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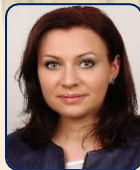


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## Research Article: 5

# Financial Distress Analysis Of Selected Public Sector Fertilizer Companies In India: An Empirical Study



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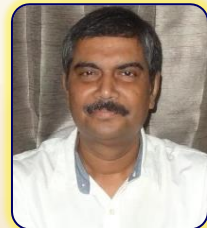
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## Abstract

*The primary motive behind conducting this research is to examine the financial distress of fertilizer companies in India. The research has been done on twelve BSE-listed fertilizer companies during the years 2010-11 to 2019-20. This study has employed Altman's Z-score model to ascertain the economic strength of the sample fertilizer companies. The outcome shows that most of the companies are not financially healthy.*

**Keywords:** Fertilizer, Financial Distress, Bankruptcy, Altman's Z-score.

## 1. INTRODUCTION

India's agricultural sector is reliant on the fertilizer industry to produce an endless supply of foodgrains. (Khan, n.d.). Agriculture sector plays an essential part in the economic growth of our nation. The production of foodgrains has raised from 50.82 MT in 1950-51 to 303.34 MT in 2020-21 due to increased use of fertilizers. (Bishnoi et al., 2020). The agriculture and allied sectors have contributed 20.19% to GDP and it also provided employment over 41.49% of total population during the year 2020-21. At present our country is the 2nd highest consumer and the 3rd highest manufacturer of fertilizers around the world. (Sowmiyaa et al., 2021).

In India, crop productivity depends on various factors such as soil nature, climatic condition, rainfall, seed characteristic, cropping type, usage of technology, etc., but most significant thing is the use of quality fertilizers. (Kumar et al., 2017). The development of agriculture sector is mostly dependent on the growth of fertilizer industry. Fertilizer industry has made significant contributions to the Indian economy through progressive agricultural productivity, employment opportunities and corporate involvement. (G. Patel, 2019)

## 2. REVIEW OF THE LITERATURE

Many studies affiliated to the fertilizer industry have emerged, each showing different perspective, such as

**Gupta (1988)** studied "Financial Performance of Public Enterprises in India: A Case Study of Rashtriya Chemicals & Fertilizers Limited" and shows that the company is working poorly due to inefficiency in use of various inputs.

**Butt et al. (2010)** explored "Financial Management Practices and Their Impact on Organizational Performance" and the result shows financial management practice have positive and significant impact on organizational performance.

**Singh (2014)** analysed "Evaluation of the Financial and Operating Performance of Fertilizers and Chemical & Pharmaceutical Sectors of Indian Public Sector Enterprises After Disinvestment" and observed that the operating performance of the units has been collapsed during the post disinvestment period.

**Masood (2014)** analysed "An Empirical Study of Financial Performance of Fertilizer Sector of Pakistan Listed on KSE-100: A Comparative Analysis" The empirical results show that out of all the Fauji group of companies have sustained a soundful economic status in the market.

**Tambe (2015)** described "Overview of Indian Fertiliser and SWOT Analysis of Fertiliser Industry" and study shows that the country has achieve self-sufficiency in production capacity which help to manage its requirement of fertilizers.

**Ambika and Sengottaiyan (2015)** explored "Financial Health of Selected

Fertilizer Companies in India – A Z-model approach” and observed that companies should have to maintain accurate financial position.

**Khan (2017)** experiment “Efficiency of Indian Fertilizer Firms: A Stochastic Frontier Approach” and found that the companies have average technical efficiency and also found that private sector fertilizer firms are more proficient than public sector fertilizer firms.

**Kumar (2017)** studied “Efficiency Measurement of Fertilizer Manufacturing Organizations Using Fuzzy Data Envelopment Analysis” and resulted the data envelopment analysis shows rank wise relative efficiencies of different fertilizers manufacturing units in India.

**Saini (2018)** analysed “Evaluation of Financial Health of RCFL of India Through ‘Z’ Score Model” and showed that the company is not economically safe or may have bankrupt in near future.

**Saini (2018)** explored “Evaluating Financial Health of Gujarat State Fertilizers Through ‘Z’ Score Model” and result shows that the financial position of the company may go for bankrupt in near future.

**Shah and Chavda (2018)** examined “A Financial Ratio Analysis of National Fertilizers Limited” and observed that Company has to control over indirect expenses to get better net profit, otherwise having good liquid condition.

**Praveena and Lavanya (2019)** evaluated “Altman’s Model – A Way to Identify the Bankruptcy in Fertilizer Industry”

and found that maximum number of the businesses are in distress zone or in grey zone and only few companies are in financially stable.

**Srivastav et al. (2019)** analysed “Improving Performance Analysis of Indian Farmers’ Fertilizers Co-operative Limited (IFFCO) Through Technology Management” and found that the company is financially stable through proficient supply chain management and technology.

**Ashutoshbhai (2020)** studied “A Comparative Evaluation of Corporate Performance of Selected Fertilizers in India” and discovered that overall financial performance of private sector firms is more proficient as compare to public sector firms.

