

TRADE-OFF BETWEEN LIQUIDITY AND PROFITABILITY: CASE STUDY OF SUN PHARMACEUTICAL INDUSTRIES

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ABSTRACT

The present study is carried out to investigate the trade-off between liquidity and profitability. The main motive any business firm is to earn profit and for earning profit they need to manage their assets properly. The firm should be ready with its asset that are liquid to meet its short term i.e. current liabilities. Effective working capital management should be employed by the business firms to ensure trade-off between liquidity and profitability. The management of the business firm is naturally keen to measure its operating efficiency. Similarly the owners invest their funds in the expectation of reasonable returns. Sun Pharmaceutical Industries Ltd. is the fifth largest specialty generic pharmaceutical company in the world, which was incorporated in the year 1983. The Company has global presence with 41 manufacturing facilities across the world. India and the US are two predominant markets accounting for nearly 70% of the company's revenue. The data was collected through secondary source i.e. audited financial statement for the 10 years from 2010-2011 to 2019-20. The data analyzed by using several ratios related with liquidity and profitability, also used descriptive statistics, Correlation coefficient and

liner multi regression analysis. The association of ROI, ROE and NPR with APP, CR and CA to TA is statistically significant and ROI, ROE and NPR are negatively correlated with ARP, ICP, CCC, CA to TA, GWCTR. Sun Pharmaceutical Industries Ltd. is taking benefit of extensive credit period allowed by their suppliers. However they should have stability in the decisions concerning management of current assets and liabilities.

Keywords: Liquidity, Profitability, relationship, trade-off, current assets, current liabilities.

INTRODUCTION

Liquidity is the ability of a firm to meet current obligations when they become due for payment. It is a prerequisite for the survival and long term success of a firm. There exist an inverse relationship between liquidity and profitability. A trade-off between liquidity and profitability is one major dimension in working capital management. Management of working capital is concern with management of current assets. The main motive any business firm is to earn profit and for earning profit they need to manage their assets properly. Normally by employing procedures and establishing rules the firm acquire and manage

their non-current asset in profitable way. But the management of current asset requires to take more precautions from the point of view of its investment. More investment in Current asset block the funds unnecessarily and the profitability of the business firm get adversely affected. If firm does not have adequate current asset to manage the current obligations then it became illiquid. Therefore effective working capital management should be employed by the business firms to ensure trade-off between liquidity and profitability.

LITERATURE REVIEW:

In order to increase the profitability of the firm, manager should focus on the proper management of the various components of the working capital (Maenuddin et.al. 2020). The working capital management involves a trade-off between profitability and liquidity risk and thus it affects the market value of the firm (Vijayakumaran, 2019).

Narwal & Jindal (2018) studied the impact of working capital and corporate governance on the profitability of the company and found that both independent variables i.e. working capital and corporate governance have positive association with profitability. Agyemang et al. (2019) revealed from the study of impact of working capital management on firm profitability that except current liability to total assets ratio all the other variables are significant in short run. Vijayalakshmia and Srividya (2015) conducted study on Working capital management of Pharmaceutical Industry in India during the period from 2009-2010 to 2013-2014. The working capital measured with the help of the ratios like Working Capital Turnover Ratio,

Working Capital to Net Worth, Net Working Capital to Current Liabilities, and Net Sales to Net worth. Liquidity ratio significantly effects on Return on Asset but Return on Equity not get affected by current ratio, quick ratio and liquid ratio whereas Return on Investment is greatly affected by all three liquid ratios current ratio, quick ratio and liquid ratio (Saleem & Rehman, 2011).

Jagtap (2012) conducted Liquidity Analysis through Ratios and Cash Flow with reference to Limited Company. The study states that how the ratio analysis and cash flow help to analyze the liquidity position of the firm. Venkateswararao et. al. (2020) states that there must be sufficient quantity of working capital and there must be efficiency in it in any business organisation including MSMEs. Dash (2018) examined the working capital and profitability relationship in the construction industry in Bangalore. For conducting study the author has used pooled regressions and fixed-effects panel regressions. Further it states that the latter methodology is preferred, as it controls for company specific differences in profitability as well as for year-to-year differences in profitability for the industry as a whole.

