Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol 3, No 4, 2012

Working Capital Investment and Financing Policies of Selected Pharmaceutical Companies in Bangladesh

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Abstract:

The study aims to examine the relative relationship between the working capital investment and financing practices of the five selected listed pharmaceutical companies in Bangladesh over a period of five years. It is observed that the pharmaceuticals have almost same policies regarding the working capital investment corresponding to working capital finance. It is also found that there is a significant difference in the working capital investment and financing policies among the pharmaceuticals but there is an interrelation between the aggressive working capital investment policy corresponding to conservative working capital financing policy of the pharmaceuticals over the study period and vice-versa. Relatively aggressive working capital investment policy balanced by relatively conservative working capital financing policy of the pharmaceutical sector of Bangladesh is also viewed by the study.

Keywords: Pharmaceuticals, Working Capital, Policy, Ratio, Correlation, T-test, F-test.

1. Introduction:

Working capital management involves management of the current assets and the current liabilities of a firm. A firm's value cannot be maximized in the long run unless it survives the short run. Thus, sound working capital management is a requisite for a firm's survival. Working capital policy refers to the firm's basic policies regarding target levels for each category of current assets and how current assets will be financed (Besley and Brigham, 2008).

Smith (1980) pointed out that working capital management plays an important role in a firm's profitability and risk as well as its value. The firm should maintain a sound working capital position. It should have adequate working capital to run its business operations. Both excessive as well as inadequate working capital positions are dangerous from the firm's point of view. Excessive working capital means holding costs and idle funds which earn no profits for the firm. Paucity of working capital not only impairs the firm's profitability but also results in production interruptions and inefficiencies and sales disruptions (Pandey, 2007). Van Horne and Wachowicz (2004) stated that excessive level of current assets may have a negative effect on a firm's profitability, whereas a low level of current assets may lead to lowers of liquidity and stock-outs, resulting in difficulties in maintaining smooth operations.

High risk, high return working capital investment and financing policies are referred to as aggressive and lower risk, lower return policies are called conservative. Aggressive working capital investment policy has an expectation of higher profitability but greater liquidity risk. It minimizes the investment in current assets versus long term investments. Besides this a more conservative policy invests a greater proportion of capital in current assets but with the sacrifice of some profitability. In this study current asset to total asset ratio is used to measure the degree of aggressiveness. Lower ratio reveals a relatively more aggressive policy and vice versa. The degree of aggressive financing policy is measured by the current liability to total asset ratio. High ratio reveals the more aggressiveness. There is an interrelation between the aggressive working capital investment policy corresponding to conservative working capital financing policy of the selected pharmaceuticals in Bangladesh and vice-versa is found in the present study.

2. Objectives of the Study:

The objectives of the study are as follows:

- To know the different types of working capital investment and financing policies followed by the selected pharmaceuticals.

- To identify whether there is any significant difference between working capital investment policy and working capital financing policy of the sample pharmaceuticals.
- To find out how aggressive working capital investment policy corresponds to aggressive working capital financing policy.

3. Review of Related Studies:

Several studies have been reviewed regarding the issues examined in this paper. A few of them are cited below:

Afza and Nazir (2007) examined the relationship between the aggressive and conservative working capital policies among seventeen industrial groups and a large sample of 263 public limited companies listed on Karachi Stock Exchange (KSE) using cross-sectional data for the period from 1998 to 2003. They used Analysis of Variance (ANOVA) and Least Significant Difference (LSD) test and found significant differences among their working capital investment and financing policies across different industries. Further, rank order correlation confirmed that these significant differences were remarkably stable over the study period and ordinary least regression analysis found a negative relationship between the profitability measures of firms and the degree of aggressiveness of working capital investment and financing policies.

Filbeck and Krueger (2005) examined the importance of efficient working capital management by analyzing the working capital management policies of thirty two non-financial industries in the US. They found that significant differences exist among industries in working capital practices overtime and these working capital practices, themselves, change significantly within industries overtime.

Weinraub and Visscher (1998) highlighted the issue of aggressive and conservative working capital management policies and their interaction by using quarterly data for the period from 1984 to 1993 of the US firms. They considered ten diverse industry groups to examine the relative relationship between their aggressive/conservative working capital policies and observed that the industries had distinctive and significantly different working capital management policies. Their study also revealed that the relative nature of the working capital management policies exhibited remarkable stability over the 10-year study period and a high and significant negative correlation between industry asset and liability policies. They also found that when relatively aggressive working capital investment policies are followed, they are balanced by relatively conservative working capital financing policies.

