www.ijemr.net ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Volume-5, Issue-3, June-2015

International Journal of Engineering and Management Research

Page Number: 196-208

A Study on Working Capital Management Efficiency

Dr .R. Kavitha[1], Dr. R. Shanmugam[2]

[1]Associate Professor, Sakthi Institute of Information and Management Studies, Pollachi, Coimbatore, Tamil Nadu, INDIA

[2]Professor (Retd), BSMED, Bharathiar University, Coimbatore, Tamil Nadu, INDIA

ABSTRACT

Efficient management of working capital is an important indicator of sound health of an organization. The successful performance of a firm depends on its financial manager's efficient management of receivables, inventories and current liabilities. Companies can decrease their resource costs by decreasing amount of resources assigned to circulating assets or they can increase their funding abilities. To measure the working capital efficiency of large and small Indian pharmaceutical companies, the data have been collected for the period of 10 years from 2002-03 to 2001-12. Statistical measures average, minimum, maximum, ratio analysis, Bhattacharya's Efficiency Index, regression analysis and ANOVA have been used for the analysis. According to the analysis made in the various utilization, performance and efficiency indices of large and small pharmaceutical firms, the efficient management of working capital leads efficiency in the firms.

Keywords*----* Working Capital, Ratio Analysis, Bhattacharya's Efficiency Index

I. INTRODUCTION

In general, current assets are considered to be one of the important components of total assets of a firm. A firm may be able to reduce the investment in fixed assets by renting or leasing a plant and machinery, whereas, the same policy cannot be followed for the components of working capital. The high level of current assets may reduce the risk of liquidity associated with the opportunity cost of funds that may have been invested in long-term assets. Thus, efficient management of working capital is an important indicator of sound health of an organization which requires reduction of unnecessary blocking of capital in order to bring down the cost of finance. In the light of the above, an attempt is made in this study to look into the efficiency of the working capital management of pharmaceutical firms.

Though accounting ratios has played a very important role in most of earlier empirical investigations, but a choice of ratios or group of ratios is often a difficult task due to the absence of a proper theory of ratio analysis (Bhattacharya, 1997). To overcome this problem, Bhattacharya (1997) has developed an alternative ratio model for the measurement and the monitoring the efficiency of working capital management. He decomposed the total efficiency index of the working capital management into performance index and utilization index. The present study adopts the efficiency index developed by Bhattacharya in order to measure the working capital performance and utilization as well as total efficiency in the case of pharmaceutical firms. Rao and Rao (1991), Afza and Nazir (2008), and Benjamin Christopher and Kamalavalli(2010) have identified that this model proved to be good in judging the efficiency of working capital management.

II. REVIEW OF LITERATURE

A review of research in this area has shown that the number of case studies in working capital management. Few of them are,

Singh (2004) studied the working capital management of Lupin Laboratories Ltd, India for the period of seven years from 1995- 96 to 2001-02. The liquidity position mainly depends upon the debtors and debt collection policy but other components like inventory, loans and advances, bank balance, bills receivables are also responsible.

Panikkos, Nicos and Khalad (2005) examined the financial management and the working capital practices of small and medium sized enterprises in UK. The study revealed that the short-term financial management practices improve as companies grow there is scope for the

owner-managers of small businesses to strengthen their trade credit.

Anup Chowdhury and Muntasir Amin (2007) carried out the study on the working capital management of pharmaceutical companies listed in Dhaka Stock Exchange. They conclude that the pharmaceutical firms operating in Bangladesh are efficiently dealing with their liquidity preferences and investment criteria.

Vedavinayagam Ganesan (2007) analyzed the working capital management efficiency of telecommunication equipment companies. The study found evidence that the day's working capital is negatively related to the profitability. It is not significantly influencing the profitability of firms in telecommunication equipment industry.

Hasan and Halil (2011) carried out research on the empirical relationship between efficiency of working capital management and corporate profitability. Study revealed that the working capital management unquestionably influences the profitability of the companies.

Mohammed Alipur (2011) studied the relationship between working capital management and profitability. The result of the study shows that there is a significant relationship between working capital and profitability.

