

Evaluating financial distress: With special reference to the Navratna companies of India

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Abstract

Public sector undertakings/enterprises are wholly or partly owned by the government of India. Navratna companies have a special place in public sector undertakings as they have been given the status based on the operational and financial criteria that includes net profit, net worth, total cost of production, total manpower cost, cost of services, capital employed and profit before depreciation, interest, and taxes. The main aim of this research paper is to study the financial distress condition of the Navratna companies. For the purpose of computation of companies' health Altman's Z- Score Model is used. Usually, these types of enterprises do not face such a situation as they are self-sustainable but even if they are in such a situation, the government of India immediately may grant them funds and their chances of bankruptcy are reduced or delayed. However, they need to examine their financial conditions regularly as it will enhance the companies' sustainability and financial creditability. The present study found that there are six companies are financially distressed, three companies are in grey zone and three companies are financially healthy.

Subject Classification: 91B05, 91G50, 91G60, 91G80, 97K40.

Keywords: Financial Distress, Navratna Companies, Altman's z-score, Bankruptcy, Sustainability.

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1. Introduction

At present, financial distress is one of the burning topics for every economy. The study of financial health in terms of 'financial distress' is an important topic in accounting and finance, which has been widely used since late 1990's. The study of financial distress was first started by Beaver (1966) who conducted individual financial ratio analysis to determine the financial position of a company. Beaver's univariate analysis was quickly followed by Altman's multivariate analysis in 1968 using the statistical technique of multi discriminant analysis (MDA). (*H. Shetty. S, 2022*).

The industrial sickness or financial distress is excessively familiar fact throughout the world. Financial distress is a basic term used to describe the falling or crushing of the financial position of the firm. Sometimes it is unavoidable due to a number of reasons like; old technology, industrial sickness and trade policies which makes them less profitable and less competitive. Due to these causes, a number of business units go from a healthy stage to sickness, sickness to incipient sickness, incipient sickness to distress, and lastly distress to bankruptcy.

In order to maximize social welfare and protect the general interest, public sector enterprises play a significant role. However, after the LPG reforms, now there are more public organizations that are operating at a loss. The conversions of public sector enterprises into private enterprises by disinvestment were done in order to reduce the unnecessary locking up of funds in these businesses. As they were incurring heavy losses and were unable to repay outstanding debts. Therefore, in the current period, predicting financial distress in advance is inevitable to avoid bankruptcy. The ability to predict financial distress helps stakeholders to make good investment decisions. (*A. Verma, 2019*)

Navratna companies are group of public sector enterprises, which have:

1. The financial freedom to undertake investments of up to Rs. 1000 crore or 15% of their net worth on a single project without seeking prior permission from the central government.
2. They are even permitted to invest up to 30% of their net wealth in a single year; provided that the investments should not be more than 1000 crore rupees.
3. They have the freedom to enter joint ventures, form alliances and float subsidiaries abroad.

A Navratna company can be turned into Maharatna Company. Nine Public Sector Enterprises (PSEs) received the Navratna title for the first time in 1997. In India, there are about 13 Navratna companies. The following qualifications must be satisfied for a Central Public Sector Enterprise to be granted the Navratna status in India:

1. The companies should be listed on Schedule A of Central Public Sector Enterprises and has status of Miniratna Category I.
2. The company's Board of Directors shall consist of four independent directors.
3. Under the Memorandum of Understanding method, the company should have received an Excellent or Very Good grade for at least three of the preceding five years.
4. When calculating the following six performance measures, it must have a composite net score of 60 or above.
 - Net profit to Net worth (Maximum 25)
 - Manpower cost to cost of production or services (Maximum 15)
 - Gross margin as capital employed (Maximum 15)
 - Gross profit as turnover (Maximum 15)
 - Earnings per share (Maximum 10)
 - Inter- Sectoral performance comparison (Maximum 20)

The term "Central Public Sector Enterprises" refers to companies in which the Central Government of India possesses 51% or more shares of the company. These companies are classified in to four categories Maharatna, Navratna, Miniratna Category I, and Miniratna Category II. These businesses are controlled by the Department of Public Enterprises under the Ministry of Heavy Industries and Public Enterprises.