Lamberson (1995) concluded that working capital management has become one of the most important issues in organization, where many financial managers are finding it difficult to identify the important drivers of working capital and the optimum level of working capital. Therefore, companies can minimize risk and improve their overall performance if they can understand the role and determinants of working capital. Eljelly (2004) stated that working capital management involves planning and controlling current assets and current liabilities in such a way that eliminates the risk of inability to meet short term obligations on the one hand and avoid excessive investment in these assets on the other hand.

Rahaman and Florin (2007) investigated the relative relationship between aggressive and conservative working capital practices of six major manufacturing industries over a period of five years in Bangladesh. Analysis revealed that working capital investment policies of Pharmaceutical, Textile, Food, Engineering, Cement and miscellaneous industries are not significantly different but their working capital financing policies are different. They also measured the degree of relationship about how aggressive asset management corresponds to aggressive financial management. It is evident that relative aggressive working capital management is balanced by relatively conservative working capital financial management.

4. Hypothesis:

The research is conducted on the basis of the following hypotheses:

H_0: There is no significant difference between the industry and the individual pharmaceutical's mean ratio.

H_1: There is a significant difference between the industry and the individual pharmaceutical's mean ratio.

The hypotheses are tested at the 5% level of significance.

5. Methodology of the Study:

The data set includes current assets, current liabilities and total assets from a random sample of five listed pharmaceutical companies which are enlisted in Dhaka Stock Exchange Ltd. of Bangladesh on a five year period from 2004-2005 to 2008-2009. We have used yearly CA/TA and CL/TA ratios of the selected pharmaceuticals as the raw data for the study. Both primary as well as secondary sources of information have been considered as a data collection process. The basic source of the study's collected data was various annual reports of the sample pharmaceuticals. The statistical tools like mean, standard deviation, coefficient of variation, T-test (Two-tailed) and F-test (One-way ANOVA) are adopted to reach the final conclusion of the study. For the further refinement of the findings Pearsonian coefficient of correlation and Rank coefficient of correlation between the aggressive/conservative working capital investment and financing policies are also computed. The hypotheses are tested through statistical measurement to arrive at systematic conclusion and contribute to the further research work regarding same perspective.

6. Analysis and Results:

6.1 Differences in Policies:

The first attempt of the study was to find out whether a significant difference exists in the working capital investment policies of the selected pharmaceuticals. For this purpose, a one-way ANOVA was applied to the set of five year current asset to total asset ratios of the pharmaceuticals. From the calculated value of F-ratio [17.17] of the Table-01, it is found that the pharmaceuticals differ in mean ratios. Therefore, the difference in working capital investment policies among the selected pharmaceuticals is significant. To further examine the strength of differences among the pharmaceuticals values, T- test was also performed. These results are also presented in Table-02 and show that four out of the five pharmaceuticals are significant at the 5 percent level. Both the ANOVA and T-test clearly show a distinctive difference in the working capital investment policies among the pharmaceuticals.

Again Table-02 shows that the industry average of CA/TA is 0.3565. The average CA/TA varies from 0.2614 in OIL to 0.4880 in RL. The average CA/TA of RL-0.4880, SPL-0.3664 and ISPIL-0.3896 is above from the industry average. On the other hand, the average CA/TA of BPL-0.2773 and OIL-0.2614 is below from the industry average. It is observed from the Table-02 that in case of RL, SPL, BPL, ISPIL and OIL the CA/TA of the income year 2004-2005, 2005-2006, 2006-2007, 2007-2008 and 2008-2009 are 0.5275, 0.5512, 0.4585, 0.4763, 0.4266; 0.4100, 0.4336, 0.3512, 0.3473, 0.2900; 0.3194, 0.2818, 0.2446, 0.1931, 0.3477; 0.3869, 0.3830, 0.3767, 0.4286, 0.3726 and 0.3044, 0.2007, 0.2211, 0.2796, 0.3014 respectively. It is found from the Table-02 that the CA/TA of the selected pharmaceuticals is less stable over the study period (CV: RL-10.41%, SPL-15.47%, BPL-22.01%, ISPIL-5.775% and OIL-18.23%). From the calculated value of t in the Table-02, it is found that there is a significant difference in CA/TA between industry average and RL, BPL, ISPIL, OIL except SPL.