III. RESEARCH METHODOLOGY

For the purpose of analysis, balance sheet and income statement data have been sourced from "CAPITALINE" data base. The study has also been made use of information from PROWESS database of CMIE. The empirical study is based on a sample of 21 large and 17 small pharmaceutical drugs and formulation companies. The data were available for a 10 years period, covering the accounting period 2002-03 to 2011-12. To assess the efficiency of working capital management, accounting ratios, averages, minimum, maximum, Bhattacharya's Efficiency Index, regression analysis and ANOVA have been used.

IV. SAMPLE SIZE

The data have been collected for twenty one large and seventeen small pharmaceutical firms in India due to the availability of data for a period of ten years. Large firms taken for the study are Alembic Ltd, Aurobindo Pharma, Cadila Healthcare, Cipla, Dr.Reddy's Lab, FDC Pharmaceuticals Ltd, Glenmark,Pharmaceuticals Ltd, IPCA Laboratories Ltd, JB Chemicals and Pharmaceuticals Ltd, KDL Biotech Ltd, Kopran, Lyka Laboratories, MorepanLaboratories Ltd, Natco Pharma Ltd, Piramal Healthcare Ltd, Ranbaxy,Sun Pharmaceuticals Industries Ltd, Torrent pharmaceuticals ltd, TTK Healthcare, Unichem Laboratories Ltd, and Wockhardt. Small firms taken for the study are Aasada life care ltd, Bal pharma ltd, Gufic Bio Sciences ltd, Ind-Swift laboratories ltd, Ndoco remedies ltd, Inwinex pharmaceuticals ltd, Jagsonpal pharmaceuticals ltd, Mangalam Drugs and organics ltd, Ortin laboratories ltd, Patidar Buildcon ltd, Surya pharmaceuticals ltd, Themis Medicare ltd, Tonira pharma ltd, Triochem products ltd, Vikram thermo (India) ltd, Welcure Drugs & pharmaceuticals ltd and Wintac ltd.

V. WORKING CAPITAL UTILIZATION INDEX

Utilization index (UI_{wcm}) of the working capital management indicates the ability of the firm to generate sales by efficiently utilizing the current assets as a whole. If an increase in total current assets is coupled with more than proportionate rise in sales, the degree of utilization of these assets with respect to sales is said to have improved and vice versa which ultimately reflects the operating cycle of the firm which can be shortened by means of increasing the degree of utilization. Thus, a value of utilization index of the working capital management is greater than one which is desired by the firms. This index is calculated by using the following formula

$$UI_{wcm}(i_t) = \frac{A_t - 1}{A_t}$$

Where, A_t = current assets/sales.

The summarized results of the utilization index of all large firms are presented in Table 1. The results show that, large pharmaceutical firms have utilized the current assets effectively. The industry average of utilization of current assets shows unity during eight of the ten years, while during the other two years the values have hovered near unity. The industry average varies from 0.82 to 1.25 during the period of study. The highest index value is observed in the year 2008-09 (1.25) while the lowest value is seen during the year 2006-07 (0.82). The years 2003-04 and 2005-06 are said to be the most successful years for the firms as 15 of 21 firms are with utilization index value above unity. The year 2006-07 has lowest number of firms (only five) having greater utilization index greater than unity. Lower values of utilization index shows that the firms have not utilized their current assets efficiently to generate sales.

A look into the fact that the small pharmaceutical firms as a whole has performed well based upon the utilization index of the working capital management. Almost 6 of the 10 years the average index value of the working capital management is greater than the unity. The highest index value observed in the year 2011-12 and the lowest value is seen in 2006-07. The year 2009-10 is the most successful year for the firms as 12 out of 17 firms are with utilization index value above unity. The year 2006-

ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

07 has proved to be the worst year for UI $_{wcm}$ as it has scored 0.86 index value (lowest) whereas the index value of UI $_{wcm}$ it is 1.46 which due to the increased level of current assets in this year. Moreover it is also noticeable from the table 2, as a whole, utilization of current assets remains unstable during the study period.

ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Table 1
Average of Working Capital Management Indices of Large Firms (n=21)

Year	Utilization index				Performance index				Efficiency index			
	Min	Max	Average	No. of firms with Ef.index>1	Min	Max	Average	No. of firms with Ef.index>1	Min	Max	Average	No. of firms with Ef.index>1
2002-03	0.67	1.26	1.03	**11**	0.76	1.76	1.06	**7**	0.61	1.64	1.09	**14**
2003-04	0.73	1.73	1.08	**15**	0.84	2.01	1.12	**12**	0.61	2.14	1.22	**15**
2004-05	0.89	1.75	0.99	**9**	0.57	4.00	1.21	**12**	0.33	4.59	1.28	**10**
2005-06	0.55	1.32	1.06	**15**	0.45	1.74	1.01	**9**	0.25	2.1`9	1.11	**10**
2006-07	0.35	1.10	0.82	**5**	0.18	17.56	1.86	**5**	0.04	13.65	1.61	**5**
2007-08	0.79	1.56	1.04	**14**	0.68	1.63	1.11	**10**	0.52	2.56	1.15	**13**
2008-09	0.34	4.74	1.25	**11**	0.43	6.77	1.44	**10**	0.15	32.08	2.88	**11**
2009-10	0.40	2.43	1.14	**13**	0.54	8.00	1.56	**10**	0.22	19.42	2.44	**11**
2010-11	0.33	2.50	1.06	**11**	0.59	515.72	25.65	**12**	0.20	602.67	29.97	**13**
2011-12	0.79	1.66	1.10	**14**	0.68	5.37	1.62	**15**	0.54	5.08	1.79	**15**

ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Table 2
Average of Working Capital Management Indices of Small Firms (n=17)

Year	Utilization index				Performance index				Efficiency index			
	Min	Maxi	Average	No. of firms with Ef.index>1	Min	Max	Average	No. of firms with Ef.index>1	Min	Max	Average	No. of firms with Ef.index>1
2002-03	0.68	1.87	1.01	**8**	0.60	2.12	1.60	**5**	0.61	3.70	1.12	**6**
2003-04	0.37	3.46	1.13	**11**	0.32	4.92	1.38	**7**	0.12	13.44	2.09	**9**
2004-05	0.78	3.22	1.07	**7**	0.55	3.37	1.08	**5**	0.51	3.09	1.42	**7**
2005-06	0.42	1.96	1.04	**10**	0.26	5.37	1.26	**8**	0.11	6.70	1.57	**9**
2006-07	0.67	1.24	0.86	**6**	0.61	2.36	0.89	**5**	0.41	2.90	0.85	**3**
2007-08	0.38	2.25	0.99	**9**	0.33	2.09	0.84	**5**	0.12	4.69	1.04	**6**
2008-09	0.62	2.18	0.97	**7**	0.63	4.26	1.32	**9**	0.38	9.28	1.72	**9**
2009-10	0.71	4.80	1.46	**12**	0.48	6.94	1.45	**8**	0.34	40.21	4.10	**9**
2010-11	0.06	2.37	0.94	**9**	0.03	1.71	0.84	**6**	0.20	3.00	0.97	**9**
2011-12	0.03	6.88	1.61	**10**	0.02	9.46	1.64	**5**	0.43	65.09	6.97	**7**

According to the tables 1 and 2, more number of large firms utilized current assets efficiently in the beginning of the study period 2003-04 and 2005-06 and more number of small firm's utilized current assets efficiently in the year 2009-2010.

VI. WORKING CAPITAL PERFORMANCE INDEX

Performance index (PI_{wcm}) of the working capital management indicates the average performance of different components of current assets (Bhattacharya, 1997). If the proportionate rise in sales is more than that of the proportionate rise in current assets during a particular period, a firm may be said to have managed its working capital efficiently. In this study, total current assets have been divided into 6 components as inventories, sundry debtors, cash and bank, loans and advances, marketable securities and other current assets. The method of computation of this index is given below.