CONCEPT OF LIQUIDITY

Liquidity is a prerequisite for the vary survival of a firm. Liquidity is the ability of the firm to satisfy its short term obligations as they become due. It shows that liquidity is related with working capital management i.e. management of current asset. For identifying the trade-off between liquidity and profitability, the researcher has used following important ratios that will help to reveal the relationship between these two concepts.

| | | |
|---|--|---|
| 1 | Current Ratio: | $\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current Liabilities}}$ |
| 2 | Account Receivable Period (ARP) | $\text{Account Receivable Period} = \frac{\text{Account Receivables}}{\text{Net Sales}} \times 12$ |
| 3 | Account Payable Period (APP) | $\text{Account Payable Period} = \frac{\text{Account Payables}}{\text{Net Purchases}} \times 12$ |
| 4 | Inventory Conversion Period (ICP) | $\text{Inventory Conversion Period} = \frac{\text{Inventory}}{\text{Net Sales}} \times 12$ |
| 5 | Current Asset to Total Asset Ratio (CATAR) | $\text{Current Asset to Total Asset ratio} = \frac{\text{Current Asset}}{\text{Total Asset}}$ |
| 6 | Current Liabilities to Total Asset ratio (CLTAR) | $\text{Current Liabilities to Total Asset ratio} = \frac{\text{Current Liabilities}}{\text{Total Asset}}$ |
| 7 | Cash Conversion Cycle (CCC) | Cash Conversion Cycle = (Average Collection period + Inventory Turnover in months) - Average Payment Period |
| 8 | Gross Working Capital Turnover Ratio (GWCTR) | $\text{Gross Working Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Current Assets}}$ |

CONCEPT OF PROFITABILITY

The management of the business firm is naturally eager to measure its operating efficiency. Similarly the owners invest their funds in the expectation of reasonable returns. The operating efficiency of the firm and its ability to ensure adequate returns to its owners depends ultimately on the profits earned by it. Profitability ratios are calculated to analyze the earning capacity of the business which is the outcome of utilization of resources employed in the business. For study the researcher has chosen two important profitability ratios, they are:

| | | |
|---|------------------------------------|---|
| 1 | Return on Investment (ROI): | $\text{Return on Investment Ratio} = \frac{\text{Net Profit after Tax}}{\text{Investment in Total Asset}} \times 100$ |
| 2 | Return on Equity (ROE): | $\text{Return on Equity Ratio} = \frac{\text{Net Profit after Tax}}{\text{Equity}} \times 100$ |

| | | |
|---|-------------------------------|---|
| 3 | Net Profit Ratio (NPR) | $\text{Net Profit ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100$ |
|---|-------------------------------|---|

ABOUT SUN PHARMACEUTICAL INDUSTRIES LIMITED

Sun Pharmaceutical Industries Ltd. is the fifth largest speciality generic pharmaceutical company in the world. It was incorporated in the year 1983. The company began operations in Kolkata with just 5 products to treat psychiatry ailments. The company continues to be led by founder, Chairman, and Managing Director Dilip S. Shanghvi. Now Sun Pharmaceutical Industries Ltd. manufactures and markets a large basket of pharmaceutical formulations covering a broad spectrum of chronic and acute therapies. The Company has global presence with 41 manufacturing facilities across the world. India and the US are two predominant markets accounting for nearly 70% of the company's revenue. The company has entered into a joint-venture agreement with MSD (Merck) to develop and bring differentiated branded generics to emerging markets. Sun Pharmaceutical Industries invests around 7-8% of its global revenue each year in R&D. In FY19, US formulations contributed the most to company's sales with 37 per cent, followed by India branded formulations at 26 per cent.

