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A financial Health Analysis of Selected Companies from Nifty 50 using Altman Z-Score Model

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Abstract: India has become the world's fastest growing major economy and is expected to be one of the world's top three economic powers for the next 10 to 15 years, backed by its strong and largest democracy. In this paper Researcher has randomly selected five companies from Nifty 50 and period of study is four financial years. Objectives of the study is to check financial status of selected companies and compare Z-Score among randomly selected Nifty 50 Companies. Altman Z Score model has been used for analysis of study. In last Researcher has found that only one Britannia Industries Ltd. has come under safe zone, two companies' vis Mahindra and Mahindra Ltd. and Shree Cement Ltd. have in Grey Zone and remaining two vis Tata Steel Ltd. and Bharti Airtel Ltd. have in Distress Zone. So, it can said that these two companies need to check their financial position and improve their sales and working capital position to come in good Z Score position.

Keywords: Z Score, NSE-National Stock Exchange, Nifty 50, ANOVA- Analysis of Variance, RBI- Reserve Bank of India.

Introduction: India has become the world's fastest growing major economy and is expected to be one of the world's top three economic powers for the next 10 to 15 years, backed by its strong and largest democracy. India has real gross domestic product (GDP) at current prices was Rs. 195.86 lakh crore (2.71 trillion USD) in FY 2020-21, based on Second Advance Estimates (SAE) for 2020-21. India is the fourth largest unicorn base in the world, with more than 21 unicorns valued at 73.2 billion USD, according to Hurun's Global Unicorn List. By 2025, India is expected to have ~ 100 unicorns and ~ 1.1 million direct jobs will creat by 2025, according to Nasscom-Zinnov's Indian Tech Start-up report.

According to McKinsey Global Institute, India needs to increase its employment growth rate and create 90 million jobs outside of agriculture between 2023 and 2030 in order to achieve productivity and economic growth. The net employment rate must increase by 1.5% annually between 2023 and 2030 in order to achieve GDP growth of 8 to 8.5% between 2023 and 2030.

The NIFTY 50 is the flagship index of the National Stock Exchange of India Ltd. (NSE) and the index tracks the performance of a portfolio of first class companies, the largest and most liquid Indian stocks. It comprises 50 of the roughly 1,600 listed companies, listed and listed and unlisted but admitted to trading on the NSE, captures about 65% of their float-adjusted market capitalization and it is mirrors of the stock market of India. The NIFTY 50 covers the



most important sectors of the Indian economy and offers investment managers exposure to the Indian market in an efficient portfolio. The index has been on the market since April 1996 and is well suited for benchmarks, index funds and index-based derivatives.

Review of Literature: Roli Pradhan (2014) Financial statements are typically used to measure the performance of the company and its management and Annual financial statements commonly used are the income statement, the balance sheet and the cash flow statement. Various reasons can be calculated from the annual financial statements in order to assess the current performance and future prospects of the respective company. Some of the ratio used include Current Ratio, quick Ratio, Total Debt to Total Assets, Profit Margin to Sales, Working Capital to Total Debt, and Total Return on Investments. Perhaps the best way to avoid failure is to examine the myriad of explanations for business failure. The studies conducted by Altman used financial metrics to predict bankruptcy and were able to correctly predict 94% one year before bankruptcy and 72% two years before it actually occurred.

Grice and Ingram (2001) Analyze the generality of the Z-Score application and the study finds negative results when using the z-score in recent periods and in manufacturing companies, but positive results when predicting problems other than bankruptcy as originally designed for bankruptcies.

Objectives of the Study:

1. To check financial status of randomly selected Nifty 50 Companies using Altman Z-Score model.
2. To compare Z-Score among randomly selected Nifty 50 Companies.

