



# PREDICTION OF FINANCIAL DISTRESS USING ALTMAN Z SCORE - A STUDY OF SELECTED FOOTWEAR COMPANIES IN INDIA

**Dr.P.Chellasamy<sup>1</sup>, S. Kannamudaiyar<sup>2</sup>**

<sup>1</sup> Professor, School of Commerce, Bharathiar University, Coimbatore

<sup>2</sup> Research Scholar, School of Commerce, Bharathiar University, Coimbatore

## **ABSTRACT**

*The Altman Z score is used to predict distress of companies two years prior to the happening of the event. The main objective of this paper is to check the efficiency of this model in predicting financial distress of Indian footwear companies five years prior to the occurring of the event. Five companies have been selected to check the efficiency and accuracy of this model. The study concludes that the overall financial health of footwear industry is in healthy zone. Because from the five selected companies, four companies (Bata India, Relaxo, Mirza International and Khadim's) are in healthy zone. Only the Z score value of Liberty Footwear are found below 1.80, which indicating Distress zone.*

**KEYWORDS:** accuracy, altman z score efficiency, financial distress

## **INTRODUCTION**

Financial distress or bankruptcy of corporate means an inability of the companies to pay its liabilities. Whenever a company goes for bankruptcy it causes banks, suppliers, shareholder a huge loss. That's why many investors are interested to predict the exact financial position and also the chances of bankruptcy in near future. Moreover the corporate failure is not a sudden incident it is a long term phenomena. The earlier the company will be aware about their position the better decision they can take to turn around the company. So for the companies also it is important to check their financial health regularly to avoid sudden corporate failure.

The footwear industry is one of the rapidly expanding industries globally. Increasing demand for new and innovative footwear and the emergence of various global as well as regional brands across segments in the category is primarily driving the market. Innovative and trendy footwear is being consistently manufactured by leading market players due to advancement in the footwear manufacturing process, technological innovations, and development of new material. India is globally the second largest footwear producer after China. India's footwear production accounts for approximately 9% of the global annual production of 22 billion pair as compared to China which produces over 60%.

## REVIEW OF LITERATURE

**Hussain, Ali, Ullah, & Ali, (2014)<sup>1</sup>** The article speaks about the role played by the textile industries in Pakistan and the problems faced by that industry in the said country. The article contains an empirical analysis of 21 textile companies listed in Karachi stock exchange from the period 2000 to 2010 by using Altman Z score model. The article concludes that the Altman Z score model provides accurate results when it comes to the textile industry of Pakistan and recommends the use of the same as a tool for financial decision making.

**Mohammed, (2016)<sup>2</sup>** The article speaks about various techniques used for measuring financial health of a business firm but out of them Altman Z score is proved as a reliable tool. This article contains about a study conducted in an company raysut cement company and for this they had taken the financial data of the past 8 years and the study revealed the company and subsidiary companies are financially sound as their z score is higher than benchmark (2.99). This article concludes that Altman Z score can be used to stock holders for investing options and for managers to make financial decisions.

## STATEMENT OF THE PROBLEM

Change is inevitable. It is very important to understand that the only thing that is constant in the world of business environment is change. An organization that is going on well might ignore to introspect themselves on a timely manner. It is very important for the investors, creditors, underwriters, credit rating agencies, banks, auditors and the organization itself to analyze the financial position for their interest. Therefore, a firm should be financially sound in order to survive between competition. So the financial health of the Indian Footwear industry is studied by applying Altman Z score model.

## OBJECTIVES OF THE STUDY

1. To analyze the liquidity position of select footwear companies in India.
2. To examine the growth of the select footwear companies in India.
3. To ascertain financial distress of select footwear in India

## SCOPE OF THE STUDY

The study is very important for the footwear sector which examines the Financial Distress of select footwear companies Listed in the National Stock Exchange. The study covers areas like Liquidity, Profitability and Solvency position, financial soundness, relationship between the share movements and company financial performance and impact of liquidity position in the footwear companies. The study also analyses the financial distress of select footwear companies for a five years.

## RESEARCH DESIGN

### METHODOLOGY

The study is mainly based on secondary data. The study focus on the financial distress of select top five Indian footwear companies listed under NSE on basis of market capitalization. The study has been undertaken for the period of five years from 2015-2016 to 2019- 2020.

### Sources of Data

Data has been collected from various published research articles, annual report of selected companies, unpublished thesis, journals and websites.

### Companies Classified on basis of market capitalization

- Relaxo Footwear
- Bata India
- Mirza International
- Khadim's
- Liberty Footwear.