METHODOLOGY

The objective of the paper is to study trade-off between liquidity and profitability. The study is based on secondary data, which has been collected from the audited financial Statements

of Sun Pharmaceutical Industries Ltd. The period covered for the study is limited to the 10 year (i.e. financial year ending on 2011 to 2020). The data analyzed by using various ratios related with liquidity and profitability, also used descriptive statistics such as Mean, Median, Standard Error, Standard Deviation, Sample Variance, Kurtosis, Skewness, Range, Minimum, Maximum, CAGR (%), Correlation coefficient and regression analysis is used to test the hypothesis.

HYPOTHESIS

Null Hypothesis (H₀): There is no significant relationship between liquidity and profitability of the Sun Pharmaceutical Industries Ltd.

DATA ANALYSIS

The Table 1 exhibits the descriptive statistics of various liquidity and profitability ratios of Sun Pharmaceutical Industries Ltd. The current ratio depict continuous decrease in it except 2015-16, 2018-19 and 2019-20, where it shows slight increase when compared with earlier years. Mean is 2.64 and compounded annual growth rate is -7.30%. The CV value of Current ratio is 39.15% which indicate unstable current asset position.

Account receivables period exhibits the minimum time during the study period is 1.64 months and maximum time is 3.67 months. The CV is 21.83 indicates that account receivable policies are little bit unstable. Average account payable

period is 27.28 months which is relatively high with the standard deviation of 14.57 months. The minimum time of account payable is 14.39 months and maximum time is 50.22 months. Next ratio is Inventory conversion period ratio. Table show that the values for inventory conversion time range from 2.33 months to 3.26 months with mean value of 2.84 months and standard deviation is 0.31 months. It shows the efficient management of inventory. It range between -43.99 months to -8.07months. It records CAGR -15.07% and Value of CV is -67.57 indicate the unstable cash conversion

cycle. The mean value of current asset to total asset ratio is 0.55 with standard deviation 0.06. It ranges from 0.46 to 0.64 during the study period. The CAGR is -2.78% with Coefficient of Variation of 11.27%. The current liabilities to total asset ratio ranges from 0.14 to 0.33. The mean value of the ratio is 0.23 with standard deviation of 0.07. Next the gross working capital turnover ratio shows the mean of 0.90 with the standard deviation of 0.09. The CAGR is 3.30% with CV value 10.03. That indicates the efficient management of working capital and the stable working capital policy.

Table 1: Descriptive Statistics

| Year | ROI | ROE | ARP | APP | ICP | CR | NPR | CATAR | CLTAR | GWCTR | CCC |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 2010-11 | 14.62 | 19.15 | 2.41 | 46.86 | 3.12 | 4.30 | 33.30 | 0.62 | 0.14 | 0.75 | -41.33 |
| 2011-12 | 16.13 | 21.71 | 3.11 | 50.22 | 3.12 | 3.93 | 37.93 | 0.62 | 0.16 | 0.78 | -43.99 |
| 2012-13 | 14.29 | 19.90 | 2.88 | 46.27 | 2.74 | 3.76 | 30.70 | 0.57 | 0.15 | 0.96 | -40.65 |
| 2013-14 | 10.70 | 16.96 | 1.64 | 26.02 | 2.33 | 3.12 | 24.12 | 0.64 | 0.20 | 0.86 | -22.05 |
| 2014-15 | 9.26 | 17.74 | 2.32 | 15.35 | 2.48 | 1.78 | 20.01 | 0.59 | 0.33 | 0.94 | -10.54 |
| 2015-16 | 8.19 | 13.78 | 2.85 | 16.91 | 2.71 | 2.28 | 19.86 | 0.54 | 0.24 | 0.95 | -11.35 |
| 2016-17 | 11.34 | 19.01 | 2.76 | 16.09 | 2.62 | 1.84 | 25.03 | 0.54 | 0.29 | 0.95 | -10.71 |
| 2017-18 | 3.36 | 5.67 | 3.55 | 20.94 | 3.13 | 1.59 | 9.97 | 0.49 | 0.31 | 0.83 | -14.26 |
| 2018-19 | 4.12 | 6.44 | 3.67 | 19.76 | 3.26 | 1.79 | 11.04 | 0.48 | 0.27 | 0.94 | -12.83 |
| 2019-20 | 5.52 | 8.32 | 3.44 | 14.39 | 2.88 | 2.02 | 12.75 | 0.46 | 0.23 | 1.04 | -8.07 |
| Mean | 9.75 | 14.87 | 2.86 | 27.28 | 2.84 | 2.64 | 22.47 | 0.55 | 0.23 | 0.90 | -21.58 |
| Median | 9.98 | 17.35 | 2.87 | 20.35 | 2.81 | 2.15 | 22.06 | 0.55 | 0.23 | 0.94 | -13.55 |
| Standard Error | 1.42 | 1.89 | 0.20 | 4.61 | 0.10 | 0.33 | 3.03 | 0.02 | 0.02 | 0.03 | 4.61 |
| Standard Deviation | 4.49 | 5.96 | 0.63 | 14.57 | 0.31 | 1.03 | 9.59 | 0.06 | 0.07 | 0.09 | 14.58 |
| CV | 46.06 | 40.10 | 21.83 | 53.40 | 11.03 | 39.15 | 42.68 | 11.27 | 29.31 | 10.03 | -67.57 |
| Kurtosis | -1.31 | -1.30 | 0.11 | -1.27 | -1.25 | -1.51 | -1.09 | -1.50 | -1.39 | -0.64 | -1.35 |
| Skewness | -0.07 | -0.67 | -0.58 | 0.87 | -0.21 | 0.63 | 0.18 | -0.14 | 0.02 | -0.43 | -0.84 |
| Range | 12.77 | 16.04 | 2.03 | 35.83 | 0.93 | 2.71 | 27.96 | 0.17 | 0.19 | 0.29 | 35.92 |