Population and Sample of the study: Population of the study is all Nifty 50 companies. Out of these Nifty 50 Companies 10% is take as sample of the study. In this study “Random Sampling Method” has been used for sample selection. Sample of the study as follow:

1. Britannia Industries Ltd.
2. Mahindra & Mahindra Ltd.
3. Bharti Airtel Ltd.
4. Shree Cement Ltd.



5. Tata Steel Ltd.

Period of the study: Period of the study is four financial years from 2016-17 to 2019-20.

Data Collection: The study relies primarily on a secondary data collection method. The data comes from the official website of the NSE National Stock Exchange of India, Moneycontrol.com, as well as from magazines and annual reports of selected companies.

Tools and Techniques: For the study mathematics and statistical tools and techniques like classification, tabulation, average, ratios, ANOVA and Altman Z-score Model has been used for the study.

The Z-Score Model: The model was published in 1968 by Edward I. Altman the formula can be used to predict the likelihood that a company will go bankrupt in two years. Z-scores are used in academic studies to predict company failure and as an easy-to-calculate control measure for financial distress and the financial health of companies. The Z-Score uses several corporate income and balance sheet values to measure a company's financial health. The aim of the present study is to find out whether the same measures can be used in the Indian context and to randomly select five companies from Nifty 50. Altman used five financial ratios to calculate Z-Score which ratios as follow:

The final discriminant function is as follows:

$$Z = 1.2 * X_1 + 1.4 * X_2 + 3.3 * X_3 + 0.6 * X_4 + 0.999 * X_5$$

Where:

X_1 = working capital/ total assets,

X_2 = retained earnings/ total assets,

X_3 =EBIT/ total assets,

X_4 = market value of equity/ book value of total debt,

X_5 = sales/ total assets.

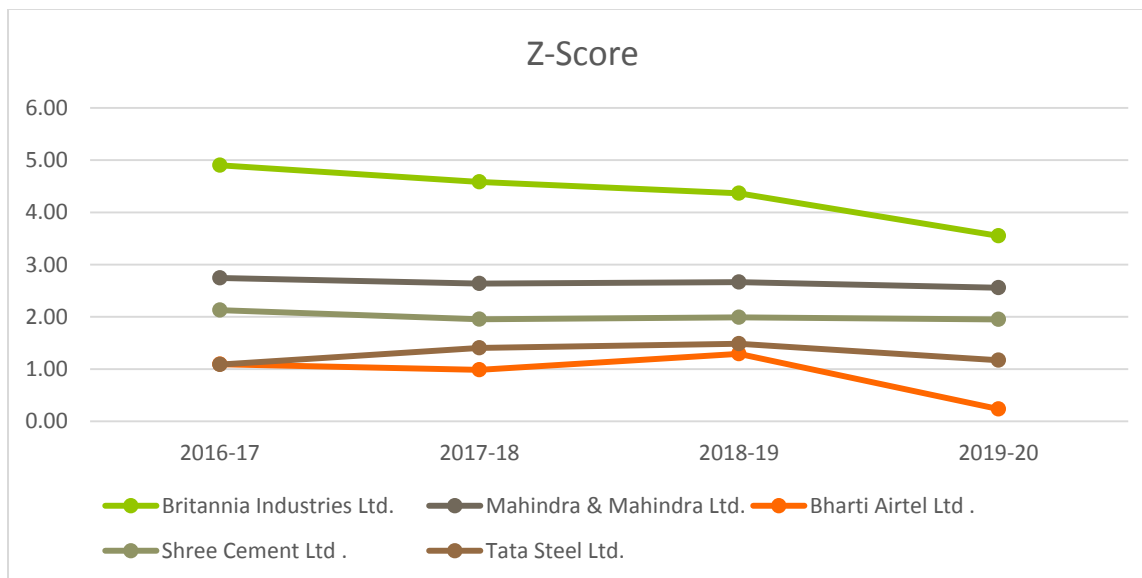
Interpretation of Z-Score:



