall profitability of the enterprises. Every business undertaking requires working capital to pay-off its short term obligations. Moreover, every firm needs working capital because it is not possible on part of the firms to ensure that production, sales, cash receipts and payments are all instantaneous and synchronized. It requires certain time for converting raw materials into finished goods: finished goods into sales and finally realization of sale proceeds. Hence, funds are needed to support all such activities in the firm. In the backdrop of this, it becomes interesting to see how companies in such a significant sector of the economy manage their working capital and how such management of working capital affects the profitability of the firms. The present paper attempts to study how working capital management affects the ability of the firms to earn profit by taking an example of Oil and Natural Gas Corporation. Oil and Natural Gas Corporation (ONGC) Limited is a Government of India enterprise with a total turnover of Rs 88,237.53 crore and profits of Rs 17,732.95 crore for the year 2014-15. It comes under the direct administrative control of the Ministry of Petroleum and Natural Gas. It is largest oil and gas exploration and production company in India. It produces around 70% of India's crude oil which is equivalent to around 25% of the country's total demand and around 60% of its natural gas. With a market capitalization which exceeds over INR 2 trillion, it is one of India's most valuable publicly-traded companies. ONGC owns and operates more than 26,600 kilometers of pipelines in India. No other oil company in India operates even 50 per cent of this route length.

Literature survey

Every organization needs both permanent and working capital. There are various ways to minimize investments in fixed assets liking by renting or leasing but no firm can avoid investment in current assets. Working capital is required for the smooth conduct of the day to day operation. S, proper management of working capital is very important for firms because of its effect on the firm's profitability and risk and consequently its value (Smith, 1980). The literature of finance has in past neglected the short term financial decisions, i.e. ,working capital management decisions. Shortage of funds for working capital as well as the uncontrolled over-expansion of working capital has resulted in the fall of many businesses and in less severe cases has stunted their growth (Grass, 1972). In case of small firms, working capital management may be the factor that decides success or failure; but in case of larger firms, efficient working capital management can significantly affect the firm risk, return and share (Gitman, 1982). Working capital management is the proper management of current assets and current liabilities. If a firm is able to maintain

high level of inventory, it will reduce the cost of possible interruption in the production process or of loss of business due to the shortage of products, reduce supply costs and protect against price fluctuations among other advantages (Blinder and Manccini, 1991).

Granting trade credit can help the firms in various ways. Trade credit can act as an effective price cut (Brennan et al., 1988; and Petersen and Rajan, 1997) and an incentive to customers to acquire merchandise at times of low demand (Emery, 1987). However, firms investing heavily in inventory and account receivable can suffer low profit. Thus, greater the investment in current assets, lower is the risk as well as profitability. At the same time, trade credit is a spontaneous source of financing that reduces the amount required to finance the sums tied up in the inventory and account receivables. Hence, the trade credit can have a very high implicit cost if early payment discounts are available. In fact, the opportunity cost may be as high as 20 percentage depending on the discount percentage and the discount period granted (Ng et al., 1999; and Wilner, 2000). Profitability and liquidity are the two conflicting goals of working capital management. The conflict arises because the maximization of the firm's returns can seriously hamper liquidity, and on the other hand, higher liquidity has a tendency to dilute returns. Over the years, analysts have used traditional ratio analysis as a primary instrument for the measurement of corporate liquidity in the firm, of well established ratios such as the current and quick ratios (Smith, 1997).

Shin and Soenen, (1998) emphasized that efficient Working Capital Management was very important for creating value for the shareholders. The way working capital was managed has a significant impact on both profitability and liquidity. The relationship between the length of Net Trading Cycle, corporate profitability and risk adjusted stock return was analyzed using correlation and regression analysis, by industry and capital intensity. They could observe a strong negative relationship between lengths of the firm's net-trading Cycle and its profitability. In addition, they found that the shorter net trade cycles were associated with higher risk adjusted stock returns.

Ghosh and Maji (2004) attempted 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 used instead of using some common working capital management ratios. They found that the Indian Cement Industry as a whole did not perform remarkably well during this period.

Chowdhury and Amin (2007) in their paper "Working Capital Management Practices in Pharmaceutical Companies Listed in DSE" observed that among all the problems of financial management, the problems of working capital management have probably been recognized as the most crucial one. It is due to the fact that working capital always helps a business concern to gain vitality and life strength and to maximize profit.