It was also examined whether a significant difference exists in the working capital financing policies among the selected pharmaceuticals through adopting a one-way ANOVA to the set of five year current liability to total asset ratios of the pharmaceuticals. From the calculated value of F-ratio [35.53] of the Table-03, it is found that the pharmaceuticals differ in mean ratios. Therefore, the difference in working capital financing policies among the pharmaceuticals is significant. To further examine the strength of differences between the pharmaceuticals values, T-test was also performed. These results are also presented in Table-04 and show that three out of the five pharmaceuticals are significant at the 5 percent level. Both the ANOVA and T-test clearly show a distinctive difference in the working capital financing policies between the pharmaceuticals. It is clear that significant differences do exist in the relative degree of aggressive/conservative working capital investment and financing policies of the selected pharmaceuticals.

Again Table-04 shows that the industry average of CL/TA is 0.3254. The average CL/TA varies from 0.1739 in BPL to 0.5030 in ISPIL. The average CL/TA of RL-0.3573, ISPIL-0.5030 and OIL-0.3512 is above from the industry average. On the other hand, the average CL/TA of SPL-0.2417 and BPL-0.1739 is below from the industry average. It is observed from the Table-04 that in case of RL, SPL, BPL, ISPIL and OIL the CL/TA of the income year

2004-2005, 2005-2006, 2006-2007, 2007-2008 and 2008-2009 are 0.3014, 0.3709, 0.3327, 0.4153, 0.3660; 0.2466, 0.2431, 0.2437, 0.2756, 0.1993; 0.2286, 0.2122, 0.1362, 0.1756, 0.1167; 0.4497, 0.4967, 0.5429, 0.5152, 0.5106 and 0.4529, 0.2658, 0.3134, 0.3388, 0.3852 respectively. It is found from the Table-04 that the CL/TA of the selected pharmaceuticals is less stable over the study period (CV: RL-12.01%, SPL-11.29%, BPL-27.50%, ISPIL-6.80% and OIL-20.32%). From the calculated value of t in the Table-04, it is found that there is a significant difference in CL/TA between industry average and SPL, BPL, ISPIL except RL and OIL.

6.2 Relationship between Working Capital Investment and Financing Policies:

At this stage to what extent aggressive working capital investment policy corresponds to aggressive financing policy was examined. This relationship was measured on the basis of mean ratios over the years of each pharmaceutical under the study. The selected pharmaceuticals were ranked from low CA/TA ratios to high ratios, corresponding to ascending order of relatively aggressive policies. Rankings were also ordered, for the mean ratios, from high to low CL/TA ratios, again corresponding to an ascending order of aggressiveness. Then Rank coefficient of correlation between the two policies was computed. The results are presented in Table-05 [R = -0.60]. It is evident that pharmaceuticals which pursued relatively aggressive working capital investment policies simultaneously followed relatively conservative financing policies.

Pearsonian coefficient of correlation also computed between the working capital investment and financing policies of the selected pharmaceuticals for the further refinement of the above results. The Table-06 shows that there is a positive [r = 0.40] correlation between the mean CA/TA and CL/TA ratios of the selected pharmaceuticals under the study. As a result, if the mean CA/TA increases, the mean CL/TA ratios will be increased of the sample pharmaceuticals and vice-versa. Therefore, it is clear that pharmaceuticals which pursued relatively aggressive working capital investment policies simultaneously followed relatively conservative financing policies. The calculated value of r [0.40] is more than the calculated value of P.E.r [0.2534] but not more than the six times of the calculated value of P.E.r [1.520]. Therefore, the value of r is acceptable but not significant. The limits of the correlation should be 0.1466 to 0.6534.

7. Conclusion:

The study is conducted to find out the relationship between the working capital investment and financing policies of the selected pharmaceuticals. The pharmaceuticals have almost same policies regarding the working capital investment corresponding to working capital finance. Study found that there is a significant difference in adopting working capital investment and working capital financing policies among the selected pharmaceuticals but there is an interrelation between the degree of aggressive working capital investment policies corresponding to conservative working capital financing policy of the pharmaceuticals and vice-versa. Finally it can be concluded that if relatively aggressive working capital investment policies are followed, they are balanced by relatively conservative working capital financing policies in the selected listed pharmaceutical companies of Bangladesh.