$PI_{wcm}(i_t) = I_s * Wi(t-1)/Wi_t / N$

Where,

I_s = Sales index defined as: S_t / S_t-1

Wi =Individual group of current assets,

N =Number of current assets,

And i =1, 2, 3, 4…….n

From the Table 1, it is evident that the industry average of the performance index values of large firms is greater than the unity during the entire period of the study. This is mainly due to the better performance of debtors as well as other working capital components during these years. A year-to-year comparison reveals that the number of efficient firms with reference to performance index varies from 5 to 15 during the study period. Thus the performance of large firms is efficient during the period of study. During the year 2011-12 out of 21 firms, 15 firms as per their average index of working capital efficiency. The year 2006-07 appears to be the less successful year because it is in this year that 5 firms have managed the performance of the components of current assets. During other years 2003-04, 20024-05 and 2010-11, 12 firms have performed well in managing their current assets.

The Table 2, shows that the industry average of performance index of small firms is more than one in 7 years out of ten years. A year wise comparison reveals that the number of efficient firms with reference to performance index varies between 4 and 9 during the study period. Thus the performance of small firms is not efficient during the period of study. During the year 2008-09, out of 17 firms only 9 firms as per their average index of performance have managed their working capital efficiently. The year 2006-07 appears to be less successful year because it is in this year 4 firms have efficiently managed the performance of the components of current assets. During other years 2005-06 and 2009-10 the firms have performed moderately well in managing their current assets.

From the Table 2, it is evident that the industry average of performance index values of small pharmaceutical firms are less than the unity during the years 2006-07, 2007-08 and 2010-11. This is mainly due to the poor performance of debtors as well as inefficient management of working capital during the period.

In total, 50 % of the large firms are having their performance index is higher than the unity in entire period of study except 2002-03 and 2006-07. However, 35% of the small firms are maintaining their performance index is higher than the unity in the study period except 2008-09, 2009-10 and 2005-06.

VII. WORKING CAPITAL EFFICIENCY INDEX

Efficiency index is the product of the performance index and the utilization index and measures the ultimate industry average which stands greater than unity in all the years of the study period (Bhattacharya, 1997). Thus it shows the efficient utilization of the working capital by the large firms during the study period. The Efficiency index of working capital management (EI_{wcm}) has been computed by multiplying the overall performance index with utilization index.

$EI_{wcm} = UI_{wcm} \times PI_{wcm}$

Where,

EI_{wcm} = Efficiency index of working capital management

UI_{wcm} = Utilization index of working capital management

PI_{wcm}= Performance index of working capital management

The Table 1 reports the overall efficiency index value of the large pharmaceutical firms. The highest maximum efficiency (602.6) is achieved in 2008-09 and the lowest minimum efficiency (0.20) is also achieved in 2008-09. The highest number of firms whose efficiency index is greater than the unity is seen in the years of 2003-04 and 2011-12 (15) as showed in table, whereas lowest number (5) of firms is found index is greater than unity during the year2006-07. The efficiency index of all other years 2002-03, 2007-08, 2008-09, 2009-10 and 2010-11 are 14,13,11,11 and 13 respectively. This shows that the firms are consistent in working capital efficiency. Similar results are obtained for small firms also (Table.2).

VIII. ACHIEVEMENT OF TARGET LEVEL OF EFFICIENCY

In order to measure the ability of pharmaceutical firms in achieving the targeted level of efficiency during the study period, following regression model has been used:

$Yi = \alpha + ßXi_t + \varepsilon$

Where;

$Yi_t = Zi_t - Zi_t\text{-}1$

$Xi_t = Z^*_t - Zi_t\text{-}1$

Zit = index at time t for the firm i and

Z^*_t = Average index of the industry at t-1

α=Constant

ß=Regression coefficient

ε=Error term

The coefficient of the regression equation represents the speed of the individual firm in improving its efficiency to achieve the industry norms. In this regard (ß) =1 for a firm indicates that the degree of firms efficiency in managing the working capital is equal to the average efficiency level of the industry as a whole. Similarly, (ß) < 1, indicates the need of further improvements by the firms in the working capital management and (ß) > 1, indicates the firms efficiently managed the working capital (Bhattacharya, 1997) during the study period.

IX. REGRESSION RESULTS – UTILIZATION, PERFORMANCE AND EFFICIENCY INDICES OF LARGE, SMALL FIRMS

The efficiency and speed of pharmaceutical firms is measured to achieve the target level of the working capital efficiency, the regression model has been estimated in the study. The results of the regression model of three indexes for large small firms are presented in tables from 3 to 8. Ranking of the firms is reported in the Table 9.