## Tools and Techniques

1. CAGR
2. Liquidity Ratio
3. Altman Z score

## RESULTS AND DISCUSSIONS

### LIQUIDITY RATIO

#### CURRENT RATIO

The current ratio is a liquidity ratio that measures whether a firm has enough resources to meet its short-term obligations. It compares a firm's current assets to its current liabilities, and is expressed as follows:

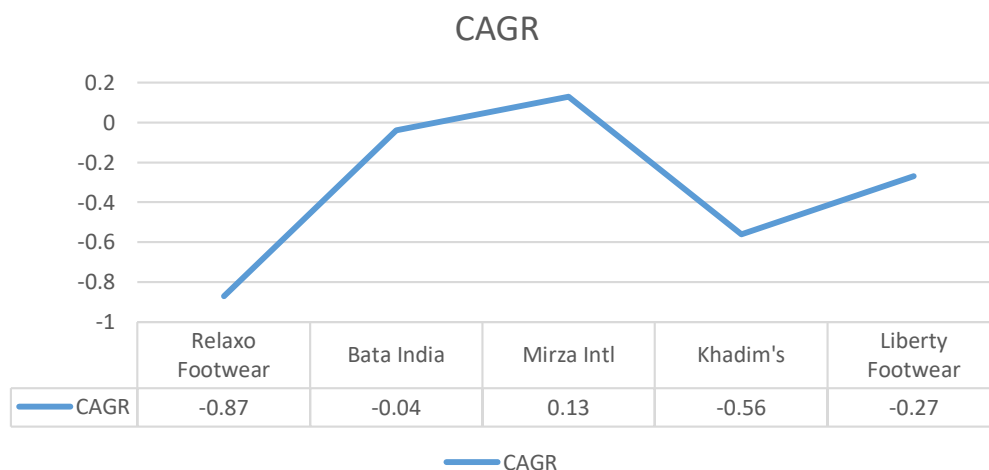
**Current Ratio= Current Asset/Current Liabilities**

Company	2016	2017	2018	2019	2020	MEAN	S.D	C.V
Relaxo Footwear	1.16	1.24	1.34	1.57	1.91	1.33	0.30	0.23
Bata India	2.48	2.74	2.76	2.92	2.50	2.72	0.19	0.07
Mirza International	1.58	1.87	1.62	1.56	1.53	1.66	0.14	0.08
Khadim's	0.97	1.10	1.49	1.45	1.19	1.25	0.22	0.18
Liberty Footwear	1.23	1.26	1.35	1.45	1.33	1.32	0.09	0.06

Source: [www.moneycontrol.com](http://www.moneycontrol.com)

The above table shows the current ratio of the select companies for the year 2016 to 2020. The current ratio of the companies shows their ability to pay short term financial liabilities. Highest Mean Value and Lowest Mean Value and Highest Hence, Bata India Company is having better liquidity position as compared to others. In case of Relaxo footwear though there is higher in year 2020 than 2019, still from overall the liquidity is in increasing trend.

#### Compound Annual Growth Rate



The Compound Annual growth rate goes on negative growth for all the companies except Mirza International (0.13) during the study period for the current ratio.

#### QUICK RATIO

The quick ratio is an indicator of a company's short-term liquidity position and measures a company's ability to meet its short-term obligations with its most liquid assets. It measures the ability of a company to use its near cash or quick assets to extinguish or retire its current liabilities immediately.

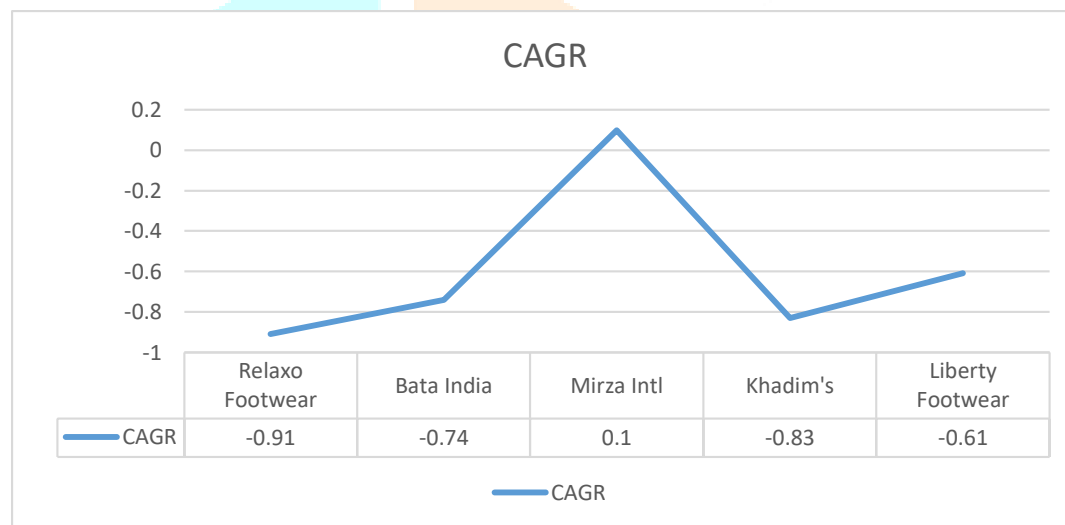
**Quick Ratio= Quick Asset/Current Liabilities**