Some researchers that support the study are:

Madrid-Guijarro (2011): This paper analyses financial difficulty in 1006 Spanish SMEs, separating high- and low-tech industries. Financial hardship is analyzed using industrial organizational theory (external causes) and the resource-based view (internal factors), such as training, planning, innovation, technology, and quality. The study employed two sources: An environmental and strategic questionnaire was sent to the firm's manager. Balance sheets and income statements were used to determine if a company was in financial crisis. Environmental factors and strategic determinants are linked to financial difficulty, in this study. Young SMEs

with low technology in a competitive market were more likely to fail. High buyer bargaining power and competition rivalry are linked to financial distress. External causes did not affect high-tech financial crisis. Quality-certified organizations have superior quality control procedures, which improves technology and firms' financial performance. **Chou et.al. (2012):** The study aims to examine the connection between financial difficulty and corporate information disclosure. The study identified financial indices that significantly differed across various financial stages and business information disclosure circumstances, using a logistic regression model. According to the test results, there was a strong correlation between financial distress and the degree of information disclosure. **Ghosh A. and Kapil S. (2022):** The study illustrates how businesses can avoid going bankrupt by adopting the best model for predicting bankruptcy and then taking the necessary corrective action to keep the business from becoming unsustainable. The use of numerous variables and cutting-edge modeling techniques like ensemble and machine learning models supports the claim that prediction accuracy can be increased. However, the majority of machine learning algorithms are crippled by their inability to detect problems with time invariance in the model. The study recommended Data Envelopment Analysis (DEA) and neural network (NN) models to replace the current Altman model for benchmarking in order to eradicate such delinquencies. Due to the lower interest coverage ratio and a higher number of defaulted loans, the study is focused on Indian steel businesses that are categorized according to NIC codes. The study's time frame was 2015 to 2018 because India's legal and fiscal system underwent numerous changes during that time. When the experiment was done, it was found that the Z-Score model had a higher cost of misclassification than the DEA model and the ANN model. For academics, the study serves as a wake-up call to use non-linear models like DEA and NN for bankruptcy prediction research. The industry would also prefer to use models that are more trustworthy and have fewer costs for misclassification. If accepted, the recommendations in this paper can help the government and policymakers avoid the company declaring bankruptcy and, as a result, avoid economic disruptions such as the loss of creditors' ability to receive payments and the society's inability to find job.

According to this Study the financial distress prediction of Indian public sector undertakings was done by **Rajasekar T; Ashraf S; Deo M. (2014)**, analyzed the financial health of Navratna using three bankruptcy prediction model; Springate (1978), Flumer (1984), and CA-Score(1987), for the period of 1995 to 2012. The study found that 6 out of 14 companies

were financially sound in all the years of study and 8 companies were facing the problem of financial distress from last few years. **Dalvadi Y.M. and Pandit J.B. (2018)**, analyzed financial distress of selected listed Indian companies using springate model during the period of 2011-12 to 2016-17 and found out that four enterprises out of eight enterprises were financially distressed. **Verma A. and Pandit J. (2019)** studied Indian public sector enterprises from 2003-04 to 2009-10 using two different models, using Altman's Z- Score model and Grover's G model, result from using Altman's Z- Score model was HOCL was the most financially distressed of all (eight) the CPSEs. The other CPSEs are which were in distressed zone is BHEL, SAIL and NFL. BEML, MRPL & SIL was in grey zone with medium range of solvency. The study found that CPCL was the soundest CPSE. And from using Grover's G model was that the HOCL was the most distressed of all (six) the CPSE. The study further found that the other CPSEs BEML, CPCL, MRPL, SIL and NFL were financially healthy. They have also done the study of six public sector enterprises from 2011-12 to 2015-16 with using another distress prediction model named Zimjewiski X- score and concluded that 2 out of 6 enterprises were the most financially distressed enterprises. The study also suggests taking preventive measures to avoid bankruptcy in future. **Paul R. and Kalyani B. (2019)**, examines the financial distress of Indian public sector enterprises using descriptive statistics, correlation analysis and cubic trend analysis with 14 financial ratios. The study took paired group of distressed and non-distressed companies, used selected financial ratios to develop a strong cubic relationship and found positive financial ratios between distressed and non-distressed companies. The empirical study shows that financial ratios' ability to distinguish between stages of distress and non-distress can be used to predict the overall financial health of the enterprises that were subject of the study.

