

An Empirical Case Study on Prediction of Corporate Failure in The Selected Industrial Unit in India

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Abstract

Industrial Sickness has been growing in such large proportions that in the wake of industrial development, a large number of new units covering all types of units in small, medium and large sectors are added in this category. The rapid growth and magnitude of industrial sickness is puzzling issue not only for present time but also for all times to come, especially for India. It has become a matter of serious concern for all; concerned directly or indirectly with the industrial units; not only because Billions of rupees locked up in Millions of sick units but also for the fortunes for numerous classes to be affected. The failure of a unit is an event which brings a lot of mental torture to entrepreneurs, managers and to their families. The society is also affected by the phenomenon of sickness as unemployment spreads widely, availability of goods and services decrease and the prices soar up. The share holders lose their hard-earned savings. Creditors lose their cash and future prospects of business. The socio-economic implications of industrial sickness are so severe that it may disturb the whole industrial climate. Under such scenario this study on "An Empirical Case Study on Prediction of Corporate Failure in the Selected Industrial Unit in India" is an attempt to identify sickness at early stage with help of Altman's discriminate Analysis model so the corporate failure can be minimized.

Key words: Industrial Sickness, Corporate Failure, Prediction Models.

1. INTRODUCTION

Incidence of industrial sickness is a continuous process and at a particular time some units in a particular industry will be running sick even if the industrial climate is favorable from all points of view. Its analogy can be understood from a society in which some are healthy, some are of medium health, some are sick and others are recouping from sickness. Similar case is with industrial units. Continuous sickness leads to closure. Hence, to avoid closure of industrial unit one has to act much in advance before the incidence of closure takes place. The effort should be to arrest or minimize the rate of sickness. This study on prediction of corporate failure is an effort to identify sickness at early stage with help of Altman's discriminate Analysis model.

2. IMPORTANCE OF THE STUDY

Industrial sector contribute a major portion in the National income of India. Its Development is the key event of modern industrial age. But the incidence of industrial sickness has been growing in such large proportions that in the wake of industrial development, a large number of new units covering all types of units in small, medium and large sectors are added in this category. The rapid growth and magnitude of industrial sickness is puzzling issue not only for present time but also for all times to come. It has become a matter of grave concern for all; not only because the billions of rupees locked up in millions of sick units but also for the fortunes for numerous classes to be affected. The failure of a unit is an event which brings a lot of mental torture to entrepreneurs, managers and to their families. The society is also affected by the phenomenon of

sickness as unemployment spreads widely, availability of goods and services decrease and the prices soar up. The share holders lose their hard-earned savings. Creditors lose their cash and future prospects of business. Under such scenario the study on prediction of corporate failure becomes necessary to protect the future of millions. This study will be helpful for the policy makers, politicians, economists, entrepreneurs, Bankers, Financial institutions, employees and researchers. It will give a road way in prediction of bad health of a company.

3. OBJECTIVE OF THE STUDY

(i) To identify the tools of predicting Corporate industrial sickness

(ii) To test the widely used model –multiple discriminate analysis (MDA) Z Score model using data from a selected company

4. REVIEW OF LITERATURE

Ramser and Foster (1931) were the first pioneers of quantitative studies into the potentiality of financial ratios to predict bankruptcy (1931). They had analysed eleven different financial ratios of 173 firms with securities registered in the state of Illinois. It was found in their study that the less successful firms and the firms subsequently failed had ratio values lower than the more successful firms. However, two turnover ratios, viz. sales to net worth and sales to total assets exhibited an opposite tendency. [1]

Undoubtedly, Beaver's (1968) contribution on empirical findings to the failure prediction is a commendable job particularly; the accounting data have shown the ability to predict failure for at least five years prior to failure. To him the user cannot among ratios indiscriminately. Persistent difference in predictive ability were found, many of which were not correctly anticipated by priori arguments in the literature.² Although Beaver, study was criticized on the ground that the work was based on univariate approach, but in reality it set the stage for the multivariate attempts by others. [2]

Altman (1968) made a significant breakthrough in the area of business bankruptcy prediction by developing a model known as Z-score. He collected necessary data pertaining to bankrupt and non-bankrupt firms and thereby established their linear combination to derive a discriminant function for group separation. He applied a statistical technique known as multiple discriminant analysis that evolved a set of discriminant coefficient which when applied to actual ratios formed mutual exclusive grouping. [3] The discriminant function runs in the form of

$$Z = V_1X_1 + V_2 X_2 + \dots + V_nX_n$$

Where Z = overall index V₁V₂.....V_n = the discriminant coefficients, X₁X₂ X_n = Independent variables (ratios.)

