ANALYSIS OF FINANCIAL PERFORMANCE OF PHARMACEUTICAL COMPANIES USING Z SCORE MODEL

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Abstract

Business units need profit for its existence and for its expansion. Theydischarge their obligations to the various segments of the society only through earning profits. So the financial performance of the business organizations matters a lot for all its stakeholders. The interested parties are very much concerned about is there any improvement in profitability and whether there is efficiency in returns, etc.An analysis of the performance of the business will help to assess the financial stability of such business. Financial performance analysis refers to the process of determining financial strength and weakness of the firm by establishing strategic relationship between the items of the balance sheet, profit and loss account.In this the researchers have attempted to analyze the financial performance of Indian pharmaceutical companies by using Z score model. The study concludes that the overall financial health of pharmaceutical industry is in healthy zone. Because from the eight selected companies, five companies (Divis Laboratories Ltd., Aurobindo Pharma Ltd.,Cipla Ltd., Dr. Reddy's Laboratories Ltd. and Cadila Healthcare Ltd.) are in healthy zone. Only three companies (Piramal Enterprises Ltd., Sun Pharma Industries Ltd. and Glenmark Pharmaceuticals Ltd.) are in bankruptcy zone.

Introduction

Financial Performance analysis is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time. Financial performance analysis can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.And thus financial performance analysis includes analysis and interpretation of financial statements in such a way that it undertakes full diagnosis of the profitability and financial soundness of the business.

Financial analysts often assess the firm's production and productivity performance (total business performance), profitability performance, liquidity performance, working capital performance, fixed assets performance, fund flow performance and social performance. Various financial ratios analysis includes

- Working capital Analysis
- Financial structure Analysis
- Activity Analysis
- Profitability Analysis

Statement of the Problem

Businesses have been functioning in a highly turbulent environment. Not all businesses survive for long as there are businesses which might come to an end within a very short period from the date of their inception. Contrary to this, some businesses might end up after a long period of time. Businesses carry out various activities so as to make profits and to generate wealth for continuing their operations. Finance will be the backbone for all these activities. Therefore, a firm should be financially sound in order to survive amidst competition. So the financial health of the Indian Pharmaceutical industry is studied by applying Z score model.

Objectives of the Study

- To study the financial health of sample pharmaceutical units in India
- To calculate Z score of sample pharmaceutical units in India
- To offer valid suggestions and recommendations

Methodology

The study has been undertaken for the period of five years from 2012 to 2016. In order to study the financial health of pharmaceutical industry in India, eight pharmaceutical companies have been considered. They are namely Aurobindo Pharma Ltd., Cipla Ltd., Cadila Healthcare Ltd.

Divis Laboratories Ltd., Dr. Reddy's Laboratories Ltd., Glenmark Pharmaceuticals Ltd., Piramal Enterprises Ltd and Sun Pharma Industries Ltd.

Tools Applied

To predict the financial health of pharmaceutical companies in India, Z Score Analysis has been applied by considering liquidity, solvency, profitability and financial efficiency.In order to analyze the financial health of sample pharmaceutical units in India in terms of liquidity, solvency, profitability and financial efficiency, various accounting ratios like Ratio of working capital to total assets, Ratio of net operating profit to net sales, Ratio of earnings before interest and taxes to total assets, Ratio of market value of equity to book value of debt and Ratio of sales to total assets have been used.

Altman Z Score

"Z" Score analysis has been established by Edward I. Altman to evaluate the general trend in the financial health of an enterprise over a period. Many of the individual accounting ratios used frequently to predict the financial performance of an enterprise may only provide warnings when its too late to take a corrective action. Further single ratio does not convey much of the sense. There is no internationally accepted standard for financial ratios against which the results can be compared. Therefore, Edward I. Altman combined a number of accounting ratios (liquidity, leverage, activity and profitability) to

form an index of the profitability, which was effective indicator of corporate performance in predicting bankruptcy.