II. Research Gap

After critically analyzing the literatures, it is clear that there are very few studies related to the financial distress of Indian Navratna companies for the period of 2018 to 2022. So, the study tries to evaluate the financial distress of 12 listed Navratna companies for the period of 2017-18 to 2021-22.

III. Objective of the Study

The sole objective of this research paper is to evaluate the financial distress of listed Navratna companies of India using Altman Z- Score model.

IV. Research Methodology

This study seeks out an enquiry on the financial distress of Indian Navratna companies using Altman's Z-Score model, during the period of 2017-18 to 2021-22. The variables of Altman's model are ratios which are calculated through secondary data. This data is collected from money control and also verified from their annual reports of respective companies available on the concerned websites. The study uses purposive sampling technique for data collection and then applies Altman's Z- Score model.

V. Analysis & Interpretation

Theoretical Framework of Altman's Model

This model was developed in 1968 by Edward I. Altman who was the Prof. of Finance in New York University. He gives the index named as Z; based on five major financial ratios, which are best in predicting corporate bankruptcy. This model was based on multivariate discriminant analysis and therefore is also called Multiple Discriminant Analysis Altman (1968). The Z- Score model is used to standardize data in one index for comparison, which is used to estimate the probability that the company would get bankrupt within two years. The Z- Score represents the financial health of the particular firm at a particular point of time.

Development of Z- Score Model

Prof. Altman developed the model by taking 66 companies in which 33 were bankrupt and remaining were surviving during the period of study, the pair of samples were taken carefully by matching same industry and approximate same size (assets), Altman (1968). The Z- Score is a linear combination of five major financial ratios with are assigned weighted coefficient, based on multiple discriminating analyses. The model has a 95% accuracy rate in predicting bankruptcy up to two years prior to failure. The Z- Score model is represented in following form:

$$Z = .012X_1 + .014X_2 + .033X_3 + .006X_4 + .999X_5$$

Where,

X1 = Working capital/Total assets i.e. measuring liquidity position of the firm in terms of net liquid assets of the company to total capitalization.

X2 = Retained Earnings/Total assets i.e. measuring the profitability of the firm through efficiency of management in manufacturing, sales and in other administrative activities.

X3 = Earnings before interest and taxes/Total assets i.e. measuring return on investment in terms of profitability of the company through productive use of assets of the company.

X4= Market value equity/Book value of total debt i.e. measuring solvency of the firm, it shows how much assets of the company decline in its value if the liabilities increase beyond a point.

X5 = Sales/Total assets i.e. measuring capital turnover of the firm by showing sales generating capacity of the company by effective utilization of resources.

$$Z = \text{Overall Index}$$

Table 1

Z- Score Measurement Scale for Maintaining Financial Health

After analyzing 66 firms, Altman concluded the following scale of measurement to find out the financial condition of the companies:

Recommended Score	Interpretation
Z score more than 2.99	The company is financially safe and sound. No danger of bankruptcy i.e. "non-bankrupt."
Z score from 1.81 to 2.99	The company is on alert mode, it may get bankrupt within two years if no remedial action is taken, the company is in "grey area". Also called "zone of ignorance."
Z score below 1.81	There is definite failure and closure of the company is certain i.e. "Bankrupt."

Source: Altman (1968)

Table 2

Altman's Modified Guidelines

If Z score is more than 2.675	Firms are Financially Sound.
If Z score is below than 2.675	The firm is leading to bankruptcy and there is definite chance to go bankrupt within next two years.

Source: Shrivastav. R.R & Srinivasan. S.R (2016)

Z- Score of Navratna Companies of India

The categories of companies like distress, grey, and healthy zone have been made according to their mean values (refer table 1 and 2).

