

**Application of Altman's Z Score Model: The Financial Soundness of Sun  
Pharmaceutical Industries in India**

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**Abstract**

The Altman Z score is a useful instrument for determining a company's financial strength and bankruptcy risk. The Z score method has been used the study to assess the financial stability of the sun pharmaceutical industries. The ten-year financial data was used to examine both the unique and emerging market formulations of the Altman Z score. This result serves as a welcome signal for internal and external financial statement users in planning and decision-making. The Z score model can aid management in developing effective strategies for future resource control and management.

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**1. Introduction**

Financial health is one of the most important issues for company stakeholders. They all want to know whether the organisation will improve in the future in order to maintain their interest in it. The company's performance and growth are important to both internal and external stakeholders. Shareholders, officers, managers, employees, and internal auditors are internal users, while banks, consumers, creditors, and suppliers are external users (Shariq, 2016).

The increasing uncertainty in the contemporary business environment robs businesses of their certainty of existence. The Z score is an analytical method of determining a company's financial stability. It is the most user-friendly tool available to any investor or stakeholder. It gives a clear path for assessing and comprehending the company's financial situation. Altman (1968) was the first to use the Multiple Discriminate Analysis (MDA) to the prediction of financial trouble. He created a Z-score bankruptcy prediction model and established a Z-score cut point to distinguish between healthy and distressed businesses. This research utilised Edward Altman's Z score to gain insight into the financial stability of the Sun Pharmaceutical industries.

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## **2. Profile of the company**

Sun Pharmaceuticals is the world's fifth largest pharmaceutical firm. It can handle injectables, sprays, ointments, creams, liquids, pills, and capsules, among other dosage forms. Its businesses include generics, branded generics, specialty, over-the-counter (OTC) medications, antiretrovirals, active pharmaceutical ingredients (APIs), and intermediates in a variety of dosage forms. It also makes specialised APIs. In FY19, US formulations accounted for 37 percent of total sales, followed by India-branded formulations at 26 percent.

## **3. Review of literature**

**Neetu Saini and Dr.Sanjeev Bansal (2020)** the financial crisis of 2008, there has been an upsurge in the use of algorithms to predict bankruptcy. The study is to assess the financial soundness of companies listed on the Bombay stock exchange in the pharmaceutical sector. Companies have created a variety of scary models to anticipate bankruptcy, with the Altman Z score model being the most admired. This approach assesses a company's financial soundness in order to determine whether or not it is in financial crisis. This article studies the financial distress risk for pharmaceutical companies listed on the Bombay Stock Exchange, as well as the prospect of bankruptcy.

## **4. Statement of the problem**

As these bankruptcies are matters of talk for majority of the stakeholders of the organization. The research is mandated by the current scenario of global financial difficulty which further create credit crunch. The stakeholders can foretell the prospect of bankruptcy in order to respond before they suffer. The problem is that the prediction models, that are under study in this research, the precision, performance and structure of the models change over time periods due to change in population of firms, Business Condition. This paper evaluates Altman's Z score model which have been popularly used in the prior literature to appraise firm health.

## **5. Objectives Of The Study**

1. To assess the company's overall financial performance over the last ten years.
2. To assess the company's Z score ratios.

## **6. Research Methodology**

The research was limited to the sun pharmaceutical industries. Its scope is limited to concerns of financial stability. The secondary data was gathered from annual reports of the sun pharmaceutical industry. The data was collected over a ten-year period, from 2012 to 2021, and it was organised, tallied, and analysed in a systematic manner. There are several tools and models that are used to analyse a company's financial performance. Edward I. Altman

established one of the models, the Altman Z -Score, in 1969, as a Z score formula helps in projecting the firm's financial efficiency and distress 2-3 years in advance. It aids in the assessment of a company's financial health. This model is built around five ratios.

