

“A Comparative Study between GNFC & GSFC Fertilizer Companies of Gujarat: Adopting Springate’s Bankruptcy Prediction Model”

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Abstract:

The purpose of the study is to know the financial position of the selected Fertilizer and Chemical companies in Gujarat. In this study researcher has analysed the risk of bankruptcy of selected companies. For the selection of sample researcher used simple random sampling – lottery method. Gujarat Narmada Valley Fertilizer and chemical (GNFC) and Gujarat State Fertilizer and Chemical Companies (GSFC) are selected as a sample of the current for the period of Five years ranging from 2018 to 2022. For analyzing the data of present study and predict the bankruptcy researcher has applied Springate’s S-score model and Independent t-test.

Key Words:

Springate’s model, Bankruptcy Prediction, Fertilizer Companies, Independent t-test.

1. INTRODUCTION:

Agriculture is largest economic activity in India. Most of rural populations are depend on agriculture for their employment. It is most dominating sector in India because the general output is depends on the agricultural output. So that efficient and improved agriculture sectors are most indispensable for the nation that is the reason government of India has included this sector in Priority Sector Lending. Thus we can say that agriculture activity is a backbone of Indian economy.

A fertilizer is environmental or man-made, chemical- based substance that is apply on enhance plant enlargement and fertility. Fertilizers can also increase water retention and filter any excess liquid, hence enhancing soil efficiency. Indian fertilizer mechanized has come a long way since the setting up of the manufacturing unit of single super phosphate (SSP) near Chennai in 1906. A new impetus to the growth of Indian fertilizer industry was provided by the set up the two fertilizer plants fertilizer and Chemical Travancore of India ltd. (FACT) in Kerala and the fertilizers corporation of India (FCI) in Bihar.

Springate's Model:

Gordon L.V Springate developed a bankruptcy prediction model in the year 1978. It is based on 4 ratios are as follow:

$$S = 1.03X1 + 3.07X2 + 0.66X3 + 0.4X4$$

X1= Working capital/Total Assets

X2= EBIT/Total Assets

X3= EBT/Current Liabilities

X4= Sales/Total Assets.

Table 1 Showing Springate's Criteria

S-Criteria	Result
S>0.862	Performant company
S<=0.862	Bankrupt company

2. REVIEW OF LITERATURE

(Pilch, 2021) Has conducted a research on “An analysis of the effectiveness of bankruptcy prediction models- An industry approach.” The objectives of the study were to check if the number of actual bankruptcy in specific industries were correctly estimated or predicted by the models and also to measure that the analyzed models were given consistent information corresponding to the risk of bankruptcy between industries. For the purpose of study data was collected from Orbis database for the period of 2014 to 2019 and the Polish bankruptcy prediction models were used by the researcher. Researcher has concluded that the analyzed models did not correctly estimate changes in the number of bankruptcy in particular industries, yet 3 out of 5 correctly estimated the trend for the entire sample. Hence researcher has concluded that by using more than one model can be beneficial for analysis.

(Jaki A, 2020) Conducted a research on Bankruptcy prediction models based on value measures. Seeing the fact that the development of corporate measure efficiency carried out into existence and uncovered the importance of cash measures, market measures, and measures based on the economic profit concept, it is acceptable to carry out research into the probability of using these measures as variables within the Discriminant function. The research was conducted individually for every variant. In the first step, a total of 30 Discriminant models were formed. This permitted researcher to select 20 diagnostic variables that were studied within the two models that were characterized by the highest predictive abilities—one for each variant.

(Aziz A, 2019) Has made a research on “Predicting corporate bankruptcy: whither do we stand? The study provided a detailed analysis of methodologies and empirical judgment on functioning of these models across

10 different countries. Researcher has concluded that Artificially Intelligent Expert System (AIES) models function better than statistical and theoretical models. In a holistic way Multiple Discriminant Analysis (MDA) tower above the research and followed by Logit models.

(Jardin, 2009) Has conducted a research on Bankruptcy prediction models: How to choose the most relevant variables? This research was the critical review of the variable selection methods adopted to build empirical bankruptcy prediction models and researcher has analyzed those variables that were considered the best bankruptcy predictors.

3. OBJECTIVES OF THE STUDY

The purpose of the study is to predict the bankruptcy threat by adopting Springate's S-score model on GNFC & GSFC.

To examine financial distress of selected fertilizer and chemical companies in Gujarat.

To compare the result of S-score of financial performance of GNFC & GSFC.

4. HYPOTHESIS OF THE STUDY:

H₀ = There is no significant difference in Springate's s-score of selected GNFC & GSFC companies at 5% level of significance.

H₁ = There is a significant difference in Springate's s-score of selected GNFC & GSFC companies at 5% level of significance.

