

# ADEQUATENESS OF APPLYING ALTMAN'S Z SCORE MODEL FOR PREDICTION OF POTENTIAL FINANCIAL DISTRESS IN NBFIs OF INDIA: A CASE STUDY OF RELIANCE CAPITAL LTD.



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## GENERAL OVERVIEW

Non-banking Financial Institutions (NBFIs) form an important part in the Indian Financial system. It has been intermediating a growing share of the resource flows to the commercial sector. NBFIs add-on the role of the banking sector in meeting the increasing financial needs of the corporate sector. NBFIs mainly belongs to private sector institutions that are focus in meeting the credit needs and a variety of financial services like financing of physical assets, infrastructure loans and commercial vehicles. The Reserve Bank of India's regulatory parameters are applicable to companies conducting non-banking financial activity, such as investment, lending or deposit acceptance as their principal business.

Bankruptcy is a state where the firm's total liabilities exceed total assets. Hence, the real net worth of the firm is negative. This leads to, increased cost & losses, reduced sales etc. Eventually firm will be under distress stage. Under such circumstances it becomes challenging for investors & lenders to analyze the financial performance of the organization.

Bankruptcy models like-recursive partitioning algorithm, logit analysis and neural networks are existing but still Altman's model is considered to be superior and extensively used by researchers all over the globe in the present days. Altman's Z-Score Model is the result of a credit-strength test that predicts company's likely events of financial distress and bankruptcy.

## OBJECTIVES OF STUDY

1. To study estimate likelihood of Bankruptcy by applying Altman's Z-Score Model in NBFIs of India with reference to a case study viz: Reliance Capital Ltd.
2. To suggest some measures to identify financial shock before occurrence of an event of financial distress for minimizing losses.

## REVIEW OF LITERATURE

The purpose of this study is to compare the predictive ability of Altman's z score models in bankruptcy risk prediction. This scenario has been analyzed and studied extensively in accounting

literature. The initial study was performed to determine whether financial ratios provide useful information for healthy business operations.

**(Altman, 1968 & 2000)** The researcher has observed that the Altman Z-Score was found to be 72% accurate in predicting bankruptcy two years before the event, with a Type II error (false negatives) of 6% **(Altman, 1968)**. The number of following tests studying three periods over the coming 31 years (up until 1999), the model was found to be approximately 80%–90% accurate in identifying bankruptcy one year before the happening of financial crisis, with a Type II error (classifying the firm as bankrupt when it does not go bankrupt) of approximately 15%–20%

**(Narendar V Rao & G. Atmanathan, Manu Shankar, & S. Ramesh, 2013)** In this research paper, researchers tried to make a comparative analysis of usefulness of Altman's Z Score model and KMV Merton Distance to Default Model in predictive analysis of Indian manufacturing companies. The paper concludes that Altman's Z Score model is more effective in predicting bankruptcy situation for Indian manufacturing companies.

**(Prof. Rohini Sajjan, 2016)** The paper analyses the use of the Altman's bankruptcy model to study the financial soundness of the firms, according to researcher unfortunately, none of the companies completely belongs to Safe Zone except for few years. There are many of the firms which are in Distress Zone and clearly showing that these firms may go Bankrupt in near future.

**(Prof Akash Jain, 2019)** The paper has studied that predictive model if applied in an Indian context to various corporate entities can help to identify the chances of occurrence of potential events of bankruptcy, frauds etc. and provide a scope to initiate recovery plan for the corporates thereby saving the hard-earned money of investors.

### RESEARCH GAP

It has been observed that, in India most of the financial institutions are suffering with the problem of financial distress. However, the use of predictive models for predicting potential financial distress is limited in applicability. This paper aims to study and analyze the Altman's Z score model which can identify the happening of the even which may lead to financial shock. Altman's Z score provides insights relating to minimizing the loss of an institution due to bankruptcy.

### RESEARCH METHODOLOGY

This research paper is the case study of Reliance Capital Ltd. The researchers have adopted the quantitative research method. The data is collected solely from the secondary sources. The data collected consists of the financial statements from standalone balance sheet of Reliance Capital ltd. for the financial year 2015-16, 2016-17, and 2017-18 in order to check the accuracy of the model. Altman's Z Score Model have been used to predict financial position. The data analysis is carried out using Altman's Model in MS Excel.

