

FINANCIAL DISTRESS PREDICTION USING ALTMAN Z-SCORE MODEL IN CASE OF SELECTED COMPANIES IN INDIAN TEXTILE SECTOR

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ABSTRACT

Financial distress is a situation where companies are unable to generate enough revenue to meet its financial obligations. Timely prediction of distressed situation can help in preventing bankruptcy. Various statistical models are developed for same. One such major and most important model is Altman Z-score model for predicting distressed situation in companies. Here in this study, Altman Z-score model is used to predict financial distress in selected companies of textile sector. The data is collected for period of five years : 2019-2023. The study shows that most of the textile companies are in distressed zone. One of the major reason for such downfall is the Economy/Market crash in FY 2019-2020 due to Covid-19 pandemic because of which companies has suffers a lot and due to global economic recession, situation for textile sector has not improved.

Keywords : Finanical Distress, Altman Z-score, Textile sector , Indian companies.

I. INTRODUCTION

Financial distress is one of the most important concerns in recent times. It is defined as a low cash flow state in which a company incurs losses without being insolvent. The company might not have enough cash to repay its debt obligation and interest. The major indications are non-payment of interests, decline in sales leading to decline in its profitability, decline in net-worth, improper diversion of funds, continuous cash losses and non-provision of depreciation, excess holding of inventory indicating that finished goods not being taken in the market. If not known at initial stage, it may lead to business failure and hence bankruptcy. Hence, knowing prior is important to prevent company from bankruptcy. It is considered a major hurdle for economic growth of any country.

The study predicts financial distress situation in Indian textile sector, using Altman Z-score model. India's textiles sector is one of the oldest industries in the Indian economy. The industry has huge capacity to produce wide variety of products suitable for different market segments, both within India and across the world. The Indian textile sector is expected to grow at 10% CAGR from 2019-20 to reach US\$ 190 billion by 2025-26. India has a 4% share of the global trade in textiles and apparel.

India is the world's largest producer of cotton. Estimated production stood at 362.18 lakh bales during cotton season 2021-22. Domestic consumption for the 2021-22 cotton season is estimated to be at 338 lakh bales. Cotton production in India is projected to reach 7.2 million tonnes (~43 million bales of 170 kg each) by 2030, driven by increasing demand from consumers. In FY23, exports of readymade garments (RMG) cotton including accessories stood at US\$ 7.68 billion till January 2023. It is expected to surpass US\$ 30 billion by 2027, with an estimated 4.6-4.9% share globally.

In April 2022, Indo Count Industries bagged the home textile business of GHCL for US\$ 74.14 million. In March 2022, Reliance Retail Ventures Limited (RRVL) acquired a controlling share of Purple Panda Fashions for US\$ 115.8 million. Sutlej Textiles plans to set up a green field project for 89,184 spindles comprising of cotton mélange yarn and PC grey yarn along with dye house in Jammu & Kashmir with an estimated cost of US\$ 111.41 million (Rs. 914

crore). Vardhman has established Vardhman ReNova, a cotton recycling facility with a six TPD production capacity. By establishing two new facilities in Madhya Pradesh, the company has also increased its capacity to produce yarn. With top-notch technology, the expansion includes over 100,000 spindles in total. This will result in a 75 TPD increase in yarn production capacity. The textile ministry has selected 61 companies, including Arvind Limited to enjoy benefits under its US\$ 1.3 billion (Rs. 10,683 crore) production-linked incentive (PLI) scheme for the labour-intensive textiles and garment sector. The companies have pledged to invest US\$ 2.32 billion (Rs 19,077) crore over five years under the scheme, which will lead to an incremental turnover of US\$ 22.55 billion (Rs 1.85 trillion) and direct employment generation for 240,000 people. Arvind Limited, the largest textile to technology conglomerate in India, and PurFi Global LLC, a sustainable technology firm that specialises in rejuvenating textile waste into virgin grade products, have formed a joint venture to reduce the quantity of textile waste dumped in landfills.

Altman Z-Score Model

The Z-Score bankruptcy model was developed by Edward Altman in 1968. Altman tested the predictive power of 22 financial ratios using multiple discriminant analysis and finalized five specific ratios to predict the financial distress of the companies. The ratios like Profitability ratio, Liquidity ratio, Productivity ratio, leverage ratio, and asset turnover ratio were found to have the greatest predictive power to forecast bankruptcy. The z score is computed using the following equation:

$$Z = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 0.999x_5$$

where

x_1 is Working Capital/Total Assets,

x_2 – Retained Earnings/Total Assets,

x_3 – Earnings before Interest and Taxes/Total Assets;

x_4 – Market Capitalization/Total Liabilities;

x_5 – Sales/Total Assets.

