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The Impact of Liquidity and Solvency on Profitability of Pharmaceutical Companies

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Abstract: *This paper empirically investigates the impact of liquidity and solvency on profitability for a sample of 20 Pharmaceutical companies that are listed on Bombay Stock Exchange (BSE) for a period of 2015-16 to 2020-21. Descriptive statistics, correlation and regression model is used to analyze the secondary data reported in companies' financial statement. The main contribution of this study i.e. it explains the impact of liquidity on return on assets and return on equity in context of working capital which is not found in WCM literature especially in context of Indian pharmaceutical companies. The key findings of analysis show that quick ratio have negative impact on both return on asset and return on equity as regression coefficient of quick ratio is negative with return on asset and return on equity. The solvency that is proxied using the debt equity ratio and interest coverage ratio does not affect the return on asset and return of equity.*

Keywords: *Working Capital Management, Bombay Stock Exchange, Liquidity, Solvency, Return On Asset, Return On Equity*.

1. Introduction

Any business firm's ability to execute well depends on its liquidity, solvency and management efficiency. These determinants play a vital role in every firm because it is the aim of every organization to boost its sale and profitability. Liquidity has been defined as the capacity to turn assets into cash or the capacity to settle short-term obligations. (Taffler R. 1982). It is crucial for streamlining a company's entire operation. Due to its impact on businesses' daily operations, studying liquidity is particularly beneficial to both internal and external analysts. (Elangkumaran & Karthika, 2013). Liquidity is essential for any company to survive. (Subramanyam & Wild, 2009) and it has a significant impact on the company's profitability.(Deloof, 2003; Pervan et al., 2017; Raheman & Nasr,). So it is extremely important for managers to assure liquidity without compromising profitability. This issue is further exacerbated in manufacturing companies since their liquidity is often influenced by inventory management, which entails decisions related to proper flow of inventory causing a real concern for their management. Solvency ratios show a company's capacity to fulfill its long-term obligations. These ratios aid in determining the risk associated with borrowing money. These both factors solvency and liquidity are connected

with the performance of the firm .In the words of Keynes, Lord (quoted by Gupta and Sharma: 2005)"profit is the engine that drives the business enterprise "Profitability Ratios measure the overall performance of an organisation and its efficiency in utilizing assets, liabilities and equity. A number of studies have been conducted to determine the relationships between these two financial dimensions of firms. Bari, K., Ghosh, S. K., & Kabir, M. R. (2021) examined the relationship between liquidity ratio, solvency ratio and profitability of 10 listed chemical sector companies in Pakistan from 2001-2009. Regression analysis was used to analyze the impact of independent variable (current ratio, quick ratio , debt equity ratio) on dependent variable(return on asset and return on equity) the study found that liquidity ratio has affects positively and solvency has affects negatively upon ROA and ROE. Pervan et al. (2017) studied 195 Croatian companies over a period of 10 years and conclude that the firms, liquidity and solvency have significant impact on their profitability. Bari, K., Ghosh,et al (2021).examined the impact of liquidity on the profitability of the pharmaceutical companies on Dhaka stock exchange in Bangladesh for the period of 2 years from 2016 -18. And after having the regression analysis it concludes that there was not a significant impact of liquidity on profitability of the company

The main purpose of this study is to examine the impact of solvency and liquidity on profitability of 20 listed chemical and pharmaceutical firms listed on B.S.E for the period of 2015-20. In current study, the explanatory variables of working capital and profitability consisting on set comprise six understudy variables:, Current ratio, Quick ratio Debt equity ratio , Interest coverage ratio, (Independent variable) and return on asset ratio and return on equity ratio for measuring profitability (dependent) variable. This research contributes in literature in two manners. First, focal point is Indian pharmaceutical companies where not much research had been carried out on these firms in recent time. Second, the above said study authenticates a few of results of prior author through testing relationship of solvency and liquidity with profitability concerning selected firms. As a result, this research adds material to existing theory evolve by prior authors.

2. Objectives & Hypothesis

I. To identify of the impact of liquidity ratios on profitability of listed pharmaceutical Companies in India

Ho. 1. There is no statistical significance impact of current ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E

Ho. 2. There is no statistical significance impact of quick ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E

Ho. 3. There is no statistical significance impact of current ratio on the financial performance measured by (return on equity) for the selected pharmaceutical companies in India.

Ho. 4. There is no statistical significance impact of quick ratio on the financial performance measured by (return on equity) for the selected pharmaceutical companies in India.

II. To assess the impact of solvency ratio on the financial performance of pharmaceutical companies

Ho. 5. There is no statistical significance impact of debt equity ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E

Ho. 6. There is no statistical significance impact of interest coverage ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E

Ho. 7. There is no statistical significance impact of debt equity ratio on the financial performance measured by (return on equity) for the selected pharmaceutical companies in India.

