

Working Capital Management Efficiency of DPSUs in India

Dr B N Mandal

Assistant Professor & HOD (Commerce)

Nims University, Rajasthan, Jaipur

The amount of working capital components vary from organization to organization depending upon the operating cycle. The Working Capital Management efficiency is measured in terms of Working Capital Period (WCP) in days. The WCP is based on the amount in each of equally weighted receivable, inventory and accounts payable. The WCP represents the lead period between purchase of material from supplier till realization of money and payment against purchases to the vendor.

The company's financial performance measure (Profitability) is measured using the EBDIT (Earnings before depreciation, interest and tax) related to Total Assets (TA). This measure indicates the earning power of the company assets (EBDIT/TA) i.e. Net operating profit to Total Assets (NOPA).

Another measure is used for financial performance (Profitability) analysis that is EBDIT (Earnings before depreciation, interest and tax) related to Sales i.e EBDIT/Sales i.e Net operating profit to Sales (NOPS). This represents the profit margin secured on sales.

To measure the financial performance-Liquidity of the firm, Cash flow from operations/Sales (CCE) and Current Ratio (CR) are applied. The CCE represents the cash flow comes from operating activities related to the sales.

The formulae for calculating the values are given in the following table.

Table – 1.1

Capital Ratio Definitions

Working Capital Ratios	Abbreviation	Formula
Average collection period	ACP	Receivables/(Sales/365)
Inventory holding period	ITIO	Inventories/(Sales/365)
Average Payment period	APP	Payables/(Sales/365)
Working Capital period	WCP	ACP + ITIO - APP
Current Ratio	CR	Current Assets /Current Liabilities
Cash conversion efficiency	CCE	(Cash flow from operations)/Sales
Net operating profit to Total Assets	NOPA	(EBDIT)/Total Assets
Net operating profit to Sales	NOPS	((EBDIT)/Sales

Source: Management Accounting defined Ratios

Deriving statistical evidence to conform to the association between the Working Capital Management efficiency (WCP) and Financial Performance (Liquidity & Profitability), Correlation analysis among WCP, ACP, ITIO, CCE, NOPA, NOPS and CR are undertaken to obtain the statistical evidence through Pearson Correlation coefficients. Statistical evidence is derived to find out the approaches of Working Capital Management (WCM) that Indian DPSUs use to increase profitability and liquidity.

Classical Analysis of Variance – ANOVA-F test is done to prove the same. The data for the measure of WCM, profitability and liquidity, are collected from the Annual Reports containing financial statements of the select DPSUs over the period from 2002-03 to 2011-12. The publicly available financial information is collected from the Public Enterprise Survey of the Government of India, as well as the annual reports of DPSUs. For each DPSU, descriptive statistics for the components of working capital management efficiency for the DPSUs have been presented. The working capital variables are (i) ACP is the average collection period (ii) ITIO is the Inventories turnover per year in terms of days of holding of inventories, (iii) APP is the days of payable Period, WCP is the working capital period, CCE is the cash flow from operation to sales, NOPA is the EBDTA to Total Assets ratio, NOPS is the EBDTA to Sales ratio, and CR is the current ratio.

1.4.2 Working Capital Management: An Analysis of individual DPSUs

After understanding the basics of the Working Capital Management, it is required to analyze the Working Capital Management of the DPSUs one after another and also the DPSUs put together which will give the practical aspect of such companies as given below:

1.4.3 Working Capital Management and Financial performance –An Analysis of DPSUS all together.

Based on the definitions cited, a ten years data of the DPSUs together comprising the years from 2002-03 to 2011-12 has been taken into consideration and the relevant ratios have been calculated and presented in the following table.

Table – 1.2

Working Capital Management and Financial performance measures of DPSUs together.

Particulars\years	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Receivables/(Sales/365) (ACP)	82	89	86	95	95	118	110	90	106	104
Inventories/(Sales/365) (ITIO)	287	276	287	300	361	428	488	440	545	510
Payables/(Sales/365) (APP)	752	794	878	1003	1098	1225	1139	904	1129	928
ACP+ITIO-APP (WCP)	-383	-429	-505	-608	-642	-680	-541	-374	-478	-313
Current Assets/Current Liabilities (CR)	1.15	1.11	1.09	1.08	1.08	1.11	1.14	1.17	1.16	1.33
(Cash flow from operations)/Sales (CCE)	1.15	1.13	1.23	1.44	1.59	1.82	1.46	1.12	1.44	1.40
EBDIT/Total Assets (NOPA)	0.06	0.07	0.08	0.08	0.07	0.08	0.08	0.08	0.07	0.07
(EBDIT)/Sales (NOPS)	0.15	0.18	0.21	0.24	0.25	0.30	0.29	0.23	0.25	0.25

Source: Statistics based on data of Annual Reports of DPSUs together

To summarize the data, the descriptive statistics has been used. The commonly used measures of Central Tendency (Mean& Median) and the measures of Variability (Standard deviation) have been ascertained as given in the following table.