The regression tables from 3 to 8 describe the values of ß, t, F-value, p-value and R-Square through the models estimated for each year of the large, small firms. The estimated ß value represents the speed of the pharmaceutical firm in improving the efficiency in achieving norms in this regard. Beta value is equal to the unity indicates that the degree of a firm's efficiency in managing the working capital is equal to the average efficiency level of the firms. Beta value is higher than the unity indicates the firm's efficiency in managing the working capital is greater than the average level of efficiency of the firm. A beta value less than the unity indicates the need of further improvements by firms in this regard. Research carried out by Ghosh and Maji (2004), Talat Afza and Nazir (2011), and Benjamine Chiristopher and Kamalavalli (2010) have corroborated the findings.

Table 3
Results of Regression Analysis of Working Capital Utilization Index of Large Firms (n=21)

Year	ß-co-efficient	t- value	F-value	p-value	R- Square
2002-03	0.922*	3.043	5.332*	0.076	0.202
2003-04	0.713*	2.056	4.229*	0.054	0.182
2004-05	1.371***	5.468	29.901***	0.000	0.611
2005-06	0.847***	4.965	24.651***	0.000	0.565
2006-07	0.813***	2.889	8.345***	0.009	0.305
2007-08	0.955***	6.200	38.434***	0.000	0.669
2008-09	1.869	1.462	2.137	0.160	0.101
2009-10	0.819***	7.159	51.251***	0.000	0.730
2010-11	1.390***	8.092	65.487***	0.000	0.775

2011-12	1.207***	9.640	92.939***	0.000	0.830

*Significant at10%. ** Significant at 5%. ***Significant at 1% .

Regression results of the working capital utilization index of the large firms are given in the Table 3. Regression coefficient is a positive and significant in all the years except 2008-09. It indicates that the large firms are faster in utilizing their current assets. The F-value is also significant in all the years except 2008-09. Regression coefficient is higher than one in 2004-05, 2010-11 and 2011-12. Other significant values are nearer to one. It reveals that the degree of the firms' efficiency in managing the working capital is higher in all the years of study except few years.

Table 4
Results of Regression Analysis of Working Capital Utilization Index of Small Firms (n=17)

Year	ß-co-efficient	t- value	F-value	p-value	R- Square
2002-03	-0.751**	-2.65	6.438	0.030	0.346
2003-04	-0.586*	-1.99	3.966	0.056	0.209
2004-05	1.123***	4.818	23.215***	0.000	0.607
2005-06	0.937***	5.170	26.726***	0.000	0.641
2006-07	0.808***	5.230	27.353***	0.000	0.646
2007-08	0.968**	2.101	4.413**	0.053	0.227
2008-09	0.944***	3.575	12.784***	0.003	0.460
2009-10	-1.250**	-2.471	6.106**	0.026	0.289
2010-11	1.131***	13.317	177.348***	0.000	0.922
2011-12	3.456***	5.139	26.411***	0.000	0.638

*Significant at10%. ** Significant at 5%. ***Significant at 1%.

Regression results of the working capital utilization index of small firms are shown in the Table 4. There is a positive and significant relationship showed in the regression coefficient of the working capital utilization index of the small firms in 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2010-11 and 2011-12. Negative and significant coefficients showed in 2002-03, 2003-04, and 2009-10. It indicates that there is a decrease in the average level of efficiency of the firm. The F-value is significant in all the years except few years. It indicates that there is a relationship between the rate of utilization of current assets and average level of efficiency of the firm.

ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Table 5
Results of Regression Analysis of Working Capital Performance Index of Large Firms (n=21)

Year	ß-co-efficient	t- value	F-value	p-value	R- Square
2002-03	0.832	0.254	0.832	0.780	0.340
2003-04	0.025	0.175	0.031	0.863	0.002
2004-05	0.590	1.021	1.043	0.320	0.052
2005-06	1.068***	11.108	123.392***	0.000	0.867
2006-07	-4.703*	-1.885	3.554*	0.075	0.158
2007-08	0.972***	36.417	1.326***	0.000	0.986
2008-09	1.110	1.631	2.661	0.119	0.123
2009-10	0.089	0.480	0.230	0.637	0.012
2010-11	6.678	0.432	0.186	0.671	0.010
2011-12	1.001***	413.71	1.712***	0.000	1.000

*Significant at10%. ** Significant at 5%. ***Significant at 1%.