## BANKRUPTCY MODEL USED IN THE STUDY

### 1) Altman's Z Score Bankruptcy Model

Z Score =  $(6.56 * X1) + (3.26 * X2) + (6.72 * X3) + (1.05 * X4)$  Where,

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings Before Interest & Tax (EBIT) / Total Asset

X4 = Book Value of Equity / Total Liabilities **Interpretation:** Healthy Company if  $Z > 2.6$

Warning Sign if  $1.1 < Z < 2.6$

Potential Bankruptcy if  $Z < 1.1$

## DATA ANALYSIS AND INTERPRETATIONS

The details required for the calculations of the above models are collected from the annual reports published Reliance Capital Ltd. for the financial year 2015-16, 2016-17 and 2018-19

To prove the Altman's Z-Score Model in credit industry researchers have studied the case of Reliance Capital Ltd. The Reliance Capital Ltd. is an Indian diversified financial services holding company founded on 05 March 1986, promoted by Reliance Anil Ambani Group & obtained its registration as NBFC in December 1998. It was one of the top rated Indian financial institutions and had the uppermost ratings of 'A1+' by ICRA and CRISIL. But recently rating agency CARE, in May, 2019 lowered rating of some of instruments to 'D'. It has exited the mutual fund business plus lending business by selling its complete stake in Reliance Nippon Life Asset Management Ltd (RNAM) in order to pare obligations. There are so many reasons behind the fall of this company. Its financial situation is endlessly worsening.

Financial statements of Reliance Capital Ltd. have been continuously depicting its financial health but it need to be properly investigated the actuality & relationship of each figure behind this composition which can be done by using Altman's Z-Score Model.

Researchers have put the requiring figures into the formulae to measure the risk by assessing the past & present performance to secure the nearer future by taking requiring measures to manage the risk by analyzing Z-Score. Following are the calculations as per the standalone financial statements which have been taken from the website of Money Control:

**Calculation for the year ended 31<sup>st</sup> March 2016 (as per Standalone Financial Statements)**

$$\begin{aligned} Z \text{ Score} &= (6.56 * X1) + (3.26 * X2) + (6.72 * X3) + (1.05 * X4) \\ &= 6.56 * \frac{1381}{36354} + 3.26 * \frac{6918}{36354} + 6.72 * \frac{3399}{36354} + 1.05 * \frac{525}{23078} \\ &= 1.02338 \end{aligned}$$

**Calculation for the year ended 31<sup>st</sup> March 2017 (as per Standalone Financial Statements)**

$$\begin{aligned} Z \text{ Score} &= (6.56 * X1) + (3.26 * X2) + (6.72 * X3) + (1.05 * X4) \\ &= 6.56 * \frac{75}{33437} + 3.26 * \frac{7254}{33437} + 6.72 * \frac{1877}{33437} + 1.05 * \frac{542}{19736} \\ &= 1.12803 \end{aligned}$$

**Calculation for the year ended 31<sup>st</sup> March 2018 (as per Standalone Financial Statements)**

$$\begin{aligned} Z \text{ Score} &= (6.56 * X1) + (3.26 * X2) + (6.72 * X3) + (1.05 * X4) \\ &= 6.56 * \frac{2009}{27576} + 3.26 * \frac{7621}{27576} + 6.72 * \frac{-3714}{27576} + 1.05 * \frac{364}{23238} \\ &= 0.49032 \end{aligned}$$

After calculating the necessitating equations researchers came on following scores, as discussed above about the Altman's Z-Score Model it has some standard benchmarks which designate the interpretation at different stages. As shown in summary table which is as given below depicting three years' score. Early, Financial Year (FY) 2015-2016, we can see there that Z-Score is less than 1.1 i.e., 1.02338, which shows that company is in bankruptcy zone. In the second FY of the study 2016-17, performance of RCap. was slightly improved as score was just above the benchmark i.e., 1.1 but still it is screening warning bell for the company.

At last performance of 2017-18 had been analyzed, as expected by the analysis of past experience performance of whole company was sharply down, and Z-Score touched the figures negatively as never before to be into the bankruptcy zone ridiculously. Z-Score for the FY 2107-18 was 0.49032. It totally disrupted the overall health and this was one of the indicators for company's collapsing into the liquidity crisis.

This is how this model can help stakeholders to study the financial fitness of particular company. Present situation can validate the future aspects by analyzing financial statements in the course of using this model.