Table 3
Z- Score of Mahanagar Telephone Nigam Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	-0.63677	-0.32616	-0.50465	-0.39629	-0.24806042	-0.42239
X2	-0.21153	-0.18439	-0.22188	-0.23098	-0.18295941	-0.20635
X3	-0.03753	-0.02642	-0.10514	-0.11469	-0.09018829	-0.07479
X4	0.044462	0.076417	0.028811	0.024439	0.045157351	0.043857
X5	0.09339	0.103942	0.097475	0.142083	0.152117551	0.117802
Z	-1.06414	-0.58705	-1.14852	-1.0208	-0.67237720	-0.89858

Source: Authors' own compilation

MTNL comes under financially distressed category according to its Z value. The Z value is negative and the worst variable of this company is X3(earnings before interest and taxes to total assets) which represents that the company didn't optimally utilize its total assets to earn profits (refer table 3).

Table 4
Z- Score of NLC India Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.0652	0.02248	0.01353	-0.0107	0.02983	0.024063
X2	0.03058	0.02396	0.01112	0.01723	0.03698	0.023974
X3	0.10078	0.07253	0.07733	0.07283	0.08754	0.082201
X4	0.47749	0.3567	0.2888	0.35743	0.55532	0.407147
X5	0.29299	0.19232	0.20236	0.20604	0.26117	0.230976
Z	1.0328	0.706	0.66242	0.67189	0.97056	0.808734

Source: Authors' own compilation

The table 7 shows that the Z value is less than 1.81 i.e. the company is financially distressed. The individual mean value of all variables represents that the X5(sales to total assets) with addition to X2(retained

earnings to total assets) and X3(earnings before interest and taxes to total assets) are contributing variables in this company which means that the company didn't utilized its total assets to make optimum earnings for the company.

Table 5
Z- Score of Shipping Corporation of India Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.174979	-0.00973	-0.15663	-0.12221	-0.07587	-0.03789
X2	0.056524	0.044392	0.022016	-0.00862	0.017621	0.026386
X3	0.071878	0.049926	0.051819	0.012087	0.014531	0.040048
X4	0.800513	0.943181	0.577278	0.380851	0.649928	0.67035
X5	0.360486	0.281896	0.322246	0.27748	0.240924	0.296606
Z	1.36674	1.062756	0.682159	0.386874	0.612214	0.822149

Source: Authors' own compilation

The SCI Company comes under financially distressed category according to its Z value. The main variable which leads the company in distress is X1(working capital to total assets ratio), which means company didn't make adequate investment in its current assets although the Z value of company has improved 123% over the entire study period because company worked on improving its working capital ratio and took some corrective measures by investing more capital in current assets, still it needs to make efforts to ramp up its sales (refer table 5).

Table 6
Z- Score of Oil India Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.028023	-0.00878	0.095864	0.06825	0.084929	0.053657
X2	0.054642	0.023477	0.033107	0.031854	0.021819	0.03298
X3	0.115838	0.024134	0.06113	0.092609	0.093688	0.07748
X4	1.031752	0.882359	0.631086	0.841619	0.820663	0.841496
X5	0.29172	0.170242	0.283103	0.289368	0.242005	0.255288
Z	1.402871	0.80146	1.024587	1.226156	1.175792	1.126173

Source: Authors' own compilation

The Z value of OIL is less than 1.81 over entire study period therefore the company comes under financial distress category. The root cause of distress is X3(earnings before interest and taxes to total assets) and to some extent X2(retained earnings to total assets), which exhibits that company didn't fully utilize its total assets to earn sufficient profits for the firm and that it also because the company has not retain which has vastly impacted its growth prospects (refer table 6).

Table 7
Z- Score of REC Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.728856	0.711222	0.741917	0.925975	0.967369	0.815068
X2	0.018602	0.015464	0.007832	0.010902	0.010076	0.012575
X3	0.084008	0.080566	0.074982	0.079747	0.079535	0.079768
X4	0.052474	0.074086	0.084854	0.1074	0.115128	0.086788
X5	0.095349	0.088418	0.085906	0.085013	0.092915	0.08952
Z	1.304634	1.27377	1.285438	1.538965	1.599315	1.400423

Source: Authors' own compilation

The company REC is lying in the category of financial distress. Its initiating Z value keeps declining but it rises minutely in the last year as compared to its previous years. The root cause of distress of this firm is X2 (retained earnings to total assets), the effect of variable X3(earnings before interest and taxes to total assets), which exhibits that company didn't fully utilize its total assets to earn profit for the firm and also because the company has not retain which has vastly impacted its growth prospects (refer table 7).