II. LITERATURE REVIEW

Various research had been done on bankruptcy. Edward Altman did research on financial distress in 1968 came up with Z-score formula. He again revised it and came with Z-score for non manufacturing firm as well. Multiple discriminant analysis (MDA) technique was used to identify bankruptcy prediction ratios. Univariate discriminant analysis was used by Beaver to study the ratios of bankrupt and nonbankrupt firms. Some of the researchers stated the fact that volatility does not diverge to infinity, but it is influenced differently considering high positive or high negative stock market returns. Moreover, Ullal et al. suggested that Indian customers are more emotional. Significant work in MDA is also done by Springate and Fulmer et al. who developed their bankruptcy models. On the other hand, Ohlson argued that assumptions about multivariate normality and independence of predictor variables of MDA are restrictive. Thus, he proposed a new model based on logit Regression analysis taking into consideration nine accounting ratios. Zmijewski used a probit analysis to develop a bankruptcy prediction model. The logit and probit model are different considering analysis is that the later

assume normal distribution of independent variables in the model. His model was further tested by authors like Wu et al. For instance, Meher et al. suggested that due to the global financial crisis of 2008 the whole banking sector of India was under deep stress because of Non Performing Assets (NPA). Mehdiabadi et al. argued that global economy is constantly changing so it is very important to consider innovation and technological development as main factors in order to achieve a sustainable growth. In the Asian context in general and Indian context, many researchers have applied the Altman Z score and other models to predict bankruptcy of varied sectors. The credit risk evaluation of BSE 200 companies was performed and it was found that 63.6 percent of the original grouped companies are correctly classified using the Z score model. Patanwala examined the financial distress among the major players in the FMCG sector using Altman Z-Score. Sanesh assessed the Altman Z-score of NIFTY 50 companies excluding banks and financial companies. It was found that most companies are in a safe zone and 9 companies are in the grey zone and 5 companies are in danger zone. Malik et al Pakistan using a z score. The study concluded that the textile industry of Pakistan failed to survive in the international market during the crisis period (2007–2009) and in the recovery period (2010–2012), financial health was found to be comparatively better. Archana predicted the z-score of selected retail firms in India. Rim and Roy applied the Altman Z score to evaluate Lebanon companies and found that it is a sound tool to predict financial distress. Batchelor tested the efficacy of Altman Z-score and concluded that manipulating variables of the Altman Z-score yields better results. Altman tested the prediction accuracy of the original Altman Z score in the international context and concluded that the model works well in most of the countries. In the backdrop of such findings in the literature, the current study has emphasized on Altman Z score over the other bankruptcy models. Further, very few studies are conducted on the textile sector in general and the Indian textile sector in specific. Thus, the current study attempts to predict bankruptcy in the Indian textile sector.

III. RESEARCH METHODOLOGY

Altman's Z-Score model is a numerical measurement that is used to predict the chances of a business going bankrupt in the next two years. The model was developed by American finance professor Edward Altman in 1968 as a measure of the financial stability of companies. According to studies, the model showed an accuracy of 72% in predicting bankruptcy two years before it occurred, and it returned a false positive of 6%. The false-positive level was lower compared to the 15% to 20% false-positive returned when the model was used to predict bankruptcy one year before it occurred. A Z-score that is lower than 1.8 means that the company is in financial distress and with a high probability of going bankrupt. On the other hand, a score of 3 and above means that the company is in a safe zone and is unlikely to file for bankruptcy. A score of between 1.8 and 3 means that the company is in a grey area and with a moderate chance of filing for bankruptcy.

Objective of the study

To predict Z-score of selected Indian listed companies in textile sector using Altman Z-score model.

Research design

Research design basically gives an idea about how the research is going to be analyzed and on what basis and variables.

Here we have used descriptive research method because descriptive research method generally used to describe the phenomena as it is. Descriptive research is a quantitative research method that attempts to collect information for statistical analysis of the population sample.

Data collection and description

Here, secondary data is collected. A sample of 10 textile sector companies, listed in India are considered for Z-score calculation. From that detailed Study is done for 10 companies. The date required for calculation Z-score using Altman Z-score model is taken from balance sheet and profit and loss statements of the company from moencontrol website. The period of study is from 2019 to 2023. Z-score values of companies are been calculated yearly for each year from 2019-2023.