| | | | | | | | | | | | |
|----------------|-------|-------|------|--------|-------|-------|-------|-------|------|------|--------|
| Minimum | 3.36 | 5.67 | 1.64 | 14.39 | 2.33 | 1.59 | 9.97 | 0.46 | 0.14 | 0.75 | -43.99 |
| Maximum | 16.13 | 21.71 | 3.67 | 50.22 | 3.26 | 4.30 | 37.93 | 0.64 | 0.33 | 1.04 | -8.07 |
| CAGR(%) | -9.29 | -0.08 | 3.64 | -11.14 | -0.81 | -7.30 | -9.15 | -2.78 | 4.87 | 3.30 | -15.07 |

Source: Generated from the financial statements of the Sun Pharmaceutical Industries Ltd.

Table 1 also depict the descriptive statistics of profitability ratios of Sun Pharmaceutical Industries Ltd. The net profit ratio shows fluctuating trend during the study period. In the year 2018-19 & 2019-20 NPR of Sun Pharmaceutical Industries Ltd. has increased slightly from 9.97 to 11.04 & 12.75 respectively, which is a good sign. The compounded growth rate is -9.15% and average is 22.47. Average value of the return on investment (ROI) of Sun Pharmaceutical Industries Ltd. is 9.75 of the overall assets with a standard deviation of 4.49. The minimum value of ROI is 3.36 while its maximum value is 16.13. The ROE shows the minimum value 5.67 and maximum value 21.71. The average value of ROE is 14.87. It is more than the ROI, which is good from the point of view of the shareholders. The CGAR is -0.08 and value of CV is 40.10% which indicates the instability of the ratio.

CORRELATION ANALYSIS

Table 2 exhibits Karl Pearson Correlation Coefficient (r) matrix used to analyze the relationship between the liquidity and profitability ratios of Sun Pharmaceutical Industries Ltd. The ARP (-0.514), ICP (-0.163), CLTAR (-0.707), GWCTR (-0.457) and CCC (-0.820) have negative relationship with ROI. It indicates that these variables have an insignificant negative correlation. While APP (0.795), CR (0.854) and CATAR (0.810) show the positive relationship with ROI. It exhibits that they are statistically significant. The ROE have negative relationship with ARP (-0.644), ICP (-0.395), CCC (-0.637), CLTAR (-0.497) and GWCTR (-0.329). It explains the insignificant negative relationship with ROE. The association of APP (0.602), CR (0.686) and CATAR (0.839) with ROE is positive. This indicates the insignificant positive relationship with APP, CR and ROE. But CATAR shows statistically significant relationship with ROE. The association of NPR with ARP (-0.469), ICP (-0.085), CCC (-0.848), CLTAR (-0.728) and GWCTR (-0.530) have negative relationship with NPR. This result shows an insignificant negative correlation among the ARP, ICP, CCC, CATAR, GWCTR and NPR.