Safe Zone	Grey Zone	Distress Zone
Z-Score > 2.99	1.81 < Z-Score < 2.99	Z-Score < 1.81

Data Analysis:

Name↓ Year→	2016-17	2017-18	2018-19	2019-20
Britannia Industries Ltd.	4.90	4.58	4.37	3.55
Mahindra & Mahindra Ltd.	2.74	2.64	2.67	2.56
Bharti Airtel Ltd .	1.09	0.99	1.29	0.23
Shree Cement Ltd .	2.13	1.95	1.99	1.95
Tata Steel Ltd.	1.08	1.40	1.49	1.17



After looking table, it can be said that Britannia Industries Ltd. Has Z score between 4.90 to 3.55 in study period this companies comes under Safe Zone. It has highest Z score among selected companies but its Z score year by year declining. Mahindra and Mahindra Ltd. has Z score between 2.74 to 2.56 in study period it is come under Grey Zone



but is near in Safe zone during study period. It has also declining trend of Z score. Shree Cement Ltd. has Z score between 2.13 to 1.99 in study period it come under Grey Zone. Tata Steel Ltd. has Z score between 1.48 to 1.08 in study period. It is come under distress zone so company should increase their working capital because it is in net minus. Bharti Airtel Ltd. has Z score between 1.29 to 0.23 it is coming under distress zone. Company may go in bankrupt in near future. Airtel has facing huge losses and it has minus net working capital. After looking chart it can be said that all randomly selected samples has been decline trend of Z score during study period.

Name↓ Year→	2016-17	2017-18	2018-19	2019-20
Britannia Industries Ltd.	Safe Zone	Safe Zone	Safe Zone	Safe Zone
Mahindra & Mahindra Ltd	Grey Zone	Grey Zone	Grey Zone	Grey Zone
Bharti Airtel Ltd .	Distress Zone	Distress Zone	Distress Zone	Distress Zone
Shree Cement Ltd .	Grey Zone	Grey Zone	Grey Zone	Grey Zone
Tata Steel Ltd.	Distress Zone	Distress Zone	Distress Zone	Distress Zone

Hypothesis Testing:

H₀: There is no significance difference of Z-Score among randomly selected Nifty Fifty companies.

H₁: There is no significance difference of Z-Score among randomly selected Nifty Fifty companies.

Results of ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	29.5215594	4	7.38038985	62.00	3.7826E-09	3.05
Within Groups	1.78545015	15	0.11903001			
Total	31.3070096	19				

ANOVA test indicates that the calculated value of $F = 62$ and tabular value of $F = 3.05$ at 5% level of significance, the calculated value of F is greater and more than table value of F ($F_c > F_t$), so the null hypothesis has been rejected and



alternative hypothesis has been accepted so, It means all randomly selected companies have unequal or different Z-Score.

Limitations: Every study has some limitations, this also has some limitations as stated below:

- This research study is based on secondary data, so the overall result will depend on the accuracy of this data.
- The research study is also based on financial ratios, so any ratio analysis limitations apply to this study.
- Only five companies are conducted, so the finding and conclusion may not apply to the study population.

Conclusion: The aim of the study was to use the Altman Z score model to review the financial condition of the Nifty 50 companies. The research paper examined the relationship between important dimensions of the annual financial statements of companies and also the performance of companies on the stock exchange. The study also helps us understand both internal financial factors and the impact of external financial factors on the company's financial position in the marketplace.

According to this research paper finding it can be said that among randomly selected companies only one Britannia Industries Ltd. has come under safe zone, two companies' vis Mahindra and Mahindra Ltd. and Shree Cement Ltd. have in Grey Zone and remaining two vis Tata Steel Ltd. and Bharti Airtel Ltd. have in Distress Zone. So it can said that these two companies need to check their financial position and improve their sale and working capital position to come in good Z Score position. Result of ANOVA alternative hypothesis has been accepted. It means all randomly selected companies have unequal or different Z-Score.

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