Quick Asset = Current Asset- Inventories

Company	2016	2017	2018	2019	2020	MEAN	S.D	C.V
Relaxo Footwear	0.45	0.43	0.62	0.74	0.83	0.56	0.18	0.31
Bata India	0.42	0.58	0.90	0.85	0.66	1.33	0.22	0.16
Mirza International	0.57	0.64	0.60	0.58	0.56	0.60	0.03	0.05
Khadim's	0.42	0.58	0.90	0.85	0.66	0.69	0.19	0.28
Liberty Footwear	0.59	0.60	0.60	0.65	0.74	0.61	0.06	0.11

Source: www.moneycontrol.com

The above table shows the quick ratio of the select companies for the year 2016 to 2020. Quick ratio indicates the ability of the companies to pay very short term liabilities immediately. From the above observation the quick ratio of Bata India Company is better than others. Relaxo footwear shows very low quick ratio as compared to other companies.

**Compound Annual Growth Rate**

The Compound Annual growth rate goes on negative growth for all the companies except Mirza International (0.1) during the study period for the liquid ratio.

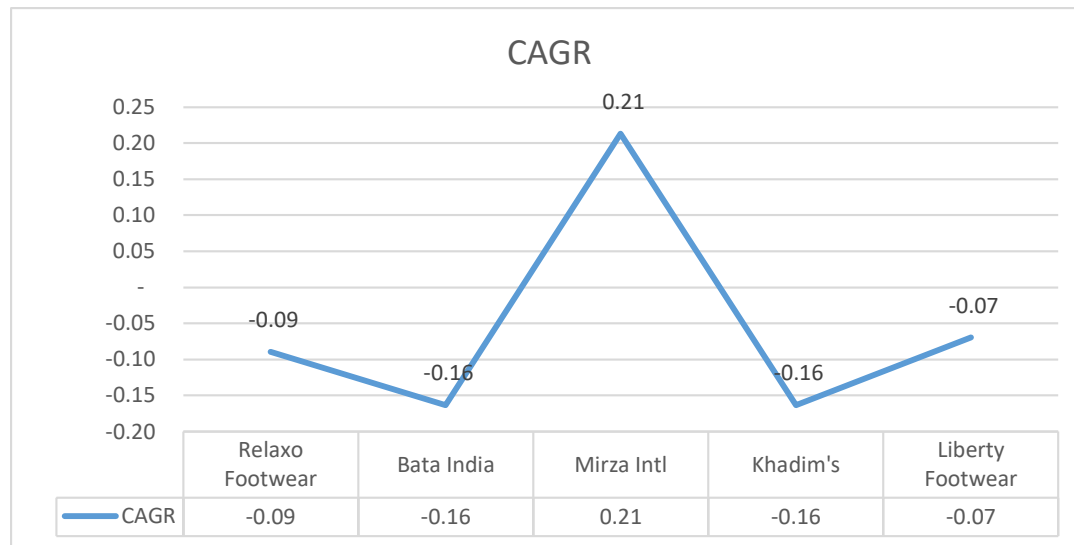
**CURRENT ASSET TO TOTAL ASSET (CATA)**

Company	2016	2017	2018	2019	2020	MEAN	S.D	C.V
Relaxo Footwear	0.42	0.42	0.46	0.45	0.43	0.44	0.02	0.04
Bata India	0.52	0.59	0.65	0.68	0.54	0.60	0.07	0.12
Mirza International	0.54	0.53	0.61	0.62	0.51	0.56	0.05	0.08
Khadim's	0.52	0.59	0.65	0.68	0.54	0.60	0.07	0.12
Liberty Footwear	0.69	0.73	0.74	0.76	0.70	0.72	0.03	0.04

Source: www.moneycontrol.com

The above table shows the Current asset to Total asset ratio of the select companies for the year 2016 to 2020. Current asset to Total asset ratio indicates the wealthiness of the companies. From the above observation the Current asset to Total asset ratio of Liberty Footwear Company is better than others. Relaxo footwear shows very low Current asset to Total asset ratio as compared to other companies.