Objectives

- Working capitals may be financed by both long term sources and short term sources of finance. When firm relies more on short term sources, it is aggressive financing and when firms rely on long term sources, it is called conservative way of financing. An attempt is made to analyze and examine the size and composition of working capital of ONGC and its pattern of financing over the period of time.
- Generally, the firms tend to sacrifice liquidity and maintain a relatively low level of current assets for earning higher levels of profits. When the companies do so, their profitability will improve, as lesser funds are tied up in the form of idle current assets, but their liquidity will be adversely affected. Hence, the article aims to study the association of profitability with the working capital ratios.

Research Methodology

This study takes into account secondary data. The data required for this study have been collected from the annual reports of Oil and Natural Gas Limited. The study covers a period of five years starting from 2010-11 to 2014-15. The study covers mainly the following aspects of working capital analysis: (i) Component of Working Capital; (ii) Financing of Working Capital; (iii) Trends of Working Capital; and (iv) Impact of working capital on Profitability. Statistical techniques used for the purpose of analysis are coefficient of correlation and simple regressions. In this study, correlation analysis is used for the purpose of establishing definite relationships between working capital ratios and profitability ratio. It implies interdependence of the set of variables. Further, the linear multiple regression models are used in order to study the influence working capital ratios on the profitability.

For the purpose of the study, working capital ratios, viz., Current Ratio (CR), Liquid Ratio (LR), Working Capital Ratio (WTR), Inventory Turnover Ratio (ITR), and Receivables Turnover Ratio (RTR) are used independent variables and Profit after Tax (PBT) to owner's fund ratio is used as dependent variable. The simple regression equation used is:

$PBT/Owner's\ equity = A + BY$; where A is a constant and Y is the respective independent variables.

Limitations of the study

- It based on the case analysis of one Sample Company only which is ONGC.
- The data is collected for a limited period of time only (five years from 2010-11-2014-15).

Data Analysis and Interpretation

Working capital analysis: There are two popular concepts of working capital, viz, gross working capital and net working capital. While the former concept refers to the total of current assets of a firm, later refers to the excess of current assets over current liabilities. In fact, net working capital refers to the long term sources of

finance used for investment in the form of current assets. The following table gives us an idea about the components of working of ONGC over the last five years time period:

Table 1: Current assets and current liabilities of ONGC					
(Rs. In Crores)					
CURRENT ASSETS	2010-11	2011-12	2012-13	2013-14	2014-15
Current Investments	0.05 (00)	851.91 (2.33)	0 (00)	0 (00)	0 (00)
Inventories	4118.98 (15.89)	5165.44 (14.12)	5704.39 (18.75)	5882.54 (19.71)	5963.53 (19.77)
Trade Receivables	3994.68 (15.41)	6194.82 (16.93)	6863.72 (22.56)	8165.67 (27.36)	13578.27 (45.02)
Cash And Cash Equivalent	14481.09 (55.86)	20124.57 (55.01)	13218.59 (43.44)	10798.88 (36.19)	2760.07 (9.15)
Short Term Loans And Advances	2673 (10.31)	3123.71 (8.54)	3702.12 (12.17)	4366.96 (14.63)	6947.68 (23.03)
Other Current Assets	655.41 (2.53)	1123.98 (3.07)	938.04 (3.08)	629.25 (2.11)	913.71 (3.03)
Total CA	25923.21 (100)	36584.43 (100)	30426.86 (100)	29843.3 (100)	30163.26 (100)
CURRENT LIABILITIES					
Short Term Borrowings	0 (00)	4500 (17.51)	0 (00)	0 (00)	1393 (7.24)
Trade Payables	5225.3 (27.28)	5261.24 (20.47)	5341.01 (30.57)	6372.48 (33.40)	5489.1 (28.63)
Other Current Liabilities	13005.53 (67.89)	13694.12 (53.29)	11222.66 (64.23)	11926.17 (62.51)	10293.81 (53.69)
Short Term Provisions	925.78 (4.83)	2242.59 (8.73)	910.19 (5.21)	781.12 (4.09)	1997.58 (10.42)
Total CL	19156.61 (100)	25697.95 (100)	17473.86 (100)	19079.77 (100)	19173.49 (100)
Net Working Capital	6766.6	10886.48	12953	10763.53	10989.77
Current Ratio	1.35	1.42	1.74	1.56	1.57
Quick Ratio	1.14	1.22	1.41	1.26	1.26