Ho. 8. There is no statistical significance impact of interest coverage ratio on the financial performance measured by (return on equity) for the selected pharmaceutical companies in India.

3. Research Methodology

This study adopts a quantitative approach; links secondary data .Data for this study was collected from annual financial reports of the Pharmaceutical companies during the period of 2017-18 to 2021-22. To measure the liquidity position, two liquidity ratios are used under this study i.e. current ratio and quick ratio. To measure the solvency ratios, two ratios related to solvency of the company, Debt equity ratio, Interest coverage ratio are covered under this study. Return on asset and return on equity are used to measure the profitability under this study. Liquidity ratios and solvency ratios are implemented as the independent variable and profitability ratios are the dependent variables .To derive the results of the study; descriptive statistical analysis, correlation analysis and multiple regression; tools of analysis are applied used for analysis.

4. Theoretical framework

Following quantitative model is used for multiple regression analysis.

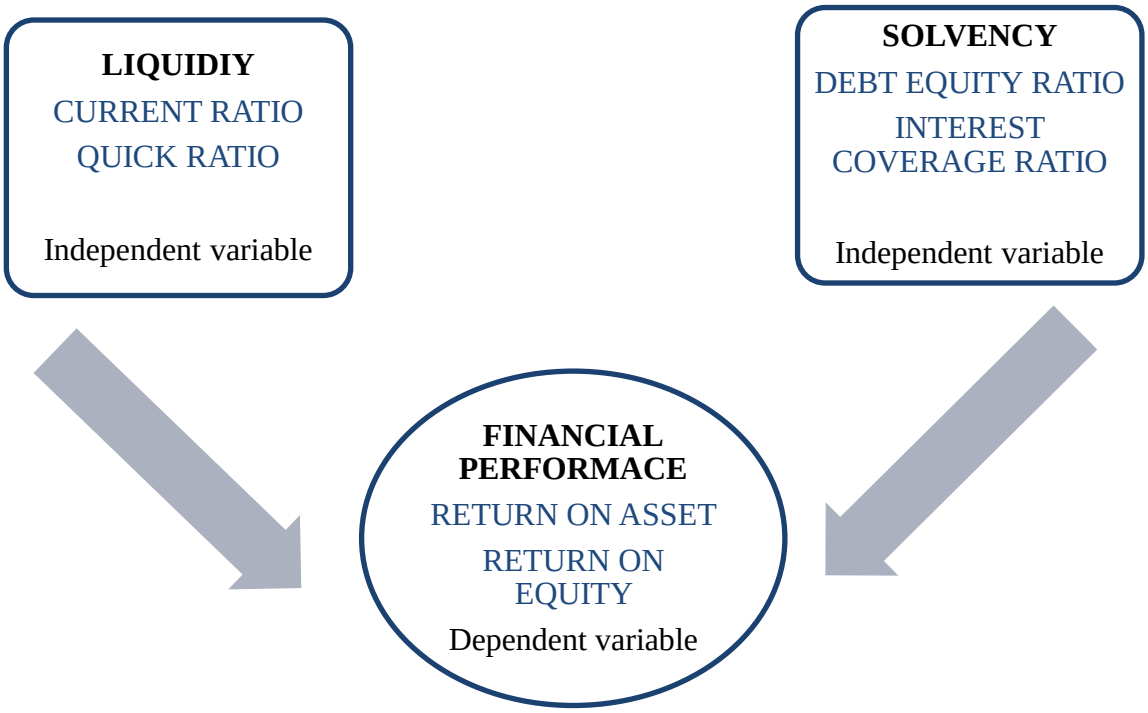

Figure 1: Quantitative Model for Multiple Regression Analysis

Return on Asset: It is a profitability ratio that measures how effectively a company uses its assets. It is a ratio of net profit after tax to total asset. Higher the ratio betters the utilization of assets.

Return on Asset = Net Income /Total Assets

Return on Equity: It is also a profitability ratio. It indicates the percentage return a shareholder earns on its invested capital. It denotes how well company uses is funds

Return on Equity: Profit after Tax /Shareholders Equity

Current Ratio: The current ratio is a gross measure of liquidity in that simply compares all liquid assets with all current liabilities. The current ratio is calculated by dividing current assets by current liabilities. The current ratio measures the liquidity position of the firm and compares the current assets with current liabilities. An increase in current assets increases the ratio. 2:1 considered the ideal ratio.

Current Ratio = Current Assets / Current Liabilities

Quick Ratio: This ratio is short term solvency ratio and measures the company's ability to meet its short term obligation with its highly liquid asset

Quick Ratio = Quick Assets / Current Liabilities

5. Results and Discussion

5.1 Pearson Correlation

Pearson Correlation was computed to establish relationship between liquidity ratios, solvency ratio, profitability ratio (Return on Asset) and financial performance (Return on Equity). A liquidity ratio is studied using two ratios Current Ratio and Quick Ratio. Solvency ratio is studied using two ratios Debt Equity Ratio and Interest Coverage Ratio.