## Compound Annual Growth Rate



The Compound Annual growth rate goes on negative growth for all the companies except Mirza International (0.21) during the study period for the Current asset to Total asset ratio.

### Altman Z Score

“Z” Score analysis has been established by Edward I. Altman to evaluate the general trend in the financial health of an enterprise over a period. Many of the individual accounting ratios used frequently to predict the financial distress of an enterprise may only provide warnings when its too late to take a corrective action. Further single ratio does not convey much of the sense. There is no internationally accepted standard for financial ratios against which the results can be compared. Therefore, Edward I. Altman combined a number of accounting ratios (liquidity, leverage, activity and profitability) to form an index of the profitability, which was effective indicator of corporate performance in predicting bankruptcy. The data collected for the study were first analyzed with the help of five accounting ratios. These different ratios are combined into a single measure called Z Score with the help of Average.

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Where,

$X_1$ = Ratio of working capital to total assets = Working capital / Total assets \* 100

$X_2$ = Ratio of Net operating profit to Net sales = Net operating profit / Net sales \* 100

$X_3$ = Ratio of Earnings before interest and taxes to total assets = Earnings before interest  
And taxes / total assets \* 100

$X_4$ = Ratio of Market value of equity to Book value of debt = Market value of equity /  
Book value of debt \* 100

$X_5$ = Ratio of Sales to total assets = Sales / total assets \* 100

### Altman Guidelines

- If the Z score is below 1.8, the unit failure is certain and it is considered to be in distress zone.
- If an unit has a “Z” Score between 1.8 and 3, then its financial viability is considered to be healthy. The failure in this situation is uncertain to predict, it is also known as Grey zone.
- If “Z” Score is of 3 and above, then the unit is in too healthy zone and its financial health is very much viable and it is known as Green zone .

Company	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	Mean	S.D	C.V	Z
Relaxo Footwear	0.12	0.02	0.17	1.63	1.51	0.69	0.81	116.48	<b>3.24</b>
Bata India	0.42	0.54	0.15	1.99	1.21	0.86	0.74	85.96	<b>4.15</b>
Mirza Intl	0.22	0.43	0.11	1.03	1.09	0.57	0.46	79.97	<b>2.92</b>
Khadim's	0.11	0.16	0.06	0.89	1.44	0.53	0.61	114.59	<b>2.53</b>
Liberty Footwear	0.18	0.05	0.03	0.62	1.02	0.38	0.43	113.47	<b>1.77</b>

The above table reveals that the financial distress of selected footwear companies in India. From the selected companies, Relaxo and Bata India companies Z score is greater than 3. Therefore, these company is in too healthy zone and its financial health is very much viable". Z score value of Mirza International and Khadim's are between 1.80 and 3. Therefore, they are financial viability and considered to be healthy. The failure in this situation is uncertain to predict, it is also known as Grey zone. The Z score value of Liberty Footwear are found below 1.80, which indicating Distress zone.

#### Financial health of selected footwear companies

Company	Z	Financial Health
Relaxo Footwear	<b>3.24</b>	GREEN ZONE
Bata India	<b>4.15</b>	GREEN ZONE
Mirza Intl	<b>2.92</b>	GREY ZONE
Khadim's	<b>2.53</b>	GREY ZONE
Liberty Footwear	<b>1.77</b>	DISTRESS ZONE

#### CONCLUSION

The study concludes that Z score is one of popular and effective model, all investors should analyze the Z-score of company before investment decision to avoid financial loss because of financial failure. The study applies Z-score in select Footwear companies to analyze the chances of Distress for the period five years. All companies have very good financial position in last five year, except Liberty footwear. Along with traditional ratios, if Z-score will be calculated it will give a better perspective for sound decision making. Also studies may be conducted to develop a model in Indian context.

**REFERENCES**

- www.moneycontrol.com
- <http://in.finance.yahoo.com>
- Gnayana Ranjan Pal., (2015), Prediction of financial distress using Altman Zscore:a study of select FMCG Companies in Indian Journal of Applied Research
- Bal, G.R., and Raja, S., (2014), Evidences of financial shenanigans from past and techniques to predict earnings management and solvency position: a case study of Iocl, The Orissa journal of commerce, Vol-XXXIV,No-2.
- Beaver, W. (1966), Financial ratios as predictors of failures. Empirical research in accounting selected studies 1966, Journal of Accounting Research, Vol. 5, pp. 71-111, Supplement.
- Bhatt N suyas (2012),Capital structure and turnaround strategies using altman's Z-score models, Asian Journal of Research in Business Economics and Management.
- Collins, R.A.,(1980), An Empirical Comparison of Bankruptcy Prediction Models, Financial Management, Vol. 9, No. 2, pp. 52-57.

