

# Analysis of Z Score For BSE Listed Airline Companies In India

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## Abstract

The research paper focuses on calculating the Altman's Z score for bankruptcy prediction for the airline industry in India. The modified Z Score for non manufacturing companies is used for analysis. 6 listed companies namely Jagson Airlines, TAAL enterprises, Global Vectra Helicorp, Spice Jet, Jet Airways, IndiGo Airways and the government owned Air India is considered for analysis. The Z scores for three preceeding years is calculated and analysed. The research paper states that the overall aviation sector is in financial distress . Only IndiGo airways is in the safe zone with a Z score of more than 2.9. All other companies are in financial distress.

**Keywords-** Altman's Z Score, Airline industry, BSE, bankruptcy prediction.

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## INTRODUCTION

Bankruptcy is the failure of a business. It is when a company is unable to honour its financial obligations. It is a situation where a firm is unable to repay debts to its creditors. With more and more companies facing liquidation process, there is a need for a warning signal system for bankruptcy. The world over there have been many models for predicting financial distress. Some of the popular ones are William Beaver model, Wilcox Model etc. One such model is the Altman's Z Score. It is usually stated that any company in financial distress shows negative cash flows. But that is not the case always. There are various other factors which can lead to financial distress. This paper tries to apply

the Altman's Z score model to the BSE listed companies in the airlines sector.

## DEFINITIONS

### Altman's Z Score:

The Altman's Z score was first developed by Edward Altman, financial economist and professor at Stern School of Business in the year 1968. The Altman's Z score makes use of fundamental financial variables to predict bankruptcy. The Z score is derived using multiple discriminant analysis (MDA). The Z score was originally developed for manufacturing firms. It was also modified for service industry firms and also for emerging markets.

Since this paper has a focus on service industry, given below is the Altman's Z score model for the service sector companies.

$$Z = 6.56A + 3.26B + 6.72C + 1.05D$$

Where,

A = Working Capital/Total Assets

B = Retained Earnings/Total Assets

C = Earnings before interest and tax (EBIT)/  
Total Assets

D = Market Capitalization/ Book value of Debt

A Z score less than 1.23 shows financial distress. A Score from 1.23 to 2.90 is in the grey zone and a score above 2.90 shows a safe position.

The Z score explores many facets of financial reporting. The 'A' factor is an indicator of a firm's ability for honouring short term obligations. The 'B' factor depicts previous history of profitability. The 'C' factor shows the efficiency of the company to earn out of total assets. The 'D' factor tells about the confidence of the market in the company.

### Airlines Sector:

The paper looks into the airline sector in India. Airline or aviation industry includes companies which are commercial or non commercial flight/helicopter operators. India is the third largest domestic aviation market in the world. With an upwardly mobile Indian

middle class the aviation sector throws a lot of opportunities for expansion. However more recently only a few airline operators are in profit. In India the major airline operators are the state run Air India, public limited companies such as Jet airways, spice Jet, Indigo Airways etc. The Wadia group operated GoAir is a privately held company. The companies listed on the Bombay Stock Exchange in the aviation sector are listed as follows:

1. Global Vectra Helicorp Ltd.
2. Jagson Airlines Ltd.
3. TAAL Enterprises
4. Jet Airways
5. Spice Jet
6. InterGlobe Aviation (Indigo Airways)
7. Air India (Public Sector, non listed)

Since Go Air is a private limited company the data for it is not available.

### OBJECTIVES:

1. To apply Altman's Z Score for Indian Aviation companies.
2. To find out the vulnerability of the aviation sector to financial distress.

**RESEARCH METHODOLOGY:**

A. Data Collection: There are total 6 aviation companies listed on BSE. All 6 companies are taken up for analysis. Also Air India which is a government company is also taken up considering it has a lot of market share in Indian aviation industry. For financial data, the annual reports of the above companies is referred.

B. Time Frame. The data for 3 years namely 2015-16, 2016-17 and 2017-18 is considered for analysis.

C. Tools: Altman's Z score for non manufacturing firms is used.

**LITERATURE REVIEW:**

1. *Applying Z-score Models in Aviation Finance Education: A Case Study of Some US Carriers*, Chris C. Hsu( 2017), (Hsu, 2017)

The paper provided a comparative study between American Airlines and Southwest Airways. It showed that American Airways is in the unsafe zone whereas Southwest airways was in the Gray Zone.

2. *An Update on Airline Financial Condition and Insolvency Prospects Using the Altman Z" Score Model by Richard D. Gritta, Bahram Adrangi, Brian Adams, and Nina Tatyana* 2008. (Richard D. Gritta, 2008)

A total of 15 carriers were considered for the study. The research concluded that the financial health of US carriers had worsened from the period of 2000 to 2005. All aircraft carriers except Southwest airways were in the grey zone or the distress zone.