Table 1: Correlation between Liquidity Ratios, Solvency Ratio, and Profitability Ratio (Return on Asset)

	Return on Asset	Current Ratio	Quick Ratio	Debt Equity Ratio	Interest Coverage Ratio
Return on Asset	1	.662	516	-.090	.596
Current Ratio	.662	1	.948	-.629	.663
Quick Ratio	516	.948	1	-.669	.490
Debt Equity Ratio	-.090	-.629	-.669	1	-.342
Interest Coverage Ratio	.596	.663	.490	-.342	1
Source: Calculated from Secondary Data					

Table no 1 shows the correlation between liquidity ratios, solvency ratio, profitability ratio (Return on Asset). Return on asset is positively related with current ratio, quick ratio, and interest coverage ratio but it is negatively related with debt equity ratio.

Table 2: Correlation between Liquidity Ratios, Solvency Ratio, Financial Performance (Return on Equity).

	Return on Equity	Current Ratio	Quick Ratio	Debt Equity Ratio	Interest Coverage Ratio
Return on Equity	1	.127	-.041	.510	284
Current Ratio	.127	1	.948	-.629	.663
Quick Ratio	-.041	.948	1	-.669	.490
Debt Equity Ratio	.510	-.629	-.669	1	-.342
Interest Coverage Ratio	.284	.663	.490	-.342	1
Source: Calculated from Secondary Data					

Table no 2 shows the correlation between liquidity ratios, solvency ratio, Financial Performance (Return on Equity). Return on equity is positively related with current ratio, debt equity ratio, and interest coverage ratio but it is negatively related with quick ratio.

5.2 Impact of Liquidity Ratio on the Profitability

Table 3: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819[a]	.670	-.648	19.65
a. Predictors: (Constant), Interest Coverage Ratio, Debt Equity Ratio, Quick Ratio, Current Ratio b. Dependent Variable: Return on Asset				
Source: Calculated from Secondary Data				

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-21.434	58.078		-.369	.775
	Current Ratio	10.939	17.732	1.593	.617	.648
	Quick Ratio	-5.640	18.121	-.716	-.311	.808
	Debt Equity Ratio	6.838	11.847	.447	.577	.667
	Interest Coverage Ratio	.006	.137	.043	.046	.971
a. Dependent Variable: Return on Assets						
Source: Calculated from Secondary Data						

Null Hypothesis 1 is supported, the regression coefficient is positive, (10.939) indicating that the more current ratio, the higher the return on asset, but the relationship is not statistically significant (Sig. = .648). Here we find no support for the current ratio that higher current ratio will increase the return on assets.
Null Hypothesis 2 is also accepted, there is no statistical significance impact of quick ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E predicts as p value is greater than 0.05 (Sig.= .808) Although the regression coefficient is negative (-5.640) indicating that the more quick ratio, the lower the return on asset.

Null Hypothesis 3 is supported, the regression coefficient is positive, (18.296) indicating that the more current ratio, the higher the return on equity, but the relationship is not statistically significant (Sig. = .649). Here we find no support for the current ratio that higher current ratio will increase the return on equity.

Null Hypothesis 4 is also accepted, there is no statistical significance impact of quick ratio on the solvency measured by (return on equity) for the pharmaceutical companies listed on B.S.E predicts as p value is greater than 0.05 (Sig.= 746) Although the regression coefficient is negative (-12.810) indicating that the more quick ratio, the lower the return on equity.

5.3 Impact of Solvency Ratio on the Financial Performance

Table 5: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.823a	.678	-.612	32.92
a. Predictors: (Constant), Interest Coverage Ratio, Debt Equity Ratio, Quick Ratio, Current Ratio b. Dependent Variable: Return on Equity				
Source: Calculated from Secondary Data				

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	-38.071	97.305		-.391	.763
	Current Ratio	18.296	29.709	1.573	.616	.649
	Quick Ratio	-12.810	30.361	-.960	-.422	.746
	Debt Equity Ratio	22.237	19.848	.858	1.120	.464
	Interest Coverage Ratio	.001	.230	.005	.006	.996
a. Dependent Variable: Return on Equity						
Source: Calculated from Primary Data						

In the case of Null Hypothesis 5 Sig. value is .667 which is greater than 0.05 predicts, which states that there is no statistical significance impact of debt equity ratio on the return on asset and Null Hypothesis 3 is accepted. The regression coefficient is positive, (6.838) indicating that the more debt equity ratio, the higher the return on asset.

