ANALYSIS OF FINANCIAL PERFORMANCE OF SELECT PHARMACEUTICAL COMPANIES IN INDIA USING Z SCORE MODEL

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ABSTRACT

Every business organization need profit for its existence and for expand the business. They discharge the obligations to various segments of the society only through earning profits. The financial performance of the business organizations has a lot for all its stakeholders. The interested parties are very much concerned in profitability and whether there is efficiency in returns. An analysis of the performance of the business helps to assess the financial stability of such business. Financial performance refers to the process of determining financial strength of the firm establishing relationship between the items of the balance sheet, profit and loss account. The study is attempted to analyze the financial performance of Indian pharmaceuticals companies by using Z score model. The study concludes that the overall financial health of pharmaceutical industry is in healthy zone. The study concluded with five selected companies.

Keywords: *Financial performance, z- score analysis, Financial health Ratios*

1. INTRODUCTION;

In the changing scenario, every business strives hard for survival in the present era of core competence. Survival of the business in the modern world is possible, only when, apart from other things, it has sufficient finance. The financial requirements of a business must be sufficient to meet the long- term and short-term commitments. To meet long-term commitment, it needs permanent capital and for short-term commitment, it needs working capital. Thus, finance is a significant facet of every business. Both excessive as well as inadequate finance position are dangerous from the business point of view. In other words, finance is the backbone of any business. Any business without finance is a wingless bird. Therefore, the financial

analyst is responsible for monitoring the financial position of the business regularly. The performance of the company is judged through its financial statements, which throws light on the operational efficiency and financial position of the company.

Due to intense completion, among the business community, everyone is doing something better than the other to capture the business and therefore, monitoring the financial health of a company by checking its sales and profit growth is not sufficient today. It is necessary to benchmark the efficiency of utilization of capital and assets, return to shareholders as well as predicting the financial distress. The prediction and prevention of financial distress is one of the major factors, which will help to avoid bankruptcy. Several indicators and information sources can help in the prediction and prevention of financial distress. Financial statement analysis is one of the methods that can be used in predicting financial distress, which focuses on financial variables.

To evaluate the financial conditions and performance of a company, the financial analysis needs certain yardsticks. Among the variables, tools employed in analysing the financial information contained in the financial statements. Ratio analysis is a widely used tool, which is relevant in assessing the performance of a firm in respect of liquidity position and long-term, solvency. In addition to this, it helps to predict the financial distress of the business. An attempt has been made in the present study to have an insight into the examination of financial health of the pharmaceutical companies in India.

1.1 Need to monitor financial health

The need to monitor financial health of a company arises today for:

a. Determining the sustainability and growth of the company in the competitive world.
b. Identifying the sign of financial distress and thereby avoid the bankruptcy.
c. Entry of the new players in the market.
d. The integrated financial market brings inventors from the foreign countries.
e. Reluctance to invest due to political uncertainty and coalition politics.

1.2 Objectives of financial health

The objectives of using 'Z' score analysis are as follows:

• To assess the overall financial performance of the company.

• To know the efficiency in financial operations.

• To predict the financial health and viability of the company

1.3 Measuring financial health through ratio analysis

For determining the financial health of a company the financial analyst takes initial steps to analyze a company's financial statement. The analyst provides a clear picture of the financial soundness of a business and a roadmap outlining the direction the business is heading to Ratio analysis is a widely used tool for financial analysis.

Financial ratios are analysis tools, applied to financial data, which are used to identify positive and negative trends, strengths and weakness, investment attributes, and other trends, which measure the viability of the business. Ratio analysis is typically used to measure liquidity, leverage, activity, profitability and growth. No single ratio calculation can provide a meaningful complete picture of a company's financial position. Keeping the above point in mind, this study uses the 'Z' Score model, which captures the predictive viability of a company's financial health by using a combination of financial ratios that ultimately predict a score, which is used to determine the financial health of a company.

2. Review of Literature:

V Apoorva D. et al. (2019) used the model to predict bankruptcy of companies two years prior to the happening of the event. Their main aim was to check the efficiency of the model for which 7 companies had been selected. The findings of the research stated that the model predicted the happening of the event however is not 100% accurate.

Shariq (2016) in his findings stated that companies with high Z-score were financially sound which further helped the managers to take a financial decision, the stockholders to choose investment options and others to look after their interest in the concerned cement manufacturers of the country.

Shariq, M. (2016). Bankruptcy Prediction Using the Altman Z-score Model in Oman: A Case Study of Raysut Cement Company SAOG and its subsidiaries. Australasian Accounting, Business and Finance Journal, 10(4), 70-80. doi:10.14453/aabfj.v10i4.6

Sajjan and (2016) displayed the financial health of selected listed firms for the past 5 years using the Altman Z-score model. Sanesh (2016) tried to predict the probability of default by Nifty 50 companies due to financial distress based on the current financial statistics of the company.