**DATA ANALYSIS****Parameters**

A: Working Capital/Total Assets

B: Retained Earnings/Total Assets

C: EBIT/ Total Assets

D: Market Capitalization/ Book value of Debt

**Formula**

$$Z = 6.56A + 3.26B + 6.72C + 1.05D$$

Parameter	Wt.	2018	2017	2016
A	6.56	-2.82	-2.56	-2.28
B	3.26	-7.18	-12.74	-11.14
C	6.72	-0.17	-0.03	-0.06
D	1.05	0*	0*	0*
Z Score		-43.11	-58.61	-51.72

**Table 1: Jagson Airways**

\* No debt in capital structure

Parameter	Wt.	2018	2017	2016
A	6.56	-0.53	-0.54	-0.68
B	3.26	-0.69	-1.46	-2.4
C	6.72	0.16	0.13	0.13
D	1.05	4.53	2.45	1.45
Z Score		<b>0.17</b>	<b>-4.85</b>	<b>-9.89</b>

Table 2: Spice Jet

Parameter	Wt.	2018	2017	2016
A	6.56	N/A*	-0.54	-0.35
B	3.26	N/A*	-7.32	-3.26
C	6.72	N/A*	-0.12	-0.14
D	1.05	N/A*	0.00#	0.00#
Z Score		<b>N/A*</b>	<b>-28.18</b>	<b>-13.89</b>

\* Data not available, # Share not listed on stock exchange

Table 3: Air India

Parameter	Wt.	2018	2017	2016
A	6.56	-0.28	-0.30	-0.37
B	3.26	0.81	0.31	0.06
C	6.72	0.00	0.13	0.11
D	1.05	0.41	0.21	0.23
Z Score		<b>1.27</b>	<b>0.19</b>	<b>-1.25</b>

Table 4: Global Vectra Helicorp

Parameter	Wt.	2018	2017	2016
A	6.56	-0.57	-0.50	-0.45
B	3.26	-1.04	-1.24	-0.50
C	6.72	-0.05	0.13	0.07
D	1.05	0.72	0.40	0.47
Z Score		<b>-6.75</b>	<b>-6.06</b>	<b>-3.57</b>

Table 5: Jet Airways

Parameter	Wt.	2018	2017	2016
A	6.56	0.23	0.15	0.38
B	3.26	0.98	0.65	0.96
C	6.72	0.23	-0.56	-0.18
D	1.05	0.00	0.00	0.00
Z Score		<b>6.25</b>	<b>-0.67</b>	<b>4.40</b>

Table 6: TAAL Enterprises

Parameter	Wt.	2018	2017	2016
A	6.56	0.40	0.31	0.15
B	3.26	0.46	0.36	0.42
C	6.72	0.51	0.45	0.77
D	1.05	5.08	3.79	3.36
Z Score		<b>12.90</b>	<b>10.18</b>	<b>11.06</b>

Table 7: InterGlobe Aviation

(Indigo Airways)

companies	2015-16	2016-17	2017-18
Jagson	-51.72	-58.61	-43.11
Spice Jet	-9.89	-4.85	0.17
Jet Airways	-3.57	-6.06	-6.75
Global Vectra	-1.25	0.19	1.27
Taal	4.40	-0.67	6.25
Indigo Airways	11.06	10.18	12.90
Air India	<b>-13.89</b>	<b>-28.18</b>	N/A

Table 8: Z score of all companies

Key:

 $Z < 1.23$ : Distress $1.23 < Z < 2.9$ : Gray Area $Z > 2.9$ : Safe Zone

## INTERPRETATIONS

1. It can be seen from the results compiled in Table 8 that majority of the airline companies are in the distress zone except for Indigo Airways.

2. It is a known fact that most the airline companies have a problem of high outstanding debt. For instance the outstanding debt for Jet Airways in the year 2017-18 is Rs. 5085. 56 crores while its EBIT is (767.62) crores. The situation is more or less same with SpiceJet, Air India ,etc.

3. Most of the airline companies are running in losses in the last three years. Only Indigo and spice Jet are running into profits. This fact is greatly impacting the Z scores.

4. Except for TAAL Enterprises and Indigo Airline all companies have negative working capital. This too is resulting in poor Z score.

5. All in all if we consider the overall performance of the airline industry as such, then this sector is thriving only on the profitability of Indigo Airways inspite of passenger traffic having a CAGR of about 12.39%. (IBEF, 2018)

6. The airline companies have not been able to take the benefit of increase of passenger traffic. The 5 airline companies namely Jagson, SpiceJet, Jet Airways and Air India have a strong likelihood of bankruptcy.

7. The most likely company to be bankrupt in the near future is Jagson Airlines and Air India.

## CONCLUSION:

It can be seen from the above interpretations that the Indian Airline Industry is running into a high risk of financial distress. The recent happenings about not many operators being interested in taking over Air India is testimony that the existing airline companies are not strong enough themselves to take over another companies. The key to uplifting the situation in the airline sector is to reduce the debt by way of leasing aircrafts and not by purchasing them. The price sensitive market may also be responsible for the worrisome situation of the airline sector. Low cost carriers have deeply impacted the profitability of this sector. This sector which was previously labeled as the premium pricing sector is stuck in the debt trap and also in the competitive pricing game.

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