Altman used matching pair sample of 33 bankrupt with 33 non-bankrupt manufacturing firms on the basis of industry and assets size. The bankrupt firms thus included in the study were those that filed bankruptcy petition under chapter X of the National Bankruptcy Act from 1946 through 1965. The data for the same were collected from Moody 's Industrial Manuals and selected annual reports for 1-5 years before bankruptcy. Initially, 22 variables were selected for the study, which covers five ratio categories, viz. liquidity, profitability, leverage, solvency and activity.

He eliminated sales to total assets variable, which he considered important in the 5 variable model and achieved 94 per cent classification accuracy just one year prior to bankruptcy. But for its practical application, Altman, say it needs further tests on a broad cross-section of bankrupt and non-bankrupt firms.

Deakin, (1968) analysed 32 firms that failed between 1964 and 1970. His definition of 'failure is based on bankrupt, insolvent or liquidate firms. Following the paired sample observation he matched failed firms with non-failed firms on the basis of industry, asset size and year of financial

data. He could not derive linear discriminant function by using paired sample. So, he selected a random sample of 32 non-failed firms drawn from Moody's Industrial Manual for the years 1962-1966. This supported the linear combination to derive the discriminate function as random sample tend to be more representative of the population and are more relevant for predictive purpose. His study showed mis-classification of less than 5 per cent for the first three years prior to failure for the original sample. However, in the fourth and fifth prior to failure error rates increased to 21 per cent and 17 per cent respectively which according to him, "probably were too high for decision making purposes. [4]

John Argenti's (1976) study on corporate failure is by far the best theoretical study for analysis of corporate failure. The approach is dynamic and traces the firm's path from healthy to failure. Argenti has typified three trajectories of organization's failure. He distinguished the symptoms of failure from the causes of failure and explained. He says "If the management of a company is poor the accounting information will be neglected or such information will be deficient and the company will not respond to change, some may be damaged because of a powerful constraint. Poor managers will make at least one of the three errors; they will overtrade; or they will launch a big project; or they will let the gearing rise to level that even a normal business hazard will become a constant threat, when these symptoms appear, the financial ratio will deteriorate and managers will resort to creative predictive models based on financial ratio. He presents three trajectories of failure. [5]

Kavery attempted (1980) to predict the borrower's health by utilizing financial ratios as predictor variables. His sample consisted of good, irregular and sick small scale, industrial units.⁸ He selected initially 22 variables for the study. Putting them under several tests, viz. t-test, analysis of variance, discriminant analysis and Scaled Vector, he selected 5 variables one from each ratio category for developing final discrimination. He found that the ratio-stock to cost of goods sold had the highest predictive power than the other four ratios namely, current assets to current liabilities, current assets to net sales, net profit to total capital employed and net worth to total outside liabilities. At one year advance to sickness 76 per cent classification accuracy was achieved for the initial sample. The holdout sample provided 69 per cent classification accuracy before one year of sickness. [6]

Bhattacharya (1982) attempted to develop a model using multiple discriminant analysis in order to identify the different symptoms, which explain the sickness phenomena, their relative contribution in determining the propensity of sickness.⁹ He selected 28 sick and 26 healthy companies for the study. He constructed two sets of model. Both the models have shown identical classification result. The first model correctly classified the observations with 80 per cent accuracy while the second model achieved 78 per cent classification accuracy in the first year prior to sickness. Bhattacharya claimed his first model superior to the second one on the basis of less number of sick companies misclassified as healthy companies. [7]

Thus, the foregoing empirical studies attempt to examine the health status of the firms in advance before they become sick or failure. These studies have unearthed the fact that financial ratios have the ability to predict the survival business. The very purpose of these studies is to investigate the potential ratios that can give indications about the survival or failure of firms/

The cell defined a Sick Industry as follows- A Industrial Unit (a) which could not reach the stage of normal production with normal profit or (b) has incurred loss or remained at the unprofitable level for consecutive 3 to 6 years from the first year of commercial production or (c) could not produce above the break-even point for reasons beyond the control of the entrepreneurs.

Gupta, (1983) has carried out a study on corporate sickness by using a simple non-parametric test for measuring the relative differentiating power of various financial ratios.⁷ His sample for the study included only units from cotton textile industry, which later extended to non-textile group. He selected 56 ratios and classified them under two groups i.e. profitability ratios and balance sheet ratios. To rest the magnitude of each ratio, he made any array of sample of sick and non-

sick companies and determined the optimum cut off points for each ratio. The least minimum misclassification number / percentage was chosen as the deciding parameter. [8]

His sample considered of 20 sick and 21 non-sick textile companies, the later was matched on the basis of product, age, size, assets and sales. Ratios for each sample company were calculated and tested in each year for a period covering 13 years i.e. from 1962 to 1974. Five profitability ratios were finally selected which had shown the possession of high degree of predictive power under the test when applied to a homogenous group. He observed that companies having low or inadequate equity base (reserve strength) are more prone to sickness. His study also pointed out that liquidity ratios had poor showing relating to corporate health.