Tyagi (2014) in his paper investigated the financial health of logistics industry using the Altman Z score model. Which revealed that Indian logistics industry was financially sound and healthy with an average Z score increase from 2.54 to 3.01 during the global recession. Kumari (2013) tried to estimate bankruptcy for MMTC using Z score analysis.

S., V., & Thiayalnayaki (2013) mentions that Altman Zscore is one of the important tool and technique to measure companies financial performance as well as operational and financial efficiency. The authors used the model for predicting bankruptcy in non-manufacturing companies, 2-3 years before happening of the event. Altman Z Score is used to predict the possibilities of the bankrupcy of manufacturing companies.

Mizan & Hossain, (2014) conducted a study to assess the financial health of cement industry of Bangladesh which showed that two out of the five firms were financially strong as they had high Z-score.

Kumari (2013) tried to estimate bankruptcy for MMTC using Z score analysis.

3. Statement of the problem:

Business has been functioning in a highly turbulent environment. All busyness survive for long as there are business might be come to an end with in a very short period from the date of their inception. Divergent to this some business might end up after a long period of time.the organizations carry out various activities so as to make profits and to generate wealth for continuing their operations. The firm should be financially sound in order to survive healthy competition. The study was conducted to know the financial health of Indian pharmaceutical using the z score model.

4.Objectives of the study:

1. To study the financial health of select pharmaceutical companies in India
2. To calculate z score of select pharmaceuticals companies in India
3. To offer valid suggestions and recommendations.

5.Research Methodology:

The study has been undertaken for the period of 2013-14 to 2022-23. In order to study the financial health of select pharmaceutical companies in India. Five pharmaceutical companies have been select to study the financial performance such as Cipla Ltd, Sun Pharmaceuticals Ltd, Aurobindo Pharma Ltd , Lupin Ltd, Dr. Reddy Laboratories Ltd.

5.1 'Z' – Score Analysis:

About 40 years ago, Edward I. Altman, a financial economist at New York University's Graduate school of Business, developed a model for predicting the likelihood that a company would go bankrupt. This model uses five financial ratios, which combine in a specific way to produce a single number. This number, called the Z-score, is a general measure of corporate financial health. The most famous failure prediction model is Altman's Z-Score Model. Based on Multiple Discriminate Analysis (MDA), the model predicts a company's financial health based on a discriminate function of the firm.

5.2 Altman Z-Score Calculation:

The formula for Altman Z-Score is 1.2(working capital / total assets) + 1.4(retained earnings / total assets) + 3.3(earnings before interest and tax / total assets) + 0.6(market value of equity / total liabilities) + 1.0(sales / total assets).

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 = 0.012 (X1)+0.014 (X2)+0.033 (X3)+0.006 (X4)+0.99 (X5)$$

Where: Z= Discriminate function score of a firm

X_1 = Working Capital / Total Assets

X_2 = Retained earnings / Total Sales

X_3 = Earnings before interest and taxes / Total assets

X_4 = Market value of equity / Book value of total liabilities or reciprocal of debt-equity ratio.

X_5 = Sales / Total Assets

The Z-Score model (developed in 1968) was based on a sample composed of 66 manufacturing companies with 13 companies in each of the two matched pair groups. Altman subsequently developed a revised Z-Score model (with revised co-efficient and Z-Score cut-offs) which dropped variables X_1 and X_5 (above) and replaced them with a new variable X_1 = net worth (book values)/Total liabilities. The X_5 variables were allegedly dropped to minimize potential industry effects related to assets turnover.

6. Data Analysis and Interpretation:

The Z-Score is calculated by multiplying the following accounting ratios, which is efficient in predicting bankruptcy.

1. **X_1 Working Capital Ratio: Working Capital / Total Assets**: This ratio expresses the liquidity position of the company towards the total capitalization. Working capital is defined as the difference between current assets and current liabilities. Liquidity and size characteristics are explicitly considered.