Table 8
Z- Score of Hindustan Aeronautics Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.342711	0.282774	0.195029	0.225916	0.235921	0.25647
X2	0.064281	0.042987	0.032341	0.033223	0.020219	0.03861
X3	0.090693	0.087331	0.08039	0.077178	0.067659	0.08065
X4	2.103739	1.109799	0.707386	0.633577	0.728368	1.056574
X5	0.42215	0.438671	0.402977	0.394745	0.376502	0.407009
Z	2.484505	1.791814	1.371604	1.346795	1.347836	1.668511

Source: Authors' own compilation

HAL comes under financially distress category except in the year 2021-22 according to its Z value. The Z value is less than 1.81 during the last four years although it started improving in the year 2020 but manages to remain in the distress category up till 2021 before getting in to grey zone in 2022. In this company the reason for downfall is X2(retained earnings to total assets) with addition to X4(sales to total assets), which exhibits that company is unable to increase its sales to earn profits from its total assets. So, it needs to optimally use its financial assets to increase its sales (refer table 8).

Table 9
Z- Score of NBCC (India) Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.01135	-0.01477	0.115585	0.101722	0.205961	0.08397
X2	0.021519	0.021352	-0.00478	0.032184	0.023962	0.018847
X3	0.125638	0.095785	0.125072	0.160608	0.097605	0.120942
X4	0.856785	1.251007	0.839184	0.931457	0.890941	0.953875
X5	1.168574	0.873108	1.05839	1.455496	0.988143	1.108742
Z	2.13983	1.951099	2.105586	2.710045	2.124515	2.206215

Source: Authors' own compilation

The company NBCC falls under the category of grey zone as indicated by its Z value. The worst variable of this is X2(retained earnings to total assets) with addition to X1(working capital to total assets). It needs to invest some more capital in its current assets to improve the value of company. As the table indicates the working capital was negative in the year 2021 and its retained earnings was negative in the year 2020. It shows that company is unable to manage its assets to make earnings for the firm (refer table 9).

Table 10
Z- Score of Engineers India Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	-0.00965	-0.03498	0.257864	0.287745	0.319618	0.16412
X2	0.045933	0.018928	0.019923	0.002039	0.034113	0.024187
X3	0.103942	0.080907	0.134674	0.121409	0.128359	0.113858
X4	1.514562	1.468496	1.843914	2.595973	3.664457	2.21748
X5	0.664948	0.70912	0.63694	0.521794	0.403488	0.587258
Z	1.968754	1.84103	2.524405	2.827655	3.456642	2.523697

Source: Authors' own compilation

The company EIL falls under the category of grey zone as indicated by its Z value. The worst variable of this category is X2(retained earnings to total assets), in addition to X1(working capital to total assets) and X3(earnings before interest and taxes to total assets). As far as the variable X3 is concerned the company is unable to earn sufficient profit due to improper utilization of the total assets, because of which variable X2(retained earnings to total assets ratio) also gets affected as it does not have enough earnings to retain. It has come to the knowledge that the company is working with low working capital which might be attributed to the problems existing with or in the operating cycles X1(Negative in last two years) (refer table 10).

In the starting phase the company was in safe zone owing to its healthy financial position and sustainable creditability but from the year 2018 it has been declining continually up till 2021(almost ending up in distressed zone), with a little bit of improvement in 2022, which reflects if proper attention is not paid to it, it might also end up or get in to distressed zone.

Table 11
Z- Score of Bharat Electronics Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.22796	0.23582	0.24545556	0.26273	0.23571	0.241533
X2	0.03963	0.03587	0.04343	0.06918	0.04166	0.045953
X3	0.09455	0.10122	0.10381919	0.1327	0.10523	0.107503
X4	1.15611	2.80314	2.07986935	2.12905	1.99129	2.031891
X5	0.45781	0.48407	0.54038147	0.59055	0.55728	0.526017
Z	1.79206	2.83271	2.4851654	2.7174	2.43991	2.453559

Source: Authors' own compilation

BEL falls under the category of Grey zone as indicated by its Z value. Variables which are liable for grey zone are X2(retained earnings to total assets), X3(earnings before interest and taxes to total assets),and X5(sales to total assets), that means company needs to increase its turnover as a result of which its earnings before interest & taxes will increase which might translate into improvement in retained earnings (refer table 11).

