



**APPLICATION OF ALTMAN'S Z-SCORE MODEL ON SELECTED
TELECOMMUNICATIONS COMPANIES FOR MEASURING FINANCIAL
HEALTH"**

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ABSTRACT:

In this paper researcher analysed Altman's z-score model and application of Altman's z-score model of selected sample. Researcher has select five telecom companies. The main aim of this study is to know about financial health of selected companies. The study is useful for the investors to know about which company is better and they can make some investments decision. Researcher used single factor ANOVA test as statistical tool and ratios given in Z- score model as an accounting tools. The Researcher has been collected data from various secondary sources of selected companies.

Keywords: *financial soundness, Z -Score model, one way ANOVA*

INTRODUCTION:

India is the second largest telecommunications market in the world. In India internet user is 904 million broadband internet subscribers as of December 2023. In Indian telecom industry many sectors are there like internet, telephone and television broadcast industry. Telecom sector has supported the socio-economic Development of India. The telecommunication in India are most rapidly growing industries in the world. The entry of Reliance Jio in the year 2016 then Indian telecommunication industry was disrupted.

REVIEW OF LITERATURE:

Muthusamy, A. (2012) has conducted study on a financial analysis of selected telecommunication companies in India. Researcher analysed that the main aim of this study to examine the liquidity, profitability and turnover performance of selected telecom companies. Researcher conducted this study covers a period of five years from 2005 to 2010. Researcher has found of this study mostly null hypotheses are accepted. Researcher has concluded that private telecom is more operator sector in India. (Muthusamy, 2012)



Gaste, M., Vanishri, R., Hundekar. (2017) have studied on financial performance of telecom companies. Researchers have analysed that to know about financial position of telecom companies and comparing the selected companies financial health. Researchers conducted this study only based on secondary data from websites, annual reports etc. The major finding of this study was return on capital employed and profit of BSNL Company is very as compare to Airtel Company. Researchers have concluded that every business have to maintain the good financial position and focus on new technology, customer's needs and also to satisfy the employees. (Gaste & Hundekar, 2017)

Shukla, S., & Roopa, T. N. (2017) have conducted study on financial behaviour of selected telecom companies in India: a comparative analysis. Researchers have analysed that the main objective of this study to examine the financial health of selected companies using selected ratios. The major finding of this study was clear that financial health of Reliance Communications, Tata Communications and BSNL remain stressed as compared to Idea and Airtel during the study period. (Shukla & Roopa, 2017)

Manaseer, S. R., & Oshibat, S.D. (2018) have conducted study on validity of Altman Z-score model to predict financial failure: Evidence from Jordan. Researchers have conducted this study was analytical Research. Researchers have collected data from the company's annual reports and they used in their study is Altman revised Z-Score model. Researchers have recommended that this model was valuable influential indicators for the external user. In this study Researchers have found out that Z-score model is high predictive power. (Manaseer & Al- Oshibat, 2018)

Ibrahim, M. (2019) has conducted this study title on measuring the financial performance of a telecommunications corporation. Researcher has analysed that the main objective of this study is to measure the financial health of the Emirats telecom sector company. Researcher has found out that in this research the analysis showed that the profit margin ratio stood at an average of 23.11% when as the return on assets was 9.6%. Researcher has concluded that the future research should build on this study. (Ibrahim, 2019)

Nagdev, I., & Pishori, K. (2019) have conducted a study on financial health of telecom companies in India. They have analysed that the main objectives of their study is to know about financial performance of telecom sector and study challenges faced in terms of liquidity by telecommunication sector. This study on the basis of secondary data sources for selected three telecom companies and five years financial performance. The major finding of this study was the second quarter ended in July 2019 the overall telecom sector has fallen to Rs. 37338 crore. Researchers have concluded that the study also helps in understanding the government grants allotted and it's usage by telecom companies. This study aware about future AGR position of the different telecommunications. (Nagdev & Pishori, 2019)



RESEARCH METHODOLOGY:

Objectives of the study:

1. The focus on this study is applied Altman's Z-score model on selected telecommunication companies for measuring financial health.
2. To examine financial distress of selected telecommunication companies in India.
3. To compare the result of Altman's Z-score model of financial health of selected companies.

Hypothesis of the study:

H_0 = There is no Significant difference in Altman's Z- score model of selected

Telecommunications companies during the period of study.

H_1 = There is Significant difference in Altman's Z-score model of selected

Telecommunications companies during the period of study.

Research Design:

This study conducted by researcher is totally based on secondary data from the annual reports of selected sample companies. Secondary data sources like annual reports, journals articles, periodicals etc. Data collected from the various websites of the selected companies.

The data collected for five year of study period from 2020- 2021 to 2024- 2025.

The following sample selected for the study:

Bharti Airtel Ltd, Vodafone Idea Ltd, Tata Teleservice Ltd, MTNL, Reliance Communications Ltd.