Table-6.1

Working Capital Ratio: Working Capital / Total Assets:

Year	Sun Pharmaceutical Industries Ltd	Cipla Ltd	Aurobindo Pharma Ltd.	Dr. Reddy's Laboratories Ltd	Lupin Ltd
2022-23	0.20	0.39	0.12	0.38	0.17
2021-22	-0.01	0.37	0.26	0.30	0.22
2020-21	0.10	0.33	0.24	0.30	0.32
2019-20	0.02	0.31	0.25	0.30	0.40
2018-19	-0.06	0.39	0.20	0.36	0.38
2017-18	-0.08	0.30	0.20	0.25	0.34
2016-17	-0.14	0.24	0.19	0.26	0.37
2015-16	-0.10	0.23	0.19	0.30	0.37
2014-15	-0.15	0.20	0.24	0.35	0.44
2013-14	0.11	0.21	0.21	0.33	0.41
Mean	-0.01	0.29	0.21	0.31	0.34
SD	0.11	0.07	0.04	0.04	0.08
CV	-1100.0%	24.14%	19.05%	12.90%	23.53%

Source: Compiled from Annual Reports

2. **X_2 Retained earning Ratio : Retained earnings / Total sales**: It indicates the amount reinvested, the earnings or losses, which reflects the extent of companies leverage. In other words, the extent assets, which have been paid by the company profits. Those firms with high retained earnings to total assets have financed their assets through retention of profits and have not utilized much of their debt. It also highlights either the use of internally generated funds for growth (low risk capital) Vs OPM (other people's money) high risk capital. This is a measure of cumulative profitability over time and leverage as well.

Table-6.2

Retained Earning Ratio : Retained Earnings / Total Sales:

Year	Sun Pharmaceuticals Ltd	Cipla Ltd	Aurobindo Pharma Ltd	Dr. Reddy's Laboratories Ltd	Lupin Ltd
2022-23	0.00	0.00	0.00	0.00	0.00
2021-22	22.59	0.86	0.82	0.74	2.56
2020-21	0.27	0.00	0.92	0.81	0.78
2019-20	0.57	0.75	0.90	0.86	0.68
2018-19	0.41	0.87	0.90	0.74	0.85
2017-18	-1.61	0.89	0.88	0.29	0.74
2016-17	11.53	0.83	0.93	0.76	0.89
2015-16	1.22	0.87	0.92	0.75	0.88
2014-15	1.48	0.86	0.91	0.79	0.85
2013-14	1.10	0.88	0.92	0.84	0.88
Mean	3.75	0.68	0.81	0.66	0.91
SD	7.52	0.36	0.28	0.28	0.63
CV	200.53	52.94	34.56	42.42	69.23

Source: Compiled from Annual Reports

3. **X₃ Basic Earnings Power Ratio: Earnings before interest and taxes / total assets**: It is the measure of the companies operating performance and also it indicates the earning power of the company. In addition, this is a measure of the productivity of the firm's assets, independent of any tax on advantages factors. Since a firm's ultimate existence is based on the earning power of its assets, this ratio appears to be particularly appropriate for studies dealing with credit risk.

Table-6.3

Basic Earnings Power Ratio: Earnings before Interest and Taxes / Total Assets

Year	Sun Pharmaceutical Industries Ltd	Cipla Ltd	Aurobindo Pharma Ltd.	Dr. Reddy's Laboratories Ltd	Lupin Ltd
2022-23	0.11	0.13	0.06	0.15	0.02
2021-22	0.05	0.14	0.08	0.09	-0.01
2020-21	0.06	0.15	0.18	0.14	0.07
2019-20	0.08	0.15	0.12	0.14	0.09
2018-19	0.05	0.14	0.11	0.10	0.14
2017-18	0.03	0.12	0.15	0.04	0.10
2016-17	0.00	0.08	0.17	0.09	0.23
2015-16	-0.03	0.11	0.17	0.11	0.27
2014-15	-0.04	0.10	0.19	0.13	0.29
2013-14	0.01	0.14	0.18	0.17	0.36
Mean	0.03	0.12	0.14	0.12	0.16
SD	0.05	0.02	0.04	0.04	0.12
CV	166.67%	16.67%	28.57%	33.33%	75.00%

Source: Compiled from Annual Reports

4. **X₄ price-to-book (P/B) ratio: Market value of equity / book value of total liabilities :** (Price/BV (X))**:** It is the measure of the long-term solvency of a company. It is reciprocal of the familiar debt-equity ratio. Equity is measured by the combined market value of all shares. While debt includes both, current and long-term liabilities, this measure shows how much assets of an enterprise can decline in value before the liabilities exceed the assets and the concern becomes insolvent.

Table-6.4

Price to Book (P/B) Ratio: Market Value of Equity / Book Value of Total Liabilities

Year	Sun Pharmaceuticals Ltd	Cipla Ltd	Aurobindo Pharma Ltd	Dr. Reddy Laboratories Ltd	Lupin Ltd
2022-23	9.93	2.95	1.69	3.76	1.60
2021-22	8.93	3.65	2.29	3.91	1.87
2020-21	5.73	3.30	3.24	4.42	2.49
2019-20	3.46	1.96	1.86	3.41	1.53
2018-19	5.03	2.70	4.06	3.63	1.95
2017-18	5.32	3.10	3.27	2.93	2.11
2016-17	7.85	3.72	4.69	3.76	4.41
2015-16	9.18	3.43	6.35	4.46	5.60
2014-15	9.31	5.15	6.65	5.59	9.99
2013-14	16.03	3.06	3.71	4.67	6.01
Mean	8.08	3.30	3.78	4.05	3.75
SD	3.37	0.78	1.63	0.71	2.62
CV	41.71%	23.64%	43.12%	17.53%	69.86%

Source: Compiled from Annual Reports

5. **X₅ Assets to Sales Ratio: Total Assets / Total Sales:** This is a standard turnover measure. Unfortunately, it varies greatly from one industry to another. In addition to this, it will reveal the sales generating capacity of the company's assets and measure of management's capacity to deal with competitive conditions.