The data collected for the study were first analyzed with the help of five accounting ratios. These different ratios are combined into a single measure called Z Score with the help of Multiple Discriminant Analysis (MDA). "Z" is the overall index and the variables 'A' to 'D' are computed as as absolute percentage values while 'E' is computed number of times.The formula for "Z" Score Analysis is as follows.

$$Z = 0.012A + 0.014B + 0.033C + 0.006D + 0.999E$$

Where,

A= Ratio of working capital to total assets = Working capital / Total assets * 100

B = Ratio of Net operating profit to Net sales = Net operating profit / Net sales * 100

C = Ratio of Earnings before interest and taxes to total assets = Earnings before interest And taxes / total assets * 100

D = Ratio of Market value of equity to Book value of debt = Market value of equity /
Bookvalue of debt * 100

E = Ratio of Sales to total assets = Sales / total assets * 100

Altman Guidelines

- If the Z score is below 1.8, the unit failure is certain and it is considered to be in bankruptcy zone.
- If an unit has a "Z" Score between 1.8 and 3, then its financial viability is considered to be healthy. The failure in this situation is uncertain to predict.
- If "Z" Score is of 3 and above, then the unit is in too healthy zone and its financial health is very much viable.

Data Analysis and Interpretation
Ratio of Working Capital to Total Assets

Table 1 reveals that the average ratio of working capital to total assets of the sample pharmaceutical units from 2012-2016.

Table 1 Ratio of Working Capital to Total Assets (A)   (in Percentage)

Company	2012	2013	2014	2015	2016	Average
Aurobindo Pharma Ltd.	6.02	12.64	20.56	23.68	20.46	16.67
Cipla Ltd.	34.87	40.25	39.77	20.74	19.61	31.04
Cadila Healthcare Ltd.	4.99	2.65	8.18	9.49	11.46	7.35
Divis Laboratories Ltd.	42.84	41.37	44.21	45.22	51.77	45.08
Dr. Reddy's Laboratories Ltd.	18.00	21.22	33.04	34.78	30.16	27.43
Glenmark Pharmaceuticals Ltd.	3.43	-5.38	8.85	15.07	17.60	7.91
Piramal Enterprises Ltd.	-2.34	-6.00	-19.54	8.53	-19.23	-7.716
Sun Pharma Industries Ltd.	32.33	29.54	10.95	-14.95	-10.22	9.53

Source: Computed from annual reports of the sample units from 2012-2016.

Table 1 reveals that the average ratio of working capital to total assets of the sample pharmaceutical units from 2012-2016. The average net liquid assets to total capitalization is recorded highest in Divis Laboratories Ltd. (45.08%) followed by Cipla Ltd. (31.04%), Dr. Reddy's Laboratories Ltd. (27.43%) which indicates adequate liquid assets to meet short term obligations. The Piramal Enterprises Ltd. recorded negative net liquid assets ratio of -7.716% indicating inadequate liquid assets.

Ratio of Net Operating Profit to Net Sales

Table 2 reveals that the average ratio of net operating profit to net sales of the sample pharmaceutical units from 2012-2016.

Table 2 Ratio of Net Operating Profit to Net Sales (B)   (in Percentage)

Company	2012	2013	2014	2015	2016	Average
Aurobindo Pharma Ltd.	4.33	10.52	21.55	24.20	23.98	16.92
Cipla Ltd.	18.79	20.79	25.01	20.03	15.81	20.08
Cadila Healthcare Ltd.	37.57	26.03	31.65	36.68	41.59	34.70
Divis Laboratories Ltd.	41.35	40.97	43.98	39.21	40.17	41.13
Dr. Reddy's Laboratories Ltd.	24.35	25.80	30.19	26.33	26.09	26.55
Glenmark Pharmaceuticals Ltd.	23.66	23.18	24.76	31.00	32.19	26.95
Piramal Enterprises Ltd.	36.26	18.10	27.61	32.60	54.42	33.79
Sun Pharma Industries Ltd.	87.64	32.16	07.15	- 4.48	- 0.04	24.48

Source: Computed from annual reports of the sample units from 2012-2016.