Table – 1.3

Descriptive Statistics: Working Capital Management and financial performance measures of DPSUs together

	ACP	ITIO	APP	WCP	CCE	NOPA	NOPS	CR
Mean	98	392	985	-495	1.38	0.07	0.23	1.14
Median	95	394	965	-492	1.42	0.07	0.24	1.12
SD	11.55	102.88	158.78	122.64	0.22	0.01	0.05	0.08

Source: Statistics based on data of Annual Reports of DPSUs together

The higher standard deviation for APP of 158.78 days indicates a wide variation in APP (Average Payable period) in DPSUs together. Further the standard deviation for WCP is also 122.64 days which indicates a wide variation in days of working capital (WCP). However the ACP median is 95 days which is near to its mean of 98 days indicating that the DPSUs are managing the sales outstanding days well. Small difference in the ITIO median of 394 days and mean 392 days indicate that the DPSUs as a whole have managed well their inventory and this is a contributor for decreased median of WCP.

Association of WCM efficiency and financial performance of DPSUs all together.

The descriptive statistics show the working capital measure. The correlation analysis is done to analyze the association between the working capital management efficiency with financial performance (profitability and liquidity). To examine the relationship among these variables, the Pearson correlation coefficient is calculated as given below:

Table – 1.4

Correlation Analysis of DPSUs – Working Capital Management Efficiency and Financial
Performance measures

	ACP	ITIO	APP	WCP	CCE	NOPA	NOPS	CR
ITIO	0.727							
APP	0.871	0.594						
WCP	-0.424	0.138	-0.714					
CCE	0.823	0.380	0.896	-0.763				
NOPA	0.430	0.121	0.535	-0.550	0.413			
NOPS	0.900	0.660	0.918	-0.550	0.803	0.727		
CR	0.222	0.603	-0.150	0.721	-0.115	-0.307	0.048	

Source: Statistics based on data of Annual Reports of DPSUs together

In general, efficient working capital management should improve a company's profitability and liquidity. To improve profitability and liquidity, the WCP (Cash conversion Period) should be negatively correlated to NOPA, NOPS and CCE. The correlation coefficients from the above table indicate that there is statistical evidence that the profitability and liquidity are negatively related to the working capital efficiency. This means the cash flow from operation (CCE), EBDIT to Assets (NOPA) and EBDIT to Sales (NOPS) are very much correlated to the improvement of profitability.

From the above it is noted that the ITIO and APP are positively related to CCE, NOPA and NOPS which indicates close association of ITIO and APP with CCE, NOPA and NOPS.

Table – 1.5

Regression Analysis of DPSUs - WCM Efficiency (WCP) and Liquidity

Multiple R	0.99					
R Square	0.99					
Adjusted R Square	0.98					
Standard	15.81					
Observations	12.00					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	2.00	180798.24	90399.12	361.54	0.00	
Residual	9.00	2250.33	250.04			
Total	11.00	183048.58				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-1167.88	88.74	-13.16	0.00	-1368.63	-967.13
C A/C L (CR)	1017.18	67.72	15.02	0.00	863.99	1170.37
CCE	-356.59	20.11	-17.73	0.00	-402.09	-311.09

Source: Regression based on SPSS Statistics

The table – 1.5 shows the multiple regression analysis to investigate the association between the working capital efficiency (WCP) and Financial Performance - Liquidity measures (CR & CCE). The WCP is the dependent variables and liquidity measures (CR & CCE) are independent variables. The regression analysis result indicates that the liquidity measure (CCE) is negatively associated whereas the CR is positively associated with WCP. The P values are minimal indicating that the whole regression is significant.

Test of Hypothesis

Hypothesis: There is no impact of Working Capital Management efficiency on liquidity in DPSUs.