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Table-01 (Insert the Table after 6.1): One-Way ANOVA Analysis of CA/TA Ratios (F-test).

Source of Variation	Sum of Squares	df	Mean Square	F-ratio
Between Samples	0.1690	4	0.04225	17.17
Within Samples	0.0492	20	0.00246	
Total	0.2182	24		

Table-02 (Insert the Table after 6.1): CA/TA Ratios.

Name of The Pharmaceuticals	2004 -2005	2005 -2006	2006 -2007	2007 -2008	2008 -2009	Mean	Industry Mean	SD	CV	t-value
RL	0.5275	0.5512	0.4585	0.4763	0.4266	0.4880	0.3565	0.0508	10.41	5.7879
SPL	0.4100	0.4336	0.3512	0.3473	0.2900	0.3664	0.3565	0.0567	15.47	0.3904
BPL	0.3194	0.2818	0.2446	0.1931	0.3477	0.2773	0.3565	0.0611	22.01	(2.9011)

ISPIL	0.3869	0.3830	0.3767	0.4286	0.3726	0.3896	0.3565	0.0225	5.775	3.2770
OIL	0.3044	0.2007	0.2211	0.2796	0.3014	0.2614	0.3565	0.0477	18.23	(4.4606)

Source: Annual Report and Official Records of the Selected Pharmaceuticals.

Table-03 (Insert the Table after 6.1): One-Way ANOVA Analysis of CL/TA Ratios (F-test).

Source of Variation	Sum of Squares	df	Mean Square	F-ratio
Between Samples	0.3162	4	0.07905	35.53
Within Samples	0.0445	20	0.00223	
Total	0.3607	24		

Table-04 (Insert the Table after 6.1): CL/TA Ratios.

Name of The Pharmaceuticals	2004 -2005	2005 -2006	2006 -2007	2007 -2008	2008 -2009	Mean	Industry Mean	SD	CV	t-value
RL	0.3014	0.3709	0.3327	0.4153	0.3660	0.3573	0.3254	0.0429	12.01	0.1662
SPL	0.2466	0.2431	0.2437	0.2756	0.1993	0.2417	0.3254	0.0273	11.29	(6.8610)
BPL	0.2286	0.2122	0.1362	0.1756	0.1167	0.1739	0.3254	0.0478	27.50	(7.0827)
ISPIL	0.4497	0.4967	0.5429	0.5152	0.5106	0.5030	0.3254	0.0342	6.800	11.612
OIL	0.4529	0.2658	0.3134	0.3388	0.3852	0.3512	0.3254	0.0714	20.32	0.8085

Source: Annual Report and Official Records of the Selected Pharmaceuticals.

Table-05 (Insert the Table after 6.2): Rank Coefficient of Correlation [R] between Aggressive Investment Policies and Aggressive Financing Policies Based on Mean CA/TA and CL/TA Ratios of the Selected Pharmaceuticals.

Name of The Pharmaceuticals	Rank [R_1] Based on CA/TA	Rank [R_2] Based on CL/TA	Rank Coefficient of Correlation [R]
RL	5	2	-0.60
SPL	3	4	
BPL	2	5	
ISPIL	4	1	
OIL	1	3	

Table-06 (Insert the Table after 6.2): Pearsonian Coefficient of Correlation [r], Probable Error [P.E.r] and Limits of Correlation between Mean CA/TA and CL/TA Ratios of the Selected Pharmaceuticals.

Name of The Pharmaceuticals	Mean CA/TA Ratios	Mean CL/TA Ratios	Coefficient of Correlation [r] between Mean CA/TA and CL/TA Ratios	Probable Error [P.E.r]	Limits of Correlation
RL	0.4880	0.3573	0.40	0.2534	0.1466 to 0.6534
SPL	0.3664	0.2417			
BPL	0.2773	0.1739			
ISPIL	0.3896	0.5030			
OIL	0.2614	0.3512			

List of Pharmaceuticals under Study

Name of The Pharmaceuticals	Acronym
Renata Limited	RL
SQUARE PHARMACEUTICALS LTD.	SPL
BEXIMCO PHARMACEUTICALS LTD.	BPL
The IBN SINA Pharmaceutical Industry Ltd.	ISPIL
Orion Infusion Ltd.	OIL