5. RESEARCH METHODOLOGY

Table 2 Showing Research Methodology

Types of Study	Analytical& comparative study
Types of Data	Secondary data
Data collection	Computed from moneycontro.com
Periods of Study	5 Years (2017-18 to 2021-22)
Target Population	Fertilizer & Chemical companies in India considered as a target population.
Sampling Technique	Simple Random Sampling (lottery method)
Selected Sample Units	1. GNFC Ltd 2. GSFC Ltd
Tools and Technique	1. Independent t-test 2. Ratios given in Springate's model

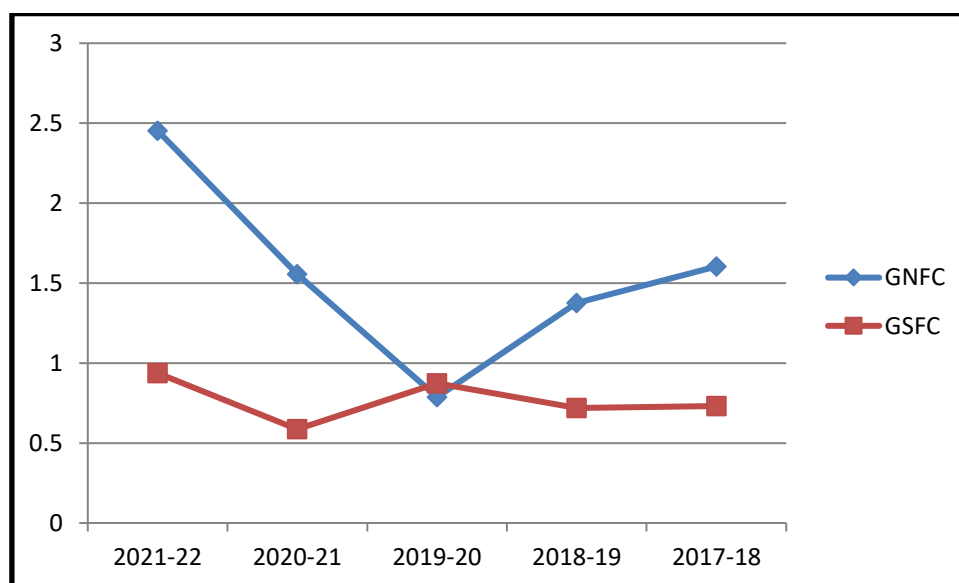
6.RESULT AND DISCUSSION:

Table 3 Showing Springate's S-score of GNFC & GSFC Companies

GNFC	(1.03)X1	(3.07)X2	(0.66)X3	(0.4)X4	S-score	Criteria
2022	0.33184	0.21625	1.7005	0.8132	2.453298	Performant
2021	0.29774	0.11425	0.987	0.6178	1.555971	Performant
2020	0.22152	0.05092	0.236	0.6188	0.787744	Bankrupt
2019	0.19436	0.10865	0.8017	0.7817	1.375511	Performant
2018	0.12909	0.16194	0.9824	0.8137	1.604016	Performant
Average S-score					1.555233	Performant
GSFC	(1.03)X1	(3.07)X2	(0.66)X3	(0.4)X4	S-score	Criteria
2022	0.22053	0.04677	0.4441	0.68332	0.937147	Performant
2021	0.20905	0.01267	0.0423	0.7602	0.586228	Bankrupt
2020	0.20428	0.06428	0.2019	0.8283	0.872355	Performant
2019	0.18249	0.04793	0.2106	0.6123	0.719009	Bankrupt
2018	0.21217	0.04152	0.2292	0.5831	0.730493	Bankrupt
Average S-score					0.769046	Bankrupt

(www.moneycontrol.com)

Figure 1 Graphical Representation of S-score of GNFC & GSFC



Interpretations:

From the above graph and table shown that s-score of selected fertilizer and chemical companies GNFC & GSFC. That is based on 4 financial ratios and all ratios are multiply with their given weight and final s-score are comparing with the given criteria in the Springate's model. GNFC was bankrupt only in the year 2020 because the s-score of this company in the year 2020 was less than 0.862. Remaining all selected years GNFC was a Performant company. GSFC was Performant Company in the year 2020 and 2022. Remaining all financial years it was a risk of bankruptcy as per the model. The average s-score of GNFC was 1.5553 that is greater than 0.862 that means GNFC was Performant Company during the period of study. The average s-score of GSFC was 1.5553 that is less than 0.862 that means the company was bankrupt company during the period of study.

Table 4 Showing Independent t-test

Particular	Variable 1	Variable 2
Mean	1.555308	0.7690464
Variance	0.357560101	0.019085788
Observations	5	5
Pooled Variance	0.188322945	
Hypothesized Mean Difference	0	
Df	8	
t Stat	2.864741583	
P(T<=t) one-tail	0.010498931	
t Critical one-tail	1.859548033	
P(T<=t) two-tail	0.020997862	
t Critical two-tail	2.306004133	

Interpretation

From the above table shown the Independent t-test assuming equal variance. The calculated value of t-test 2.86 is greater than table value 2.306 it means hull hypothesis H0 rejected and Alternative hypothesis H1 is accepted. Researcher found there is a significant difference between two selected samples.

7. CONCLUSION:

In this study researcher analyse the financial health of GNFC and GSFC companies selected form Gujarat. After reviewing the literature researcher also found a research gap. Previous studies on this model are applying in different sector and not as much of study have done on Fertilizer companies especially in Gujarat state. Researcher found that GSFC Ltd was financially distress or risk of bankruptcy as per the criteria given in the Springate's model. Performance was much better o GNFC Ltd.

8. REFERENCES:

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