

A Study on Forecasting of Default Probability of Auto Component Manufacturers in Chennai

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Abstract:

The auto Component manufacturers like other industries is nowadays facing a lot of challenges due to various macro environmental factors and other operating issues. Over the past few years, the auto component manufacturer's profitability is declined due to increasing raw material cost and financial expenses. On account of above factors, the auto component manufacturers facing severe liquidity problems and leads to bankruptcy. Forecasting bankruptcy is important for investor and other stakeholders to take appropriate decision on making investments. Identification of probability of default may avoid various problems in the near future & may shelter the company from Bankruptcy situation. If the financial distress was predicted ahead of time, stakeholders of the companies have the ability to secure their company and could take necessary action to mitigate the risk and perhaps avoid bankruptcy itself. The financial health of the firm shall be established with detailed ratios analysis and using other Financial analytical tool. The analysis establishes the financial performance of a firm by evaluating its operational and financial status. For this specific study, we are trying to analyse the probability of bankruptcy of automobile dealer companies using Altman's Z-Score Model and their score. This study aims to evaluate the financial distress of the auto component manufacturers in Chennai

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INTRODUCTION

A company's financial health is measured by taking a snapshot of its assets and liabilities at one moment in time, usually at the end of a reporting period. Due to intense competition among the auto component manufacturers, therefore analysing the financial health of a company by checking its sales and profit growth is not sufficient today. It is necessary to benchmark the efficiency of utilization of capital and assets, return to shareholders as well as predicting financial distress or failure.

1. LITERATURE REVIEW

Collins and green (1982) analysed and compared several bankruptcy models and employed the multiple discriminant analysis which offered the

least richness of the results. However, multiple discriminant analysis and linear probability produce uniformly good results. The logit model appears to be more consistent with the theory of financial distress.

Altman (1993) developed a revised Z-score model for privately held firms in the year 1983. Altman did not view his original model nor his revised Zeta model as perfect, citing four issues: (a) subjectiveness in the weightings, (b) an element of ambiguity within the model, (c) the univariate approach, and (d) some misleading ratios (Schaeffer, 2000). He further feels that the fifth ratio (sales/total assets) does not represent a difference between failed and non-failed firms and does not reflect any variations from industry to industry. Apart from

this, the model could not forecast financial difficulties for non-manufacturing firms and non-publicly operated firms accurately.

Mansur A. Mulla (2002) in his study on “Use of ‘Z’ score analysis for evaluation of financial health of textile mills - A case study’ made an insight into the financial health of Shri Venkatesh Co-operative Textile Mills Limited, Arunageri of Dharwad District. It is concluded from the study that the textiles mill under study was just on the verge of financial collapse.

2. OBJECTIVES OF STUDY

The objectives of this study are twofold, viz:

1. Forecasting of default for Auto component manufacturers in Chennai
2. To apply and verify the Altman “Z” Score Model to predict financial health of the selected companies in Auto Components Industry in Chennai.

4. RESEARCH METHODOLOGY

The brief description of the research methodology applied for the present study is given in the table 1.

TABLE 1: RESEARCH METHODOLOGY

Research type	Descriptive and Analytical Research
Research Approach/Design	Quantitative Approach (Numerical Data)
Population (Universe) & Sampling Unit	Auto Components Companies in Chennai
Sample size	24 Auto Components Companies (8 companies in 3 categories based on turnover)
Sampling Area	Chennai Cluster
Sampling Method	Non-Probability Sampling – Purposive Sampling
Data type	Secondary Data
Sources of Secondary Data	Annual Reports, Bulletins, Websites, Newspapers, Journals, Magazines, books, research articles, etc.
Period of data collection	10 Years - April 2007 to March 2017
Software used for Data Analysis	MS Excel 2013 & SPSS (Version 20)

5. CRITERIA FOR SELECTION OF COMPANIES

According to ACMA (Automotive Components Manufacturers Association of India), 782 Auto Components Companies in India are their members. Out of 782, 163 Auto Components

Companies are located in Southern Region of India. Out of 163, 24 Auto Components Companies, located in Chennai cluster, are selected for this research based on the list of member companies registered in ACMA. The companies selected are further classified into three categories i.e. Small, Medium and Large, based on their annual turnover. The classification of companies is given in the following table 2.

TABLE 2: CRITERIA FOR SELECTION OF AUTO COMPONENTS COMPANIES

*ANNUAL TURNOVER (INR) based on 2016-17	*CATEGORY OF COMPANIES	SAMPLE SIZE
Up to 150 Crores	Small Companies (A)	8 Companies
151 to 500 Crores	Medium Companies (B)	8 Companies
Above 500 Crores	Large Companies (C)	8 Companies
TOTAL		24 Companies

Source: *Categorization of Companies based on ACMA Report, May 2017

5. FINANCIAL AND STATISTICAL TOOLS APPLIED FOR DATA ANALYSIS

In this study, a detailed analysis of selected Auto Components Companies in three categories in Chennai is carried out by using combination of financial and statistical analytical tools. In order to better understand the financial performance of the Auto Components Companies, the comparative analysis of three categories (large, medium and small based on turnover) of companies in Auto Components Industry in Chennai is made.

In order to forecast the bankruptcy of these companies, Multiple Discriminant Analysis (DMA) by employing Altman Z Scores Model is used to analyze the financial health of the selected companies in Auto Components Industry in Chennai.