Table 2 reveals that the average ratio of net operating profit to net sales of the sample pharmaceutical units from 2012-2016. The average net operating to net sales is recorded highest in Divis Laboratories Ltd. (41.31%), when compared to other sample units like Cadila Healthcare Ltd. (34.70%), Piramal Enterprises Ltd. (33.79%) etc. indicating efficiency of the management in controlling expenses. The average net operating profit to net sales recorded lowest in Aurobindo Pharma Ltd. (16.92%) when compared to all other sample units indicating less efficiency of the management in controlling expenses.

Ratio of Earinings before Interest and Taxes to Total Assets

Table 3 reveals that the average ratio of earnings before interest and taxes to total assets of the sample pharmaceutical units from 2012-2016.

Table 3 Ratio of Earinings before Interest and Taxes To Total Assets (C) (in Percentage)

Company	2012	2013	2014	2015	2016	Average
Aurobindo Pharma Ltd.	3.03	8.25	17.71	18.97	17.93	13.18
Cipla Ltd.	13.78	16.10	17.79	15.05	11.03	14.75
Cadila Healthcare Ltd.	16.92	11.57	15.82	20.54	28.05	18.58
Divis Laboratories Ltd.	24.92	24.82	26.71	23.89	27.33	25.53

Dr. Reddy's Laboratories Ltd.	12.79	15.13	17.45	12.90	11.38	13.93
Glenmark Pharmaceuticals Ltd.	10.88	10.90	12.59	18.69	17.16	14.04
Piramal Enterprises Ltd.	2.33	1.05	2.50	3.98	6.78	3.32
Sun Pharma Industries Ltd.	22.18	07.17	0.67	-2.69	-1.36	5.19

Source: Computed from annual reports of the sample units from 2012-2016.

Table 3 reveals that the average ratio of earnings before interest and taxes to total assets of the sample pharmaceutical units from 2012-2016. This ratio is recorded highest in Divis Laboratories Ltd. (25.53%), when compared to all other sample units which indicates the efficiency of productivity of assets employed. The ratio is recorded least in Piramal Enterprises Ltd. (3.32%) which indicates inefficiency of productivity of assets employed.

Ratio of Market Value of Equity to Book Value of Debt

Table 4 reveals that the average ratio of market value of equity to book value of debt of the sample pharmaceutical units from 2012-2016.

Table 4 Ratio of Market Value of Equity to Book Value of Debt(D) (in Percentage)

Company	2012	2013	2014	2015	2016	Average
Aurobindo Pharma Ltd.	3.45	2.60	2.33	3.17	10.30	4.37
Cipla Ltd.	67.93	60.87	44.71	38.63	30.70	48.56
Cadila Healthcare Ltd.	11.68	10.47	09.80	12.61	14.72	11.85
Divis Laboratories Ltd.	34.14	29.16	21.00	18.80	32.92	27.20
Dr. Reddy's Laboratories Ltd.	15.12	64.02	07.99	07.45	07.39	20.39
Glenmark Pharmaceuticals Ltd.	07.59	23.86	30.71	10.66	17.44	18.05
Piramal Enterprises Ltd.	07.34	04.16	04.72	02.66	0.58	3.89
Sun Pharma Industries Ltd.	44.15	34.22	07.60	05.74	06.22	19.58

Source: Computed from annual reports of the sample units from 2012-2016.

Table 4 reveals that the average ratio of market value of equity to book value of debt of the sample pharmaceutical units from 2012-2016. This ratio is recorded highest in Cipla Ltd. (48.56%), when compared all other sample units which indicates market value of equity is more than that of the debt capital. This ratio is recorded least in Piramal Enterprises Ltd. (3.89%), when compared to all other sample units which indicates the company uses less debt capital.

Ratio of Sales to Total Assets

Table 5 reveals that the average ratio of sales to total assets of the sample pharmaceutical units from 2012-2016.