Data analysis and interpretation**Altman's Z-score Model Analysis**

The Z-score model was introduced as a way of predicting the probability that a company would collapse in the next two years. The model proved to be an accurate method for predicting bankruptcy on several occasions. The Z-score model is based on five key financial ratios..

The Altman's Z-score formula is written as follows:

$$Z = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 0.999x_5$$

Where:

X1. Working Capital (Current Assets – Current Liabilities) / Total Assets

Working capital is the difference between the current assets of a company and its current liabilities. The value of a company's working capital determines its short-term financial health.

X2. Retained Earnings / Total Assets

Ratio shows the amount of retained earnings or losses in a company.

X3. Earnings before Interest & Taxes (EBIT) / Total Assets

Ratio demonstrates a company's ability to generate enough revenues to stay profitable and fund on-going operations and make debt payments.

X4. Market Value of Equity / Total liabilities

Ratio shows the degree to which a company's market value would decline when it declares bankruptcy before the value of liabilities exceeds the value of assets in the balance sheet.

X5. Sales / Total Assets

Ratio means that the management will need to use more resources to generate enough sales, which will reduce the company's profitability.

Z-Score Results:

Z-Score of < 1.81 represents a company in distress (Distress zone).

Z-Score between 1.81 and 2.9 represents the “caution” zone (Grey zone).

Z-Score of over 2.9 represents a company with a safe balance sheet (Safe zone).

	2023	2022	2021	2020	2019
VARDHMAN TEXTILES	5.272259	8.790223	4.787866	2.770788	2.515387
TRIDENT	3.462125	4.764065	3.5151	1.982954	1.727573
RAYMOND	2.715982	1.864573	1.51439	1.670587	1.797681
PAGE INDUSTRIES	13.47295	18.57427	17.13386	13.89614	15.49931
GRASIM	2.718697	2.625753	2.431098	2.013346	2.294854
BOMBAY DYEING	0.13272	0.320157	0.236401	0.902934	2.319951
ALOK INDUSTRIES	-2.48857	-1.20119	-3.39809	-0.16181	-2.1218
ARVIND	2.455212	2.416646	1.965085	1.740533	2.855149
WELSPUN	2.869588	3.319796	3.339007	2.277581	2.017624
HIMMATSINGA SEIDGE	0.905365	1.227278	0.975647	0.964737	1.288779

Table:1 Altman Z-score for selected companies

IV. FINDINGS

One of the major reason for such downfall is the economy/market crash due to Covid-19 pandemic because of which most of the companies has suffered loss.

From the analysis conducted we see that, most of the textile companies are in distressed zone in FY-2019. One of the major reason was economic /market crash by covid- 19 pandemic which affected most of the companies.

Page Industries Z-score is above 2.9 for all the last five years. It is one of the most stable company in textile sector.

Vardhman textiles and Trident had recovered from the distressed zone from last two years. Increase in sales and profitability in last two years is major contribution for company to go from distressed to safe zone.

Alok Industries , Bombay dyeing, Himmatsinga siedge are in distressed zone from last five years. High debt and negative net profit also depicts the same.

The other companies are trying to be stable but due to ongoing economic slowdown in US,Europe maket Indian textile sector is facing distressed situation.

V. CONCLUSION

The purpose of this paper is to measure the financial distress of the 10 Indian listed Textile companies with the application of Altman Z-score model. This model is used to predict the chances of company becoming bankrupt within next 2 years. Bankruptcy is a state wherein a company or the person becomes insolvent and won't be able to repay the creditors its debt amount. So its early prediction becomes beneficiary for the investors or the stakeholders of the company. So Z-scores also helps the investors to understand were to invest and were not to invest to earn maximum gain. According to this paper, the model was able to predict financial distress of Alok Industries and setting a warning bell for all the investors and stakeholders of the company. SBI had already initiated insolvency proceeding against Alok Industries in June

2017 and in 2019 Reliance Industries acquired 37.7% stake in Alok Industry. Even Raymond Ltd. has been facing financial crises since they are also reducing jobs, rents and marketing cost to decrease the expenditure by as much as 35% this was declared by the Chairman Gautam Hari Singhania of Raymond Ltd. in his interview. Bombay dyeing sold out its land to Japan Conglomerate to repay its debt. In this research paper we also found that there is a strong correlation between the Z-score and the Share Price of the company which can also help the investors to make their decisions accordingly.

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