Multiple Discriminate Analysis: ‘Z’ Score Value:

$$Z = (1.2 * X_1) + (1.4 * X_2) + (3.3 * X_3) + (0.6 * X_4) + (1 * X_5)$$

The study has made to evaluate the general financial health of the selected companies in three Categories (A, B and C) based on the turnover in Auto-components Industry through “Z” score analysis with the five weighted financial ratios (X1 to X5) which are given below:

$$X_1 = \text{Working Capital} / \text{Total Assets}$$

- X2 = Retained Earnings / Total Assets
- X3 = EBIT / Total Assets
- X4 = Net Worth / Total Liabilities
- X5 = Sales / Total Assets

Z Score Values – A Category Companies.

TABLE 3: Z SCORE VALUES – A CATEGORY COMPANIES

YEAR	X1	X2	X3	X4	X5	TOTAL
2007-08	0.23	0.33	0.19	0.20	1.16	2.11
2008-09	0.24	0.39	0.27	0.23	1.19	2.32
2009-10	0.28	0.42	0.33	0.24	1.23	2.50
2010-11	0.13	0.44	0.37	0.24	1.38	2.56
2011-12	0.10	0.42	0.40	0.23	1.45	2.60
2012-13	0.09	0.44	0.28	0.19	1.36	2.36
2013-14	0.11	0.45	0.30	0.20	1.34	2.41
2014-15	0.17	0.47	0.30	0.21	1.35	2.49
2015-16	0.21	0.50	0.36	0.22	1.33	2.61
2016-17	0.23	0.52	0.35	0.23	1.23	2.57
AVERAGE Z SCORE						2.453

Source: Computed from Secondary Data (Annual Reports)

Interpretation

The Z scores relating to general financial health of the selected “A Category Companies” in Auto-components Industry obtained during the ten years period varied from 2.11 to 2.61. The scores of the companies during the 10 years period are above the value of 1.8 which indicates the healthy financial position. The companies’ health position is too good in the year 2015-16 since the Z score is maximum (2.61). During the past three years (2013-14 to 2016-17), the companies’ health position is more improving. The average Z score is 2.453 (> 1.8) which is a good indicator of financial soundness of the Companies in A Category. Overall, as per the Altman’s guidelines, the companies’ financial position is **HEALTHY** during the study period.

Z Score Values – B Category Companies

TABLE 4 : Z SCORE VALUES – B CATEGORY COMPANIES

YEAR	X1	X2	X3	X4	X5	TOTAL
2007-08	0.15	0.52	0.30	0.28	0.80	2.06
2008-09	0.15	0.50	0.26	0.26	0.78	1.95
2009-10	0.16	0.54	0.24	0.28	0.78	2.01
2010-11	0.12	0.58	0.34	0.30	0.92	2.25
2011-12	0.14	0.59	0.35	0.30	0.96	2.35
2012-13	0.17	0.61	0.22	0.31	0.88	2.20
2013-14	0.18	0.61	0.22	0.31	0.84	2.16
2014-15	0.20	0.63	0.23	0.31	0.94	2.32
2015-16	0.20	0.65	0.22	0.32	0.93	2.34
2016-17	0.25	0.72	0.27	0.35	0.92	2.51
AVERAGE Z SCORE						2.215

Source: Computed from Secondary Data (Annual Reports)

Interpretation

The Z scores relating to general financial health of the selected “B Category Companies” in Auto-components Industry obtained during the ten years period varied from 1.95 to 2.51. The scores of the companies during the 10 years period are above the value of 1.8 which indicates the healthy financial position. The companies’ health position is too good in the year 2016-17 since the Z score is maximum (2.61). During the past three years (2013-14 to 2016-17), the companies’ health position is more improving. The average Z score is 2.215 (> 1.8) which is a good indicator of financial soundness of the Companies in B Category. Overall, as per the Altman’s guidelines, the companies’ financial position is **HEALTHY** during the study period.

Z Score Values – C Category Companies

TABLE 5: Z SCORE VALUES – C CATEGORY COMPANIES

YEAR	X1	X2	X3	X4	X5	TOTAL
2007-08	0.24	0.46	0.32	0.22	1.34	2.58
2008-09	0.23	0.49	0.35	0.24	1.27	2.57
2009-10	0.26	0.56	0.48	0.27	1.51	3.08
2010-11	0.23	0.64	0.53	0.30	1.65	3.35
2011-12	0.22	0.66	0.55	0.30	1.66	3.40
2012-13	0.27	0.73	0.46	0.33	1.48	3.26
2013-14	0.32	0.75	0.44	0.34	1.38	3.23
2014-15	0.32	0.80	0.43	0.36	1.30	3.21
2015-16	0.34	0.84	0.54	0.38	1.44	3.54
2016-17	0.38	0.91	0.53	0.41	1.37	3.60
AVERAGE Z SCORE						3.184

Source: Computed from Secondary Data (Annual Reports)

Interpretation

The Z scores relating to general financial health of the selected “C Category Companies” in Auto-components Industry obtained during the ten years period varied from 2.57 to 3.60. The scores of the companies during the 10 years period are above the value of 1.8 which indicates the healthy financial position. The companies’ health position is too good in the year 2016-17 since the Z score is maximum (3.60). During the past three years (2013-14 to 2016-17), the companies’ health position is more improving. During the study period, the companies’ financial health position is too good since the Z score exceeds 3 in 8 out of 10 years. The average Z score is 3.184 (> 3) which is indicator of best financial soundness of the Companies in C Category. Overall, as per the Altman’s guidelines, the companies’ financial position is **TOO HEALTHY** during the study period.

6. CONCLUSION

The study was conducted to analyse, forecast the default probability of selected companies in auto components industry in Chennai. The companies in C Category have highest average Z score (3.184) followed by A Category Companies and the companies in B Category have lowest average Z

Score (2.215). Overall, the study revealed that all the selected companies in these three categories (A, B and C) are financially sound during the study period.

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