Tools and techniques of the study:

1. Altman's Z-score model for non-manufacturing sector
2. One way ANOVA test

Limitations of the study:

The limitations of this study is following:

The first limitation of this study is the researcher conducted this study for five years data only.

The second limitation of this study is researcher conducted this study is totally based on secondary data. So, quality of this study depends purely upon the reliability, accuracy and quality of secondary data sources.

The third limitation of this study is the researcher conducted this study covered only five telecom companies.



Table no: 1 Working capital to Total Assets

Year	Bharti Airtel Ltd	Vodafone Idea Ltd	Tata Teleservices Ltd	MTNL	Reliance Communications Ltd
2020-2021	- 0.112	-0.231	-6.309	-0.326	-1.056
2021-2022	-0.128	-0.204	-6.629	-0.636	-1.186
2022-2023	-0.112	-0.201	-8.218	-0.564	-1.570
2023-2024	-0.142	-0.202	-5.542	-0.415	-1.774
2024-2025	-0.200	-0.105	-7.411	-0.755	-1.986

Interpretation: The above table shows working capital to total assets ratio sample companies is presented in the above table. As it could be observed in the table, among all the sample companies working capital to total assets ratio are not good. The high working capital to total assets ratio indicates company ability to meet its current obligations. But here all selected units have unsatisfactory level of working capital.

Table no: 2 Single factor ANOVA of Working Capital to Total Assets

Source of Variation	SS	df	MS	F	F-Crit	H ₀ Accepted/ Rejected
Between groups	161.1881	4	40.29704	161.916	F(4,20)= 2.87	Rejected
Within groups	4.977523	20	0.248876			
Total	166.1657	24				

The above table shows the single factor ANOVA. The calculated of F is 161.916 which is more than the table value of 2.87 at 5% level of significance with degree of freedom being $v_1 = 4$ and $v_2 = 20$. So, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, There is significance difference in working capital to total assets ratio of selected telecommunication companies during the study period.



Table no : 3 Retained Earnings to Total Assets

Year	Bharti Airtel Ltd	Vodafone Idea Ltd	Tata Teleservices Ltd	MTNL	Reliance Communications Ltd
2020-2021	0.062	- 0.729	-9.674	-1.322	-1.438
2021-2022	0.059	-0.754	-22.760	-1.641	-1.573
2022-2023	0.042	-0.990	-23.542	-1.986	-1.999
2023-2024	0.048	-1.278	-21.979	-2.475	-2.490
2024-2025	0.092	-1.343	-22.050	-2.183	-2.451

Interpretation: The above table shows that the selected companies more debt rather than Retained Earnings. Higher retained earnings is 0.092 of bharti airtel ltd in the year 2024-2025. The highest retained earnings 0.092 of bharti airtel ltd compared to other selected companies. On the other hand, Vodafone idea ltd, Tata teleservices ltd MTNL, R.com have the lowest ratio. It's indicates the companies may distributes more dividends and retains less for future use.

Table no: 4 Single factor ANOVA of Retained Earnings to Total Assets

Source of Variation	SS	df	MS	F	F-Crit	H₀ Accepted/ Rejected
Between groups	1425.115	4	356.2787	52.01321	F(4,20)= 2.87	Rejected
Within groups	136.9955	20	6.849774			
Total	1562.11					

The above table shows the single factor ANOVA. The calculated of F is 52.01321 which is more than the table value of 2.87 at 5% level of significance with degree of freedom being $v_1 = 4$ and $v_2 = 20$. So, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, There is significance difference in Retained Earnings to total assets ratio of selected telecommunication companies during the study period.



Table no: 5 EBIT to Total Assets

Year	Bharti Airtel Ltd	Vodafone Idea Ltd	Tata Teleservices Ltd	MTNL	Reliance Communications Ltd
2020- 2021	-0.012	-0.119	-0.806	-0.184	-0.005
2021-2022	-0.007	-0.145	-0.890	-0.211	-0.005
2022-2023	0.016	-0.141	-0.941	-0.250	-0.004
2023-2024	0.024	-0.168	-0.940	-0.309	-0.004
2024-2025	0.037	-0.140	-0.978	-0.326	-0.004

Interpretation: the above table shows that the only and one Bharti Airtel limited earnings before interest and tax is higher than the other selected companies. Bharti airtel ltd has EBIT to Total Assets is 0.037 in the year 2024-2025. It's generate profits compared to other selected companies.