Table 5 shows the regression values of the performance index of the large firms. There is a positive and significant relationship shown between the regression coefficient of performance index in 2005-06, 2007-08 and 2011-12. The negative and significant relationship is shown in the year 2006-07. F-values are also significant in the same years. The result indicates that the large firms are efficiently managed the components of the current assets to increase the sales and efficiency of the company.

Table 6

Year	ß-co-efficient	t- value	F-value	p-value	R- Square
2002-03	1.002***	7.009	24.670***	0.000	0.746
2003-04	1.050***	7.176	51.501***	0.000	0.774
2004-05	1.083***	6.855	46.994***	0.000	0.758
2005-06	0.998**	2.505	6.274**	0.024	0.295
2006-07	0.991***	10.082	101.650***	0.000	0.871
2007-08	0.983***	3.771	14.221***	0.002	0.487

2008-09	1.266*	2.022	4.090*	0.061	0.214
2009-10	0.066	0.230	0.053	0.821	0.004
2010-11	1.099***	15.389	236.808***	0.000	0.940
2011-12	4.086***	3.953	15.624***	0.001	0.510

Results of Regression Analysis of Working Capital Performance Index of Small Firms (n=17)

*Significant at10%. ** Significant at 5%. ***Significant at 1%.

Table 6 shows the regression coefficient of the performance index of small firms. There is a positive and significant relationship shown in the performance index of the firms in all the years except 2009-10. F-values are also significant in all the years except 2009-10. The result indicates that small firms are efficiently managed their current asset components during the study period to increase their sales volume.

Table 7
Results of Regression Analysis of Working Capital Efficiency Index of Large Firms (n=21)

Year	ß-co-efficient	t- value	F-value	p-value	R- Square
2002-03	0.592	0.621	0.234	0.682	0.340
2003-04	0.115	0.383	0.147	0.706	0.008
2004-05	0.702	1.366	1.866	0.188	0.089
2005-06	1.050***	9.788	95.800***	0.000	0.834
2006-07	-1.857	-1.287	1.655	0.214	0.080
2007-08	0.978***	30.220	913.237***	0.000	0.980
2008-09	1.770	0.511	0.261	0.615	0.014
2009-10	0.452***	6.103	37.245***	0.000	0.662
2010-11	3.452	0.499	0.249	0.624	0.013
2011-12	1.001***	451.842	2.042***	0.000	1.000

*Significant at10%. ** Significant at 5%. ***Significant at 1%.

From the Table 7, the regression coefficients of the large firms are positive and significant in 2005-06, 2007-08, 2009-10, and 2011-12. F-values are also significant in the same years. The results in the table indicate that the firms are more efficient in the utilization and management of their current assets in the same years. Rest of the years the regression coefficient is not significant.

Table 8
Results of Regression Analysis of Working Capital Efficiency Index of Small Firms (n=17)

Year	ß-co-efficient	t- value	F-value	p-value	R -Square
2002-03	1.240***	6.57	67.81***	0.000	0.707
2003-04	-2.667***	-9.131	83.379***	0.000	0.848
2004-05	1.125***	7.719	59.590***	0.000	0.799
2005-06	1.130***	4.684	21.941***	0.000	0.594
2006-07	1.037***	11.497	132.190***	0.000	0.898
2007-08	1.305**	2.754	7.587**	0.015	0.336
2008-09	1.420**	2.539	6.444**	0.023	0.301
2009-10	-2.964***	-5.494	30.187***	0.000	0.668
2010-11	1.030***	40.760	1.661***	0.000	0.991
2011-12	12.766**	2.342	5.486**	0.033	0.268

*Significant at10%. ** Significant at 5%. ***Significant at 1%.

Table 8, reveals that the regression coefficient of small firms is positive and significant in all the years of the study period. The result of the study indicates that the small firms are efficiently utilized and managed their current asset components during the study period. F-values are also significant in all the years. It shows that the sales performance of the small firms is positively influenced by the efficient management of the working capital.