Level of Significance: 5 percent

Degree of freedom: 11

From the table -1.5, it is noted that the calculated value of p for Liquidity - CR and CCE are 0.00 and 0.00 respectively. Since the calculated values of p are lower than 0.05 (5 percent significance level), it is concluded that the model is significant.

Hence the null hypothesis is rejected. This indicates that there is impact of the Working Capital Management efficiency on Liquidity in DPSUs.

Table – 1.6

Regression Analysis of DPSUs - WCM Efficiency (WCP) and Profitability

Multiple R	0.72					
R Square	0.52					
Adjusted R	0.41					
Standard Error	99.16					
Observations	12.00					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	2.00	94561.17	47280.58	4.81	0.04	
Residual	9.00	88487.41	9831.93			
Total	11.00	183048.58				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	123.07	314.62	0.39	0.70	-588.64	834.78
EBDIT/Total Assets (NOPA)	-5900.43	6792.48	-0.87	0.41	-21266.08	9465.23
(EBDIT)/Sales (NOPS)	-815.11	985.93	-0.83	0.43	-3045.44	1415.22

Source: Regression based on SPSS Statistics

The table -3.50 shows the regression analysis to investigate the association between the working capital efficiency (WCP) and Financial Performance -Profitability measures (NOPA&NOPS). The WCP is the dependent variables and profitability measures (NOPA&NOPS) are independent variables. The regression analysis result indicates that the profitability measures (NOPS) as well as NOPA are negatively associated with WCP. The P values are highly exceeding 0.05 (5 percent significance level) indicating that the whole regression is insignificant.

Test of Hypothesis

Hypothesis: There is no impact of Working Capital Management efficiency on profitability in DPSUs.

Level of Significance: 5 percent

Degree of freedom: 11

- (i) From the table -3.50, it is noted that the calculated value of p for Profitability - NOPA and NOPS are 0.41 and 0.43 respectively. In both cases, it is higher than 0.05 (5 percent significance level). Hence the model is not fit.
- (ii) From the ANOVA exhibited in the above table, the significance of F shows the goodness of fit of the model. The lower the number, the better is the fit. Since the value of the significance F is 0.04 i.e. less than 0.05, it is concluded that the overall model is fit to the data

Hence the null hypothesis is rejected. This indicates that there is impact of the Working Capital Management efficiency on profitability of DPSUs altogether.

Based on the testing of the null hypothesis, the result indicates that there is impact of Working Capital Management efficiency on liquidity in the case of all DPSUs and impact of Working Capital Management efficiency on PROFITABILITY in the case of DPSUs like BDL, GSL GRSE, HAL, MDL, and MIDHANI. There is no impact of Working Capital Management efficiency on PROFITABILITY in the case of DPSUs like BEL and BEML. This shows significant level of management of working capital in all DPSUs except BEL and BEML.

1.5 Summary

Working Capital consists of that portion of the assets of a business, which are used, in current operations. It includes receivables, inventories or raw materials, stores, work-in-progress and finished goods, merchandise, bill receivable and cash. A firm may exist without making profits but cannot survive without liquidity. The function of working capital management organization is similar that of heart in a human body. Also it is an important function of financial management. The financial manager must determine the satisfactory level of working capital funds and also the optimum mix of current assets and current liabilities. He must ensure that the appropriate sources of funds are used to finance working capital and should also see that short term obligation of the business are met well in time. Working capital as represented by excess of current assets over current liabilities and identifying the relatively liquid portion of the total enterprise capital which constitutes a margin for meeting obligation within the ordinary operating cycle of the business.

There are two concepts of working capital, Gross concept and Net Concept. Gross working capital refers to a firm's investment in current assets. Current assets are the assets, which can be converted into cash within an accounting year and includes cash, short term securities, debtor, bills receivables and inventories. In other way, it defines as "total of current assets i.e. circulating capital." This concept is also known as quantitative concept. The net concept i.e. net working capital concept refers to the difference between current assets and current liabilities. Current liabilities are those claims of outsiders, which are expected to mature for payment within an accounting year and include creditors, bills payable, bank overdraft and outstanding expenses. The working Capital management deals with the liquidity ratios. Liquidity ratios describe the current ability of the DPSUs to meet their short-term requirement. These ratios measure the availability of cash in a company. The persons interested like Suppliers of goods, moneylenders and financial institutions may do a liquidity analysis to find out the ability of the company to meet its obligations.