Table no: 6 Single factor ANOVA of EBIT to Total Assets

Source of Variation	SS	df	MS	F	F-Crit	H ₀ Accepted/ Rejected
Between groups	2.883483	4	0.720871	405.1019	F(4,20) = 2.87	Rejected
Within groups	0.03559	20	0.001779			
Total	2.919072	24				

The above table shows the single factor ANOVA. The calculated of F is 405.1019 which is more than the table value of 2.87 at 5% level of significance with degree of freedom being $v_1 = 4$ and $v_2 = 20$. So, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, There is significance difference in EBIT to Total Assets ratio of selected telecommunication companies during the study period.



Table no: 7 Market Capitalization to Total Liabilities

Year	Bharti Airtel Ltd	Vodafone Idea Ltd	Tata Teleservices Ltd	MTNL	Reliance Communications Ltd
2020- 2021	0.009	0.141	0.151	0.047	0.030
2021-2022	0.009	0.166	9.543	0.051	0.031
2022-2023	0.008	0.235	14.175	0.054	0.034
2023-2024	0.008	0.271	13.024	0.059	0.035
2024-2025	0.007	0.361	12.861	0.061	0.035

Interpretation: market capitalization to total liabilities ratio measures long term solvency of a firm. Higher Market Capitalization to Total Liabilities ratio suggests stronger investor confidence in the company's financial health. If lower MC/ TL ratio indicates weak investor confidence as the market value of equity is low compared to liabilities. The above table shows that the Tata teleservices limited overall market Capitalization is higher then other selected companies in which highest market capitalization to total liabilities ratio is 14.175 in the year 2022-2023.

Table no: 8 Single factor ANOVA of Market Capitalization to Total Liabilities

Source of Variation	SS	df	MS	F	F-Crit	H ₀ Accepted/ Rejected
Between groups	389.6853	4	97.42132	14.76181	F(4,20) = 2.87	Rejected
Within groups	131.991	20	6.59955			
Total	521.6763	24				

The above table shows the single factor ANOVA. The calculated of F is 14.76181 which is more than the table value of 2.87 at 5% level of significance with degree of freedom being $v_1 = 4$ and $v_2 = 20$. So, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, There is significance difference in Market Capitalization Total Liabilities ratio of selected telecommunication companies during the study period.



Table no : 9 Altman's Z- Score value of Selected companies

Year	Bharti Airtel Ltd	Vodafone Idea Ltd	Tata Teleservices Ltd	MTNL	Reliance Communications Ltd
2020- 2021	-0.603	-4.543	-78.182	-7.635	-11.617
2021-2022	-0.684	-4.596	-113.64	-10.886	-12.909
2022-2023	-0.481	-5.246	-122.09	-11.797	-16.807
2023-2024	-0.605	-6.335	-100.64	-12.803	-19.691
2024-2025	-0.756	-5.628	-113.56	-14.196	-21.008
Average	-0.288	-5.2696	-105.6224	-11.4634	-16.4064

Interpretation: the above table shows that the result of Z- Score value of all selected companies. The above table showing the all selected companies are in distress zone. Their Z- Score value are less than the 1.1 so, the all selected companies are in bankrupt zone. That is not good sign for all selected companies.

Table no: 10 Single factor ANOVA of Altman's Z- Score value

Source of Variation	SS	df	MS	F	F-Crit	H ₀ Accepted/ Rejected
Between groups	38495.25	4	9623.813	151.5306	F(4,20)= 2.87	Rejected
Within groups	1270.214	20	63.5107			
Total	39765.47	24				

The above table shows the single factor ANOVA. The calculated of F is 151.5306 which is more than the table value of 2.87 at 5% level of significance with degree of freedom being $v_1 = 4$ and $v_2 = 20$. So, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, There is significance difference in Altman's Z- Score model of selected telecommunication companies during the study period.



FINDING OF THE STUDY:

Table no: 11 findings based on Altman's Z- Score model

Company	Z- Score Value	Result
Bharti Airtel Ltd	-0.288	Bankrupt Zone
Vodafone Idea Ltd	-5.2696	Bankrupt Zone
Tata Teleservices Ltd	-105.6224	Bankrupt Zone
MTNL	-11.4634	Bankrupt Zone
Reliance Communications Ltd	-16.4064	Bankrupt Zone

The all selected companies are in distress zone because the all selected companies Altman's Z- Score value is less than 1.1. so, it's indicates bankrupt Zone.

Table no: 12 Findings based on Single factor ANOVA test

Under Z – Score model ratios	Calculated value	H ₀ Accepted/ Rejected
WC/TA	161.916	Rejected
RE/TA	52.01321	Rejected
EBIT/TA	405.1019	Rejected
MC/TA	14.76181	Rejected

The above table shows that the result of single factor ANOVA test in which all selected companies calculated value are More than the table value $F(4,20) = 2.87$. so, the null hypothesis is rejected in all selected companies.

Conclusion:

Researcher has conclude that the all selected telecommunication companies found a poor performance and it was bankrupt during the study period. So, the all selected companies must have improve their all ratios under the Z- Score model



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