ISSN (ONLINE): 2250-0758, ISSN (PRINT): 2394-6962

Table 9
Ranking of Large and Small Firms Based on Beta Values of Indices

Year	Large Firms(n=21)			Small Firms(n=17)		
	Utilization index	Performance index	Efficiency index	Utilization index	Performance index	Efficiency index
2002-03	6	7	8	9	6	8
2003-04	10	10	10	10	5	3
2004-05	3	8	7	4	4	7
2005-06	7	4	4	7	7	6
2006-07	9	2	2	8	8	9
2007-08	5	6	6	5	9	5
2008-09	1	3	3	6	2	4
2009-10	8	9	9	2	10	2
2010-11	2	1	1	3	3	10
2011-12	4	5	5	1	1	1

Table 9 describes the ranking of large and small firms based on Beta coefficients of the working capital utilization, performance and efficiency indices.

Utilization index of large firms ranked as first in the year 2008-09. First rank of the performance and efficiency indices showed in the year 2010-11. The last ranks for all the three indices have been awarded to the year 203-04. It indicates that the large firms are managed their working capital efficiently in the year 2008-09 and 2010-11 and the firms are not efficiently managed their working capital in the year 2003-04.

Working capital utilization, performance and efficiency indices of small firms are ranked as first in the year 2011-12. The last rank of utilization, performance and efficiency indices are showed in the years 2003-04, 2009-10 and 2010-11 respectively. It indicates that the working capital of small firms is efficiently managed in the last year (2011-12) of the study period and working capital is not efficiently managed in 2003-04, 2009-10 and 2010-11.

X. SUMMARY

Utilization, performance and efficiency indices have been calculated for the selected pharmaceutical firms for the period of ten years from 2002-03 to 2011-12 to investigate the efficiency of the pharmaceutical firms in managing their working capital. Using industry average as target efficiency level of the individual years of all selected firms, an evaluation has been made with regard to the speed of achieving that level of efficiency by individual years during the study period.

According to the results of the regression, utilization index of large firms is ranked as first in the year 2008-09. Both performance and efficiency indices are ranked as first in the year 2010-11. Current assets are perfectly utilized by the large firms in the year 2008-09 and current assets are managed effectively in 2010-11. The speed of achieving efficiency level of working capital of large firms is high in the same year 2010-11. The efficiency level of small firms is improving from the year

2002-03 to 2011-12. Efficiency level of large firms is fluctuating over the study period. In 2011-12, the small firms ranked as first in all the three indexes. The small firms are more efficiently utilized and managed their current assets in the year 2011-12. The speed of achieving level of working capital is also high in the same year.

According to the analysis made in the various utilization, performance and efficiency indices of large and small pharmaceutical firms, the efficient management of working capital leads efficiency in the firms. Small firms are more efficient than the large firms in managing their current assets and working capital during the study period.

REFERENCES

[1] **Bhattacharya, H. (1997),** "Total Management by Ratios", *Sage Publication India Pvt. Ltd.* New Dehli.

[2] **Anup Chowdhury and Muntasir Amin.Md (2007),** "Working Capital Management Practices in Pharmaceutical Companies Listed in Dhaka Stock Exchange", *BRAC University Journal*, Vol.4, No.2, pp.75-86.

[3] **Vedavinayagam Ganeshan (2007),** "An Analysis of Working Capital Management Efficiency in Telecommunication Equipment Industry", *Rivier Academic Journal*, Vol.3, No.2, pp.1-10.

[4] **Azhagaiah Ramachandran and Muralidharan Janakiraman (2009),** " The Relationship between Working Capital Management Efficiency and EBIT", *Managing Global Transitions*, Vol.7, No.1, pp.61-74

[5] **Hasan Agan Karaduman, Halil Emre Akbas Arzu Ozsozgun Caliskan and Salih Durer (2011),** "The Relationship between Working Capital Management and Profitability: Evidence from an Emerging Market, *International Research Journal of Finance and Economics*, Issue 62, pp.61-67.

[6] **Mohamed Alipur (2011),** "Working Capital Management and Corporate Profitability**:** Evidence from Iran", *World Applied Sciences Journal* (7), pp.1093-1099.