Table 2: The Pearson Correlations Matrix

| Variables | ROI | ROE | NPR | ARP | APP | ICP | CR | CCC | CATAR | CLTAR | GWCTR |
|-----------|-------|-------|-----|-----|-----|-----|----|-----|-------|-------|-------|
| ROI | 1 | | | | | | | | | | |
| ROE | 0.955 | 1 | | | | | | | | | |
| NPR | 0.993 | 0.930 | 1 | | | | | | | | |

| | | | | | | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---|
| ARP | -0.514 | -0.644 | -0.469 | 1 | | | | | | | |
| APP | 0.795 | 0.602 | 0.827 | -0.142 | 1 | | | | | | |
| ICP | -0.163 | -0.395 | -0.085 | 0.758 | 0.327 | 1 | | | | | |
| CR | 0.854 | 0.686 | 0.872 | -0.382 | 0.935 | 0.114 | 1 | | | | |
| CCC | -0.820 | -0.637 | -0.848 | 0.201 | -0.998 | -0.273 | -0.948 | 1 | | | |
| CATAR | 0.810 | 0.839 | 0.811 | -0.809 | 0.599 | -0.376 | 0.711 | -0.641 | 1 | | |
| CLTAR | -0.707 | -0.497 | -0.728 | 0.196 | -0.850 | -0.190 | -0.936 | 0.854 | -0.473 | 1 | |
| GWCTR | -0.457 | -0.329 | -0.530 | 0.242 | -0.659 | -0.369 | -0.599 | 0.660 | -0.616 | 0.399 | 1 |

Source: Generated from the financial statements of the Sun Pharmaceutical Industries Ltd.

Above table depicts the positive relationship of NPR with APP (0.827), CR (0.872) and CATAR (0.811) which means there is significant positive correlation among the variables. Thus it can be seen from the result that the association of ROI, ROE and NPR with APP, CR and CATAR is statistically significant.

REGRESSION ANALYSIS

Regression Model 1 and model 2 is used for conducting further analysis of the functional relationship between dependent and independent variables.

Model 1

Here liquidity ratio [ARP, APP, ICP, CR, CCC, and GWCTR] is taken as independent variable while profitability [ROI] is dependent variable.

$$ROI = \beta_0 + \beta_1(ARP) + \beta_2(APP) + \beta_3(ICP) + \beta_4(CR) + \beta_5(CCC) + \beta_6(GWCTR) + \varepsilon$$

β_0 is the intercept of the equation, $\beta_1 - \beta_6$ are the coefficients of independent variables and ε is the error term.

Table 3: Model 1 Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|--|-------|----------|-------------------|----------------------------|
| 1 | 0.915 | 0.838 | 0.385 | 2.713 |
| Dependent Variable: ROE, Predictors: (Constant), ARP, APP, ICP, CR, CCC, GWCTR | | | | |

Source: Based on Calculation (Using SPSS)

Table 4: ANNOVA

| Model | | DF | Sum of Squares | Mean Square | F | Significance F |
|--|------------|--------|----------------|-------------|-------|----------------|
| 2 | Regression | 6.000 | 152.108 | 25.351 | 4.134 | 0.136 |
| | Residual | 4.000 | 29.438 | 7.359 | | |
| | Total | 10.000 | 181.545 | | | |
| Dependent Variable: ROE, Predictors: (Constant), ARP, APP,ICP, CR,CCC, GWCTR | | | | | | |

Source: Based on Calculation (Using SPSS)

Table 3 exhibits Model 1 summary based on the calculations done by using SPSS. The R value is 0.915 suggests that the predictors have a high degree of association with the ROI. The R square value shows that 0.838 (83.8%) of variability in ROI is due to predictors.