Table-6.5

Assets to Sales Ratio: Total Assets / Total Sales

Year	Sun Pharmaceutical Industries Ltd	Cipla Ltd	Aurobindo Pharma Ltd.	Dr Reddys Laboratories Ltd	Lupin Ltd
2022-23	1.94	1.71	4.25	3.04	2.49
2021-22	2.46	1.57	3.68	2.94	2.45
2020-21	3.01	1.42	3.95	2.59	2.40
2019-20	2.74	1.26	3.33	2.34	2.28
2018-19	3.26	1.14	3.09	1.95	2.17
2017-18	3.63	1.06	2.69	2.06	2.06
2016-17	4.13	9.70	2.22	1.98	1.97
2015-16	4.25	9.48	2.14	2.05	1.57
2014-15	4.55	9.46	3.50	1.93	1.22
2013-14	4.60	8.04	2.94	1.70	9.8
Mean	3.46	1.18	3.18	2.26	1.96
SD	0.92	0.30	0.70	0.45	0.53
CV	26.58%	25.42%	22.01%	19.91%	27.04%

Source: Compiled from Annual Reports

Altman 'Z'- Score guidelines for Healthy Zone

With the help of Altman guidelines, the overall financial health of the Sun Pharmaceutical, Cipla Ltd, Aurobindo Pharma Ltd, Dr. Reddy's Laboratories, and Lupin Ltd. is measured during the study period 2013-14 to 2022-23 with Z-Score ingredients of X_1, X_2, X_3, X_4 and X_5. Below table shows the Z-Score guidelines.

Altman 'Z'-Score Guidelines for Healthy Zone

Situation	Z-Score	Zone	Remarks
I	Below 1.8	Not healthy	If failure is certain and extremely likely and would occur properly with in a period of 2 years
II	Between 1.8 and 2.99	Healthy	Financial viability is considered health. The failure in the situation is uncertain to predict.
III	3.0 and above	Too healthy	It financial health viable and not to fall.

Source: www.google.com

Table-6.6

Z - Score Analysis for select Pharmaceutical Companies in India

	X1	X2	X3	X4	X5	Z-Score
Sun pharmaceutical Industries Ltd	-0.01	3.76	0.03	8.08	3.46	3.52
Cipla Ltd	0.29	0.68	0.12	3.30	1.18	1.21
Aurobindo Pharma Ltd.	0.21	0.81	0.14	3.78	3.18	3.19
Dr. Reddy's Laboratories Ltd	0.31	0.66	0.11	4.05	2.26	2.28
Lupin Ltd	0.34	0.91	0.15	3.75	1.96	1.99

Source: Compiled and Calculated

Table -6.6 reveals that the financial health of selected pharmaceuticals companies in India. Form the selected companies the z score of the companies Sun Pharma and Aurobindo Pharmaceuticals is greater than 3 therefore the companies is in too healthy zone, Dr Reddy's laboratories, and Lupin Ltd 1.18 and 2.99. Therefore they are in healthy zone. and Z score value of Cipla Ltd below 1.8 not healthy.

7. Findings, Recommendation and Conclusion:

The financial health of the firms is the biggest concern for the stakeholders. On the basis of financial soundness and health of the firm the stakeholders have a decision regarding their possible involvement with a particular firm. The one of the best measure z score model is can give the shape and influence the decision of stakeholders. The current study conducted to assess the financial health of the companies.

Findings:

Dr. Reddy's Laboratories, and Lupin Ltd 1.18 and 2.99. therefore they are in healthy zone. and Z score value of Cipla Ltd below 1.8 not healthy.

Recommendation:

The findings of the study can be useful to managers to make financial decisions, the stock holders to choose investment options and others to look after their interest in the concern of the respective companies.

Conclusion;

It can be concluded that the overall financial health of pharmaceutical industry is in health zone. Because form the five selected company's sun pharmaceuticals Ltd, Aurobindo Pharma Ltd, Cipla Ltd and Dr Reddy's laboratories are healthy zone only one company Cipla limited is not in healthy zone.

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