Source: data compiled from the annual reports of the company

The current assets of the company have increased from Rs 25,926.21 crores in 2010-11 to Rs 30163.26 crores over the period of five years reflecting an increase of over 16%. If we see carefully, we can observe that there is lot of fluctuations in the investment in the form of current assets. There are lots of increases and decreases in total current assets over the time period under consideration. The current liabilities of the company have also undergone lot of fluctuation over the time period of five years. However, if see the change from 2010-211 to 2014-15, it increased only by less than 1%. So, as compared to increase in current assets, increases in current liabilities are very less over time. This is also reflected in the form of net working capital which increased over the same time by 62.41%. Now, this implies that firm is

relying more on long term source of finance as compared to initial years in which increased investment in current assets was financed by short term sources of finance.

Table 2: Sources Used for Financing of Working Capital					
Gross Working Capital	25923.21	36584.43	30426.86	29843.3	30163.26
Long Term Sources of Finance	6766.6	10886.48	12953	10763.53	10989.77
Short Term Sources of Finance	19156.61	25697.95	17473.86	19079.77	19173.49

When we see the components of current assets, we can find that trade receivable which was only around 15% of current assets in 2010-11 increased to almost three times in 2014-15. This increase in the receivable is very significant keeping in mind the fact that the operating revenue of the business has registered a growth of 21.26% over the same period from Rs 68,338.92 cores in 2010-11 to Rs 82870.96 crores in 2014-15. Further, Short Term Loans and Advances also registered significant increases from 10.31% of current assets in 2010-11 to 23.03% in 2014-15. The proportion of liquid assets has come down significantly from 55.86% of current asset to 9.15% in 2014-15. Inventories recorded a marginal increase of 4% over the same period of time. If we see the liquidity position of the firm, it has improved over the time. Both current ratio and quick ratio not only remained steady but also improved over the study duration. So, the firm is maintaining a sound liquidity position.

Table 3: Correlation between PBT to Owner's equity and independent variables							
	CR	QR	WCR	ITR	DTR	WC to total assets Ratio	PBT to owner's equity
CR	1.00						
QR	0.97	1.00					
WCR	1.00	0.95	1.00				
ITR	-0.68	-0.61	-0.73	1.00			
DTR	-0.64	-0.51	-0.70	0.94	1.00		
WC to total assets Ratio	0.69	0.85	0.67	-0.43	-0.20	1.00	
PBT to owner's equity	-0.61	-0.49	-0.67	0.98	0.96	-0.25	1.00

From the above table, we can see that except inventory turnover ratio and debtor turnover ratio, all other independent variable like current ratio, quick ratio, working capital ratio and WC to TA ratio have negative correlation with PBT to Owner's equity ratio. Both inventory turnover and debtor turnover ratio have found to have positive relation with profit before tax to owner's fund ratio. The highest negative correlation is found with WCR. Higher the amount of working capital in relation to its current assets, lower is the profitability of the business measured in term of profit before tax divided by owner's fund of the firm.

Regression analysis

The relationship between profitability of ONGC measured by PBT to total assets is studied by taking one independent variable at a time in the following way:

Table 4: Impact of current ratio on Profitability measured by PBT/Owner's equity				
<i>Regression Statistics</i>				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.727045636	0.354822423	2.049041	0.132886
Current Ratio	-0.306818	0.230858315	-1.32903	0.275875
	Multiple R	0.608756323		
	R Square	0.370584261		
	Adjusted R Square	0.160779015		
	Standard Error	0.069344131		
	Observations	5		

In the above table, the impact of current ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in current ratio, profitability decreased by 0.306818 unit. However, this was not found statistically significant at 5% level of significant as the p-value is above 0.05.

Table 5: Impact of QR on Profitability Measured by PBT/Owner's Equity				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.725866299	0.478497014	1.516971	0.226549
Quick Ratio	-0.372270483	0.37918287	-0.98177	0.398609
	Multiple R	0.493117063		
	R Square	0.243164438		
	Adjusted R Square	-0.009114083		
	Standard Error	0.076039925		
	Observations	5		

In the above table, the impact of quick ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in quick ratio, profitability decreased by 0.372270483 unit. However, this was also not found statistically significant at 5% level of significant as the p-value is above 0.05.