**Chandubhai (2021)** examined “Assessing Financial Distress of GSFC & GNFC of Gujarat Through Altman’s Z- Score Model” and resulted both of the enterprises are not in completely safe zone.

**Sowmiyaa et al. (2021)** experiment “Financial Performance of Indian Fertilizer Industry - A Comparative Evaluation of Private, Public and Co-operative Sector Companies” and observed that the whole of the fertilizer industry financially is in weak state.

**Prasad (2022)** examined “Financial Efficiency Analysis Using Altman Z- Score Model for Selected Seed and Fertilizer Companies in India” and revealed that most of the fertilizer companies are not financially healthy but seeds companies are in financially positive zone.

Oduor et al. (n.d.) investigated "E-Commerce Adoption and Organizational Performance Among Fertilizer Manufacturers: The Case of Minjingu Mines and Fertilizer Limited" and found that the use of e-commerce as a channel for distribution had no fruitful effect on the performance of the company.

### 3. RESEARCH GAP

From the above literature related to the fertilizer industry, it is noticed that very few studies were conducted for the analysis regarding financial distress in public sector fertilizer companies in India. It is also found that no other study appears to have been conducted to analyse financial distress of BSE listed fertilizer companies during our study period.

### 4. OBJECTIVE OF THE STUDY

The principal goal of this research is to analysis the financial distress of the selected BSE listed public sector fertilizer companies in India.

### 5. RESEARCH METHODOLOGY

The present study selects 12 BSE listed public sector fertilizer companies operating in India. In this study, we have used multistage sampling method for the selection of the sample. The duration of the study is 10 years, from 2010-11 to 2019-20.

In this research, Altman's Z score model has been applied in order to ascertain

the financial distress of selected fertilizer companies. This study is using the secondary sources, obtained through CMIE database. Besides, companies' annual reports have also been considered for evaluating the financial strength of the company.

### Altman's Z- Score Model

Edward I. Altman first invented the Z-score equation in 1968, for predicting bankruptcy of any organization that would help to find out whether or not the organization will collapse in the next two years. Z-scores are primarily used to evaluate financial stability of an organization through different ratios which are obtained from financial statements. The Z-score formula is as follows (for manufacturing companies):

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

" $X_1$  = Working Capital / Total Assets"

" $X_2$  = Retained Earnings / Total Assets"

" $X_3$  = Earnings Before Interest and Taxes / Total Assets"

" $X_4$  = Market Value of Equity / Total Liabilities"

" $X_5$  = Sales / Total Assets"

According to the model if –

- " $Z > 2.99$ "- "safe zone means low risk of bankruptcy".
- " $1.81 < Z < 2.99$ "- "grey zone means moderate risk of bankruptcy".
- " $Z < 1.81$ "- "distress zone means high risk of bankruptcy".

### **Working Capital / Total Assets**

Working capital is measured as the distinction between a business' short-term assets and its short-term borrowings. That helps to assess a company's short-term financial situation. A lucrative working capital means the business is efficient to meet its short-lived financial obligations and on other hand, deficit working capital indicates that the business is disabled to meet short-lived financial obligation due to insufficient liquid assets.

### **Retained Earnings / Total Assets**

Low RE to TA ratio indicates that the company is utilizing borrowed funds to pay for its expenses in lieu of retained earnings and in contrast, high RE to TA means company uses its own capital and it does not depend on borrowed capital.

### **EBIT / Total Assets**

This ratio indicates how efficiently companies' total assets performs to generate sufficient operating profit that would help companies to achieve a massive growth and opportunities. Higher EBIT to total assets ratio is always better for an organization, since it indicates that assets are performing well to achieve a strong profitable position.

### **Market Value Of Equity / Total Liabilities**

Market capitalization is another well-known term for the equity market value.

This ratio measures the possible difficulties of the equity's market value to a particular insolvency risk. A high ratio can lead to ideal investor confidence towards companies' monetary power.

### **Sales / Total Assets**

It shows how effectively management operates corporate resources to generate income. Thus, a higher percentage of this ratio results in more efficiency in generating revenue. In contrast, a lower percentage means management will require more resources to make sufficient sales, which will maximize the profit of a business.

## **6. DATA ANALYSIS AND INTERPRETATION**

In the previous section, we explained the Altman's Z Score model and now we have applied this model in our study. The following scores are as follows:

Table 1: Altman's Z Scores For Fertilizers Companies in India

Company Name	Mar'11	Mar'12	Mar'13	Mar'14	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20
Aries Agro Ltd.	1.85	1.90	1.69	2.16	2.35	2.23	2.52	2.19	1.79	1.72
Basant Agro Tech (India) Ltd.	2.16	2.24	2.02	2.01	2.03	1.96	2.05	2.07	2.00	2.20
Coromandel International Ltd.	3.86	3.22	2.58	2.84	2.76	2.12	2.82	2.69	3.11	3.59
Fertilisers & Chemicals, Travancore Ltd.	2.16	2.17	0.73	0.34	-0.36	-0.73	0.30	0.51	0.60	2.19
Gujarat State Fertilizers & Chemicals Ltd.	3.43	3.14	2.56	2.49	2.70	2.29	2.30	2.17	2.38	1.98
Khaitan Chemicals & Fertilizers Ltd.	2.68	2.34	1.71	1.87	1.54	1.85	1.72	1.60	1.85	1.91
Mangalore Chemicals & Fertilizers Ltd.	4.24	2.44	1.87	2.01	1.78	1.51	1.57	1.59	1.48	1.41
National Fertilizers Ltd.	3.49	1.91	1.18	1.23	1.39	1.12	1.35	1.55	1.37	1.11
Rama Phosphates Ltd.	4.06	3.65	3.27	2.97	2.24	2.53	2.66	2.45	3.79	2.88
Rashtriya Chemicals & Fertilizers Ltd.	3.38	2.39	2.37	2.48	2.69	1.49	2.48	2.38	1.92	1.45
Southern Petrochemical Inds. Corpn. Ltd.	-0.79	0.63	7.56	1.26	1.72	1.19	1.38	1.66	1.61	1.39
Shiva Global Agro Inds. Ltd.	2.27	2.00	1.73	1.72	1.84	1.77	2.03	2.38	2.36	1.97

Source: Researcher's Calculation

Lower Z-score suggests that the business is going towards insolvency. If the Z-score is below 1.81, it indicates that the business is in distress zone and higher possibility of going bankrupt. In this study, several companies' financial health are not stable to keep up smooth operations and high chances for insolvency is there.

Thereafter, if the score lies in the middle of 1.81 to 2.99, it means that the company is in grey zone having average risk of insolvency and may go bankrupt in near future. Here, most of the companies are having this tolerable financial condition to sustain in the market.

If the score is higher than 2.99, it denotes that the business is in secure zone and there is no chance for corporate failure. In our study, only one company has achieved strong financial position in the last few years.

## 7. FINDINGS

1. Aries Agro Ltd. shows the grey zone during the years 2010-11 to 2011-12 and 2013-14 to 2017-18, which means that the company was in moderate risk of insolvency. Then during the years 2012-13 and 2018-19 to 2019-20, the company's Z score was below 1.81, indicating that the financial situation of the business was very poor in those years.

2. Basant Agro Tech (India) Ltd. scored between 1.81 to 2.99 from the year 2010-11 to 2019-20, which means that the company was above the distress zone throughout the years.

3. Coromandel International Ltd. was revealed to be in the safe zone during the year 2010-11 to 2011-12 and then it went through the grey zone from the year 2012-13 to 2017-18 and then again, the company moved to safe zone for the years 2018-19 to 2019-20 with healthy financial position.

4. Fertilisers & Chemicals, Travancore Ltd. was in tolerable situation in the earlier period 2010-11 to 2011-12 and afterwards, the company suffered through distress zone during the years 2012-13 to 2018-19, which means that there were high chances for going bankrupt and then the company entered into grey zone.

5. Gujarat State Fertilizers & Chemicals Ltd. was situated in the favourable place for the year 2010-11 to 2011-12 and later on, the company went through moderate risk zone from the year 2012-13 to 2019-20.

6. Khaitan Chemicals & Fertilizers Ltd. did not have well enough financial health because of its

poor financial performance throughout the study period.

7. Mangalore Chemicals & Fertilizers Ltd. was in sufferable situation at the earlier time but the situation continuously fell down over the period 2014-15 to 2019-20.

8. National Fertilizers Ltd. was in the distress zone, except the years 2010-11 to 2011-12 and the company had high probability of going bankrupt.

9. Rama Phosphates Ltd. was situated in the fortunate position from the years 2010-11 to 2012-13, and after that the company did not perform well during the years 2013-14 to 2019-20 except the year 2018-19.

10. Rashtriya Chemicals & Fertilizers Ltd. situated in the moderate risk zone in most of the time but lastly this company entered into distress zone for their poor financial performance.

11. Southern Petrochemical Inds. Corpn. Ltd. had a very weak financial condition throughout the study period except the year 2012-13.

12. Shiva Global Agro Inds. Ltd. hung around between grey and distress zone during the earlier period but the company continued its bad performance afterwards.

## CONCLUSION

Investors are mainly using Altman's Z-score to build a decision regarding investment for purchase or encash of a business stock, based on its financial stability of an organization. If a business displays Z-score

close to 3, then investors have the option to buy company's stock because of minimum risk of business bankruptcy. If, on the other hand, a company display Z-value close to 1.8, then shareholders may wish to sell the business stock to prevent their investing failure because of high chances of business bankruptcy in the upcoming two years. In this study, it can be concluded that maximum number of fertilizer organization are either in distress or in grey zone, it means that the companies have a chance of bankruptcy in the upcoming two years.

## LIMITATIONS AND FUTURE DIRECTIONS

Unavailability of data of all public listed companies is one of the primary limitations of this study. Had the data been available for all companies from fertilizers industry, more companies could have been considered in the sample for the analysis.

The performance of the companies in a longer time frame and a comparative analysis between the public and private companies belonging to the fertilizer industry can be the topics of further research.

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