Table 5 Ratio of Sales to Total Assets (E)(in times)

Companies	2012	2013	2014	2015	2016	Average
Aurobindo Pharma Ltd.	0.71	0.80	0.84	0.79	0.76	0.78
Cipla Ltd.	0.73	0.77	0.70	0.70	0.64	0.71
Cadila Healthcare Ltd.	0.52	0.53	0.57	0.64	0.74	0.60
Divis Laboratories Ltd.	0.66	0.66	0.66	0.69	0.74	0.68
Dr. Reddy's Laboratories Ltd.	0.64	0.69	0.67	0.60	0.58	0.64
Glenmark Pharmaceuticals Ltd.	0.50	0.52	0.57	0.67	0.59	0.57
Piramal Enterprises Ltd.	0.08	0.08	0.10	0.14	0.13	0.10
Sun Pharma Industries Ltd.	0.26	0.25	0.20	0.21	0.21	0.22

Source: Computed from annual reports of the sample units from 2012-2016.

Table 5 reveals that the average ratio of sales to total assets of the sample pharmaceutical units from 2012-2016. This ratio is recorded highest in Aurobindo Pharma Ltd. (0.78 times), when compared to all other sample units which indicates efficiency of management in converting assets to sales. The ratio is recorded lowest in Piramal Enterprises Ltd. (0.10 times), when compared to all other sample units which indicates less efficiency of management in converting assets to sales.

Altman Z – Score for the Sampled Companies

Table 6 reveals the the financial health of sample pharmaceutical companies in India by way of Z score calculated by considering the data for the year 2012 – 16.

Table 6 Altman Z – Score Analysis

Name of the Companies	A	B	C	D	E	Z-SCORE
Aurobindo Pharma Ltd.	16.67	16.92	13.18	4.37	0.78	2.65
Cipla Ltd.	31.04	20.08	14.75	48.56	0.71	2.14
Cadila Healthcare Ltd.	7.35	34.70	18.58	11.85	0.60	1.85
Divis Laboratories Ltd.	45.08	41.13	25.53	27.20	0.68	2.80
Dr. Reddy's Laboratories Ltd.	27.43	26.55	13.93	20.39	0.64	1.92
Glenmark Pharmaceuticals Ltd.	7.91	26.95	14.04	18.05	0.57	1.61
Piramal Enterprises Ltd.	-7.71	33.79	3.32	3.89	0.10	0.61
Sun Pharma Industries Ltd.	9.53	24.48	5.19	19.58	0.22	0.96

Source: Compiled and Calculated

Table 6 reveals that the financial health of sample pharmaceutical companies in India. From the selected companies, no companies Z score is greater than 3. Therefore, no company is in "too healthy zone". Z score value of Divis Laboratories Ltd., Aurobindo Pharma Ltd.,Cipla Ltd., Dr. Reddy's Laboratories Ltd. and Cadila Healthcare Ltd. are between 1.80 and 3. Therefore, they are in healthy zone. The Z score value of Piramal Enterprises Ltd., Sun Pharma Industries Ltd. and Glenmark Pharmaceuticals Ltd. are found below 1.80, which indicating bankruptcy zone.

Financial Health of the Sampled Companies

Table 7 brings the financial health of the sampled companies considered for this present study to the light.

Table 7 Financial Health of the Sampled Companies

Variables	Z-Score	Financial Heath
Aurobindo Pharma Ltd.	2.65	HEALTHY ZONE
Cipla Ltd.	2.14	HEALTHY ZONE
Cadila Healthcare Ltd.	1.85	HEALTHY ZONE
Divis Laboratories Ltd.	2.80	HEALTHY ZONE
Dr. Reddy's Laboratories Ltd.	1.92	HEALTHY ZONE
Glenmark Pharmaceuticals Ltd.	1.61	BANKRUPTCYZONE
Piramal Enterprises Ltd.	0.61	BANKRUPTCYZONE
Sun Pharma Industries Ltd.	0.96	BANKRUPTCYZONE

Conclusion

It can be concluded that the overall financial health of pharmaceutical industry is in healthy zone. Because from the eight selected companies, five companies (Divis Laboratories Ltd., Aurobindo Pharma Ltd.,Cipla Ltd., Dr. Reddy's Laboratories Ltd. and Cadila Healthcare Ltd.) are in healthy zone. Only three companies (Piramal Enterprises Ltd., Sun Pharma Industries Ltd. and Glenmark Pharmaceuticals Ltd.) are in bankruptcy zone.

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