Table 6: Impact of Working capital ratio on Profitability Measured by				
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PBT/Owner's equity				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.528037002	0.175774597	3.004058	0.057483
Working capital Ratio	-0.792003637	0.507105578	-1.56181	0.21626
	Multiple R	0.669667149		
	R Square	0.44845409		
	Adjusted R Square	0.264605454		
	Standard Error	0.06491301		
	Observations	5		

In the above table, the impact of working capital ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in working capital ratio, profitability decreased by 0.792003637 unit. However, this was also not found statistically significant at 5% level of significant as the p-value is above 0.05. But at 10% level of significant, working capital is found to be significantly affecting the profitability measured by PBT divided by owner's equity.

Table 7: Impact of inventory turnover ratio on Profitability Measured by PBT/Owner's equity				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.792040864	0.132212303	-5.99067	0.009313
inventory turnover ratio	0.070794822	0.00890233	7.952392	0.004148
	Multiple R	0.97709289		
	R Square	0.954710515		
	Adjusted R Square	0.93961402		
	Standard Error	0.018601142		
	Observations	5		

In the above table, the impact of inventory turnover ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in inventory turnover ratio, profitability increased by 0.070794822 unit. This was found statistically significant at 5% level of significant as the p-value is less than 0.05.

Table 8: Impact of debtor turnover ratio on Profitability Measured by PBT/Owner's equity				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.038874023	0.037920093	1.025156	0.38073
debtor turnover ratio	0.016573529	0.002757786	6.009722	0.009231

	Multiple R	0.960888404		
	R Square	0.923306525		
	Adjusted R Square	0.897742034		
	Standard Error	0.024205838		
	Observations	5		

In the above table, the impact of debtor turnover ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in debtor turnover ratio, profitability increased by 0.016573529 unit. This was also not found statistically significant at 5% level of significant as the p-value is more than 0.05.

Table 9: Impact of WC to total assets Ratio on Profitability Measured by PBT/Owner's equity				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.3609193	0.236311077	1.527306	0.224131
WC to total assets Ratio	-1.795231499	4.040476159	-0.44431	0.686914
	Multiple R	0.248478342		
	R Square	0.061741486		
	Adjusted R Square	-0.251011351		
	Standard Error	0.08466466		
	Observations	5		

In the above table, the impact of working capital to total assets ratio on profitability of ONGC is shown with the help of simple regression analysis. For a unit increase in working capital to total assets ratio, profitability increased by -1.795231499 unit. This was also not found statistically significant at 5% level of significant as the p-value is more than 0.05.

If we compare the result of this study with other studies, we can note some interesting observations. In a study titled "Effectiveness on Profitability: Working Capital Management" by Prof. S. Pandey and V K Jaiswal (2011) based on NALCO, it has been observed that different working capital ratios had statistically insignificant impact on the ROCE of the firm. Another study by J P Singh and S Pandey (2008) based on Hindalco has shown that the contribution of long term source in working capital was below 30%. Regression results of the study had shown that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio have statistically significant impact on the profitability of Hindalco Industries Limited. But on the whole, it can be commented that working capital has a significant role to play as far the profitability of the business is concerned.

Conclusion

From the above analysis following aspects were observed. Working capital ratios like current ratio, quick ratio, working capital ratio and WC to TA ratio were found to have negative correlation with PBT to Owner's equity ratio. This implies that any increase in these ratios will decrease profitability of the firms. Further, inventory turnover and debtor turnover ratio were found to have positive relation with profit before tax to owner's fund ratio. This implies that firms will have a positive impact on their profitability if they can speed up their inventory and debtor turnovers. Both current and quick ratios were found not to have significant impact on profitability at 5% level of significance. With a unit increase in working capital ratio, profitability decreasing by 0.792003637 units is major negative effect on the profitability of the firms. From statistical analysis, this impact was proved to be significant at 10 % level of significance. With a unit increase in working capital ratio, profitability decreasing by 0.792003637 units is also a major negative impact which was found to be statistically significant at 10% of significance. With a unit increase in inventory turnover ratio, profitability increasing by 0.070794822 units was found to be statistically significant at 5% level of significant as the p-value is less than 0.05. Hence, faster the turnover of inventory, greater will be profitability of the business. Debtor turnover also had a positive impact on profitability which was also not found to be statistically significant. The impact of working capital to total assets ratio on profitability of ONGC was the most negative of all the variables. This was also not found to be statistically significant.

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