S. N. Bidani and P.K. Mitra (1993) developed a clinical model of the anatomy of any industrial unit. The modal shows four functional area; of an industrial unit which are; Finance, production, marketing and personnel. There is a middle circle which shows corporate management which is responsible for co-coordinating these four function. [9]

Bakul Dholakia, (1989) in "Industrial Sickness in India: need for Comprehensive identification Criteria analyze that "Prevention is better than cure- in the context of growing industrial sickness in the country. The criteria used by financial institutions sickness is the recurrence of cash loss argues that the use of various criteria based on the cash loss syndrome delays units identification of sickness and results in a high proposition of terminally sick. He suggests a comprehensive set of empirically criteria which would serve as an early warning system. Abnormal fluctuations in a firm's relative position within the industry of which it belongs should be explicitly used to determine sickness at the incipient stage. This is likely to help prevent industrial sickness. This would require restructuring of existing systems and procedures adopted by the financial institutions. [10]

Ramachandra K.S. (2001) in "Reviving Sick units" discussed the reviving the sick SMEs in various aspects, like providing technology, management training, skilled labour, export promotion and giving finance. The root cause for all the above problems is the financial problem. The finance should provide sufficient amount at an easy disbursal system to promote the SME.s It focused more on the credit facility and availability of several schemes for SMES. [11]

5. RESEARCH HYPOTHESIS

Ho: Corporate Failure can be predicted with help of statistical tools and Altman's model is a strong model for predicting corporate failure

H1: Altman's Z score Model is not a strong model for predicting corporate failure

To make the reasons more reliable the present research study will be restricted to the selected sick unit for in-depth Analysis.

To analyze the past performance of the company ratio technique and Altman's Z score will be used

Altman used a statistical methodology called Multiple Discriminat Analysis (MDA) which predict the relationship between mainly dichotomous response variable and one more independent predictor variable by determining a set of discriminant coefficient which best result in mutually exclusive response variables, to generate his model. Financial statement data one year prior to bankruptcy will be used to develop the following five variable models

$$Z=1.2 X1+1.4X2+3.3X3+0.6X4+.999X5$$

Here:

X1 = working Capital/Total assets

X2 = Retained Earnings/total assets/Total Assets

X3 = EBIT/Total Assets
 X4 = Market Value of Equity/Book Value of Total Debt
 X5 = Sales/Total Assets

If the Z score is above 2.99 indicate Good health
 Between 1.81 to 2.99 Indicate Gray Zone
 Below 1.81 Indicate probable Failure

The researcher has selected a company from textile sector. Due to confidentiality name of the company will remain Unit 'X' the company was engaged in power loom production

The financial ratios calculated to apply Z score are as follows for last five Years

Ratios/ Years	Year 1	2	3	4	5
X ₁ = Working Capital / Total Assets	0.33	0.23	0.21	0.31	0.22
X ₂ = Retained Earning / Total assets	0.20	0.19	0.21	0.11	0.13
X ₃ = Earnings before Interest & Taxes / Total assets	1.01	0.84	0.63	0.15	0.30
X ₄ = Market value of equity / Book value of total debt.	2.22	2.07	2.01	2.02	2.04
X ₅ = Sales / Total assets	0.29	0.39	0.28	0.21	0.19

Source: calculated from the financial statement of the selected company

TABLE 1: Calculated Value of Various Ratios For Last Five Years.

On the basis of above ratios the researcher has calculated Z score for the five years applying Altman's model. The value in given in the table

Year	Z Score	
1	4.77	Average =3.02
2	4.18	
3	3.40	
4	1.82	
5	0.93	

TABLE 2: Table Showing Calculated Value of Z Score.

The above table shows that 4th year company give an indication of probale sickness as the Z score value come to 1.82. in the next year the Z core declined to 0.93 which show sickness. In this way we can say that Z score is the perfect measure of corporate sickness. It gives an indication of probable sickness and complete sickness. If the companies keep checking their financial performance through the Altman's model the sickness can be predicted and revival or correction strategy may be started in time.

Conclusion:

From the above analysis and review of literature the researcher can conclude that Altman's model is a simple tool for predicting corporate failure. To keep an eye on the investments, investors should consider checking their companies' Z-score on a regular basis. A deteriorating Z-score gives a signal about the trouble ahead and provides a simpler conclusion than the mass of ratios. The Management can also check the financial health of their companies by applying Z score.

But we should keep in mind that Z score gives an indicator about financial health. It is not the perfect proof of bad financial condition. As it gives indication about poor financial health the companies should have detailed analysis of their companies to confirm. Altman's has further modified the model to make the result more reliable and suggested different models for manufacturing and non-manufacturing companies. Regular check-up can stop the tendency of industrial closure or sickness. Early prediction of sickness can help easy recovery from the sickness and avoid corporate failure or closure.

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