Table 12
Z- Score of NACL Industries Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.195966	0.153395	0.126311	0.177962	0.217121	0.174151
X2	0.107073	0.057028	-0.00973	0.058947	0.029693	0.048602
X3	0.230237	0.089976	0.015944	0.181046	0.139647	0.13137
X4	2.803662	4.598552	1.762737	1.746597	3.092976	2.800905
X5	0.820754	0.608799	0.582272	0.759183	0.650717	0.684345
Z	3.646975	3.928157	1.829895	2.699915	3.268805	3.0746

Source: Authors' own compilation

The company NACL comes under the category of financially sound as indicated by its Z value. Although company is financially sound but it needs to improve its retained earnings to total assets ratio by improving its sales which will further improve its Earnings before interest to taxes (refer table 12).

Table 13
Z- Score of National Mineral Development Corporation Limited

Variables / Years	2022	2021	2020	2019	2018	Mean
X1	0.197876	0.136347	0.145297	0.164593	0.185195	0.165862
X2	0.113639	0.108167	0.06391	0.099119	0.085477	0.094062
X3	0.291338	0.242434	0.196936	0.243079	0.2173	0.238217
X4	3.937046	5.562045	9.702952	10.30755	7.212138	7.344346
X5	0.579114	0.417836	0.37565	0.408054	0.405986	0.437328
Z	4.298725	4.869728	7.110764	7.730616	5.791854	5.960337

Source: Authors' own compilation

The company NMDC comes under the category of financially sound as indicated by its Z value. Which is giving a misleading picture as the company highly overvalued which are depicted by its other variables namely X3(earnings before interest & taxes) (refer table 13).

Table 14
Z- Score of Container Corporation of India Limited

Variables/ Years	2022	2021	2020	2019	2018	Mean
X1	0.175324	0.154932	0.151594	0.217179	0.199096	0.179625
X2	0.04491	0.012046	-0.0165	0.08191	0.058631	0.036199
X3	0.114173	0.058474	0.048417	0.134024	0.129437	0.096905
X4	20.78	18.80546	16.18725	15.56348	12.56988	16.78082
X5	0.59	0.523591	0.559688	0.545889	0.575117	0.559505
Z	13.70949	12.20209	10.59006	10.701	8.86461	11.21345

Source: Authors' own compilation

Going by the initial view it might seem the company lies in financially sound category as indicated by its Z value. But like previous CPSUs, it is also highly overvalued as indicated by its variable X4 (market value of equity to total assets) (refer table 14).

VI. Findings and Conclusion

The above study has highlighted that half of the companies out of the selected 12 enlisted from Table 3 to Table 8 are in financially distressed zone or on the brink of insolvency. In the second category, the data enumerated from table no 9 to Table 11 comprising of three companies are in grey zone which require corrective measures by the management, if it intends to thrive them towards growth. In the last but not the least, data enshrined from Table 12 to Table 14 captures the performance of the remaining three companies which are performing sound and are best performer as far as our group is concerned. Under this study, we find that the companies that come under the financially safe zone have high share market value. Periodic review of the working of the companies will enable them to counter its threats in advance and help the management in taking proactive decisions that will enhance the financial stability and long run sustainability.

The problems faced by PSUs can be rationalized, distressed can be turned into undistressed and healthy can be made more effective and efficient if the government can look into some of the issues plaguing them by resolving it with a host of measures like, reducing the expenses of PSUs by giving VRS and by abolishing special privileges of those at the helm of the affairs. Second, by boosting morale of the employees by

introducing financial packages like ESOPs, and taking their advice at adequate times. Thirdly, by injecting liquidity at the right time rather than at the last resort. Fourth, taking the initiative of talking to domain experts and activists and giving them responsibilities to revitalize and by giving them free hand in management, stability of tenure and full support from back like Dr Swaminathan was given in Green Revolution and Verghese Kurien in White Revolution or Dr Manmohan Singh was given during economic crisis. Fifth, facilitating the right and latest technology at the right time so that it doesn't lag behind in competition. Sixth, by increasing the expenditure on research and development which is abysmally low compared to their counterparts and by entering into agreements with required national or international vested interests as per requirements.

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