Hypothesis 6 predicts that the greater the interest coverage ratio, the higher the return on asset as the regression coefficient is positive (.006). The value of p is greater than 0.05 (Sig. =. 971) indicates there is no statistical significance impact of interest coverage ratio on the return on asset and Null Hypothesis 6 is accepted.

In the case of Null Hypothesis 7 Sig. value is .464 which is greater than 0.05 predicts, which states that there is no statistical significance impact of debt equity ratio on the return on equity and Null Hypothesis 7 is accepted. The regression coefficient is positive, (22.237) indicating that the more debt equity ratio, the higher the return on equity.

Hypothesis 8 predicts that the greater the interest coverage ratio, the higher the return on equity as the regression coefficient is positive (.001). The value of p is greater than 0.05 (Sig. = .996) indicates there is no statistical significance impact of interest coverage ratio on the return on equity and Null Hypothesis 8 is accepted.

6. Discussion

Based on the research results, it is obtained that the Liquidity of the firms as measured by the current ratio and quick ratio does not affect the return on assets and return on equity. According to Kasmir (2008) the current ratio can be used to assess a company's worth and demonstrate its capacity to settle its debts. From the t-test results obtained on the variable current ratio (CR) the significance value of 0.648> 0.05. It shows that the current ratio does not affect the return on asset. Similar in case of return on equity current ratio have no impact the significance value is 0.649> 0.05. The results of the research prove that the profitability and financial position is not affected by the current ratio, although the current ratio also shows the company's ability to pay short-term debts (Kretarto, 2005). This is in line with research conducted by Ibe, S.O. (2013) and Zygmunt, J. (2013) which states that current ratio do not affect profitability.

The findings reveals that quick ratio have negative impact on both return on asset and return on equity as regression coefficient of quick ratio is negative (-5.640) and (-12.810) with return on asset and return on equity respectively. Even there is no statistical significance impact of quick ratio on return on asset as p value is greater than 0.05 (Sig. = .808) and in case of return of equity the significance value is 0.648> 0.05. The results of this study support the research of Putri et.al (2016) with the result that the quick ratio has no significant effect on profitability of the firm.

Solvency demonstrates how a company's debt finances its assets (Van Horne et al., 2012). It is anticipated that the company will be able to fund and manage its assets to earn a profit in order to improve the value of the business. The results show that the solvency that is proxied using the debt equity ratio and interest coverage ratio does not affect the return on asset and return of equity. This shows that automotive pharmaceutical sector companies. This research supports the results of research Lazaridis, I. and Tryfonidis (2006)., Pratama and Wirawati (2016), Novari and Lestari (2016), Putra and Juniariani (2017) with the results of statistical tests showing that Liquidity & Solvency ratio does not affects the profitability.

7. Future Scope of research:

For further researchers use other criteria that can affect firm profitability, it is anticipated that future researchers will be able to study other industries, such as banking, the automobile industry, or businesses that are both conventionally and sharia-indexed. The firm's dependent variable can be measured using a different metric, such as the Price Earnings Ratio or Tobin's Q.

- Inter sector comparison of Liquidity and Solvency on Profitability can do done in future.
- In this study top twenty Pharmaceutical companies were taken the further studies, can be done more companies belonging to Pharmaceutical sector.
- Researcher can also make an analysis on the Impact of working capital management on profitability of the company.
- The Impact of Liquidity and Solvency on Profitability of various private or public banks can also be done in future

8. Limitations:

The study is limited only to twenty Pharmaceutical companies

- The study is restricted to five year's data of twenty Pharmaceutical companies.
- Time limit is the difficult for the research study.
- The authentication of information relies upon the accessibility of the secondary data
- Many facts and data they are not to be uncovered on account of secret nature of the company.

9. Managerial Implications:

From the findings researcher has suggested several managerial implications for the organisations regarding liquidity and solvency. Financial Ratio is significant in financial management due to the fact that it plays a vital role in financial statements analysis. Companies should try to maintain its ideal current and liquid ratio to enhance its efficiency and earnings. Every the impact of liquidity and solvency is also important for the investors for taking decision related to investment

10. Conclusion

The result of the research shows that in the studied Pharmaceutical companies that quick ratio has negative impact on both return on asset and return on equity as regression coefficient of quick ratio is negative with return on asset and return on equity. The solvency that is proxied using the debt equity ratio and interest coverage ratio does not affect the return on asset and return of equity. The more current ratio, the higher the return on asset, but the relationship is not statistically significant. There is no statistical significance impact of quick ratio on the profitability measured by (return on asset) for the pharmaceutical companies listed on B.S.E. Although the regression coefficient is negative indicaties that the more quick ratio, the lower the return on asset. The regression coefficient is positive, which indicates that the more current ratio, the higher the return on equity, but the relationship is not statistically significant. There is no statistical significance impact of interest coverage ratio on the return on equity

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