$X_1 = \text{Working Capital} / \text{Total Assets}$

$X_2 = \text{Retained Earnings} / \text{Total Assets}$

$X_3 = \text{Earnings before Interest and Taxes (EBIT)} / \text{Total Assets}$

$X_4 = \text{Book Value of Equity} / \text{Total Liabilities.}$

The Find out what Z is worth.  $Z = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$  is the formula.

**INSTRUCTIONS OF ALTMAN’S Z SCORE MODEL:**

- ✓ Z 2.6 Safe Zone: This is a secure position for the organisation, and financial data has a significant impact on solvency, thus it is termed a safe zone.
- ✓ 1.1 Z 2.6 Grey Zone: This is a bad sign for the company, and it may go bankrupt in the near future.
- ✓ Z 1.1 Distress Zone, which reflects the company's insolvency situation.

**Table (1)-Various Ratios of Sun Pharmaceutical Industries**

S. No	Year/ Ratio	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
1	2021	0.009	0.328	0.084	0.328
2	2020	0.019	0.326	0.121	0.326
3	2019	-0.055	0.273	1.479	0.273
4	2018	-0.081	0.215	0.019	0.215
5	2017	-0.135	0.223	0.024	0.222
6	2016	-0.10	0.223	0.014	0.222
7	2015	-0.09	0.214	0.003	0.214
8	2014	0.105	0.204	-0.191	0.204
9	2013	0.295	0.263	0.097	0.263
10	2012	0.323	0.439	0.200	0.439
<b>MEAN</b>		<b>0.03</b>	<b>0.27</b>	<b>0.19</b>	<b>0.02</b>
<b>S. D</b>		<b>0.16</b>	<b>0.07</b>	<b>0.47</b>	<b>0.04</b>
<b>C. V</b>		<b>5.63</b>	<b>0.28</b>	<b>2.52</b>	<b>2.10</b>

**Source:** Computed Data

From the above table shows that the various ratios of sun pharmaceutical industries, the mean value of X<sub>1</sub> was 0.03 standard deviation and covariances of 0.16 and 5.63 percentage followed by the mean value of X<sub>2</sub> was 0.27 standard deviation and covariances of 0.07 and 0.28 percentage, the mean value of X<sub>3</sub> was 0.19 standard deviation and covariances of 0.47 and 2.52 percentage and the mean value of X<sub>4</sub> was 0.02 standard deviation and

covariances of 0.04 and 2.10 percentage. The following table shows that the Z-score indicator table for sun pharmaceutical industries.

**Table (2)-Z-Score In Sun Pharmaceutical Industries**

S.NO	YEAR	Z SCORE	DISCRIMINATION	INDICATOR	AVERAGE INDICATOR
1	2021	2.037	Grey zones	Insolvent	<b>Insolvent</b>
2	2020	2.342	Grey zones	Secure	
3	2019	10.754	Safe zone	Health zone	
4	2018	0.523	Distress Zone	Insolvent	
5	2017	0.236			
6	2016	0.398			
7	2015	-0.351			
8	2014	0.285			
9	2013	2.810	Grey zones	Secure	
10	2012	5.354	Safe zone	Health zone	
<b>*Average Z Score 2.43</b>					

**Source: Computed data**

The above table the Z values are less than 1.1, the minimum Standard level defined by Altman's Z score method, indicates that the Sun pharmaceutical enterprises are in difficulty. For all of the years covered in the model, Sun pharma Ltd. was in the red and declared insolvent, as evidenced by the average proportion.

### 7. Conclusion

Sun Pharma Ltd is financial health and wealth was assessed using Altman's Z score method. This study spanned a 10-year period from 2012 to 2021, including the pandemic phase. The conclusion is that over a ten-year period, the Z- score of sun pharmaceutical firms goes from 2.037 to 5.354, which is more than 3.00, indicating that the financial condition is extremely excellent and there is a minimal risk of bankruptcy. This result serves as an internal and external user welcoming signal. The Z score models can help management devise effective strategies for resource control and management in the future.

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