Table 4 shows the output of the ANOVA analysis and whether there is a statistically significant difference between our group means. It can be seen that model 1 does not fit for forecasting the relation between with predictors and dependent variable as F-value is 4.134 and the significance value is 0.136 (i.e., $p = .136$) at 5% significance level. The result indicates that relationship and model is statistically insignificant. This model is not suitable for predicting the value of ROI on the basis of selected liquidity ratio. Thus it can be seen that the alternative hypothesis is rejected and the null hypothesis is accepted.

Model 1

Here liquidity ratio [ARP, APP, ICP, CR, CCC, and GWCTR] is taken as independent variable while profitability [ROE] is dependent variable.

$$ROI = \beta_0 + \beta_1(ARP) + \beta_2(APP) + \beta_3(ICP) + \beta_4(CR) + \beta_5(CCC) + \beta_6(GWCTR) + \varepsilon$$

β_0 is the intercept of the equation, $\beta_1 - \beta_6$ are the coefficients of independent variables and ε is the error term.

Table 5: Model 2 Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|--|-------|----------|-------------------|----------------------------|
| 2 | 0.872 | 0.760 | 0.209 | 4.385 |
| Dependent Variable: ROE, Predictors: (Constant), ARP, APP,ICP, CR,CCC, GWCTR | | | | |

Source: Based on Calculation (Using SPSS)

Table 6: ANNOVA

| Model | | DF | Sum of Squares | Mean Square | F | Significance F |
|--|------------|--------|----------------|-------------|-------|----------------|
| 2 | Regression | 6.000 | 243.035 | 40.506 | 2.528 | 0.239 |
| | Residual | 4.000 | 76.910 | 19.228 | | |
| | Total | 10.000 | 319.945 | | | |
| Dependent Variable: ROE, Predictors: (Constant), ARP, APP,ICP, CR,CCC, GWCTR | | | | | | |

Source: Based on Calculation (Using SPSS)

Table 5 depict the Model 2 summary based on the calculations using SPSS. The R value is 0.872 suggests that the predictors have a high degree of association with the ROE. The R square value shows that 0.760 (76.0%) of variability in ROE is due to predictors.

Table 6 shows the output of the ANOVA analysis and whether there is a statistically significant difference between our group means. It can be seen that model 2 does not fit for forecasting the relation between with predictors and dependent variable as F-value is 2.528 and the significance value is 0.239 (i.e., $p = .239$) at 5% significance level. The result indicates that relationship and model is statistically insignificant. Finally we can say that the alternative hypothesis is rejected and the null hypothesis is accepted.

CONCLUSION

From the study, it can be concluded from the correlation analysis that the association of ROI, ROE and NPR with APP, CR and CATAR is statistically significant and ROI, ROE and NPR are negatively correlated with ARP, ICP, CCC, CATAR, and GWCTR. It means there exist insignificant relationship between the ROI, ROE and NPR with ARP, ICP, CCC, CATAR, and GWCTR. Further liner multiple regression analysis used for analyzing the functional relationship between dependent (ROI and ROE) and independent variables (ARP, APP, ICP, CR, CCC, and GWCTR). The result of both the models shows that relationship is statistically insignificant and model is not suitable for predicting the value of ROI as well as ROE on the basis of selected liquidity ratio. In conclusion we can say that the alternative hypothesis is rejected and the null hypothesis is accepted.

Thus, from the study of trade off between liquidity and profitability, it can be understood related to Sun Pharmaceutical Industries Ltd. that working capital management policies adopted are stable. The business is taking benefit of extensive credit period allowed by their suppliers. However they should have stability in the decisions concerning management of current assets and liabilities, also the maximum utilization of the assets with effective and efficient manner will help the organization to earn worthy profit and satisfy the shareholders which is the ultimate objective of the business.

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