**RISK MEASUREMENT THROUGH THE ALTMAN'S Z-SCORE MODEL**

Summary Table							
Statistical Tool	Benchmark	Financial Year 2015-2016		Financial Year 2016-2017		Financial Year 2017-2018	
		Score	Interpretation	Score	Interpretation	Score	Interpretation
Altman's Z-Score Model	Z<1.1	1.02338	Bankruptcy Zone	1.12803	Warning Sign	0.49032	Bankruptcy Zone



## SUGGESTIONS

- As we all have seen the liquidity crunch episode in Non-Banking Financial Institutes (NBFIs), this was predictable by using risk alarming models hence they must step up on the credit risks management to avoid the same in nearer prospect.
- Some models of risk management are not sensitive to financial distress situations hence researchers should use bankruptcy prediction models very cautiously to keep away from the blunders.
- Regularity authority should make compliance on filling a new statement viz: risk management statements along with financial statements to describe the financial risk of a company.
- Chief Risk Officer should be appointed by every NBFIs to assess the surrounded risk of a company to alarm them from financial uncertainties.
- NBFCs must determine a reasonable time phase in which the account is likely to become viable, based on the cash flow & the Techno-Economic Viability (TEV) study.
- RegTech & SupTech should be implemented effectively at have to basis with modern techniques.
- This model is 70% - 75% accurate & effective for three years prior to the occurrence of the episode of bankruptcy hence it should be widely used.

By using these types of models' management can get to know the current & future image of a company and they can keep them self away from the future bankruptcy episodes which have not been done so far.

## CONCLUSION

Indian NBFIs had been given a positive response to financial sector reforms like nobody. It is too important because they are fund providers to so many units. Hence it is important to know the financial health & current picture of these organizations. Because of worst performance of these

NBFIs the fund takers can be affected & can provide negative impact to the economy. This scene can be kept at arm's length by managing risk at primary basis. In the credit industry risk can be managed through predictive models like, Altman's Z-Score which has discriminant analysis supremacy & which employs a combination of various ratios. Situations can be improvised by using this type of predictive models which can avoid the financial tussles & can provide prosperity in financial sector.

The upcoming eons will be very vital for NBFIs and only those who will be able to meet the challenges, to be very true, the fittest NBFIs will survive and actually do better if we believe the story that India will continue to grow.

## REFERENCES

1. Pathak, B. V. (2018). *The Indian Financial System* (Fifth). Pearson.
2. Akhan, J. A. (2010). Non-Banking Financial Companies (NBFCs) in India: Functioning & Reforms.
3. Jain, A. S. (2019). A STUDY OF PREDICTIVE ANALYSIS OF POTENTIAL FINANCIAL DISTRESS IN NBFCs USING PREDICTIVE MODEL: A CASE STUDY OF IL & FS, *International Journal of Research in Social Sciences (IJRSS)*, 9, Issue 4(2).
4. Meena, M. L. (2019). ECONOMY GROWTH TREND OF NON-BANKING FINANCIAL INSTITUTIONS (NBFI) IN INDIA. *Inspira-Journal of Commerce, Economics & Computer Science (JCECS)*, 05(03).
5. Sajjan, R. (2016). PREDICTING BANKRUPTCY OF SELECTED FIRMS BY APPLYING ALTMAN'S Z-SCORE MODEL. *International Journal of Research – Granthaalayah*, 4(4).
6. B, A. (2014). Non-banking Finance Companies (NBFCs): A Review. *Indian Journal for Research- PARIPEX*, 03(10).

## WEBLIOGRAPHY

- <https://www.reliancecapital.co.in> › RCL-Unabridged-Annual-Report-2018
- <https://www.reliancecapital.co.in> › pdf › RCAP\_Unabridged\_AR\_2017
- <https://www.investopedia.com/terms/a/altman.asp>
- <https://www.moneycontrol.com/financials/reliancecapital/balance-sheet/RC>
- [http://www.ijbmi.org/papers/Vol\(8\)1/Version-3/N0801037782.pdf](http://www.ijbmi.org/papers/Vol(8)1/Version-3/N0801037782.pdf)
- <https://pdfs.semanticscholar.org/a758/08a07101f9e55a486192020ef951a14807d3.pdf>
- <https://www.thehindubusinessline.com/companies/announcements/results/reliance-capital-ltd-audited-financial-results-for-the-quarter-and-financial-year-ended-march-31-2019/article28221599.ece>

