Predicting Financial Viability of Selected Indian IT Companies by Using Edward Altman's Z Score Model

Dr. Geeta Rani *(Assistant Professor in Commerce, TDL GCW, Murthal)*
Dr. Sunil Panwar *(Assistant Professor in Commerce, TDL GCW, Murthal)*

Abstract:
Assessing the financial performance of all companies has been a major concern since the financial-economic downturn of 2008. The financial health of a firm plays a significant role in its successful functioning in emerging markets. IT companies are often considered as one of the significant indicators for the economic growth and development of a country in this modern era. Stakeholders are constantly looking for the best method for forecasting financial performance to simplify the decision-making process. To assess the financial viability, the Z Score model is one of the important statistical tools. The main aim of the study is to predict the financial viability of selected IT sector companies in India. The study used secondary data; secondary data is collected from the annual report of the company, their respective websites, etc. The study covers a period of five years from 2017 to 2021. To achieve the objectives Altman's Z Score model ratios are used to know selected firms into the healthy and unhealthy zone. The results show that the average Altman Z score of all the selected IT companies is more than 2.6. So, all selected companies are in the healthy zone.
Keywords: *IT Companies, Financial Viability, Performance, Z-Score, Bankruptcy, etc.*

I.   Introduction:

In emerging markets, the financial requirements of companies should be adequate to meet their long-term and short-term requirements. To meet long-term requirements the companies, need fixed capital, and short-term requirements need working capital. Therefore, finance is a very important facet for every company. Without finance, every business is like a wingless bird. Therefore, the financial predictor is responsible for screening the financial position of the company regularly. The performance of the company is judged through its financial position, which throws light on the operational efficiency and financial health of the company. Several tools can help in forecasting the financial position. Edward Altman Z Score model is one of the widely accepted models to assess financial viability. Financial Viability means the ability to ensure a profitable activity in an organization. Viability is closely correlated to profit as well as solvency and liquidity. Further, the assessment of financial viability is an integrated process of reviewing the audited financial reports, financial statements, and other information that supports our financial analysis. Reviewing the current performance level and financial position of the business will determine the future of the company.

II.   Review of Literature

Many of the research works have been conducted with different aspects of financial viability. Some of these are:

Hayes, Hodge, & Hughes (2010) investigated the efficiency of the selected retail firms. They used the Altman Z score in predicting the financial distress in retail firms and data was used from 2007 to 2008. A sample of public retail companies was taken which had declared bankruptcy during the study period. Finally, results revealed that selected companies were in bankruptcy position. Sheela & Karthikeyan (2011), in their study, found the financial strength of Redington India limited from the financial year 2006 to 2010. They used analytical research and secondary data for such purposes. And also used ratio analysis, cash flow analysis, and Altman Z score model and revealed satisfactory financial health i.e. the company was having constant profit during the study years. In addition, the Z score value was 4.96 which showed that the company was running in a too healthy zone, financial health was viable, and its financial position strength was not to fall. Ray (2011), in their study, tried to examine the combined effect of various financial ratios with the help of Z Score model analysis of Andhra Pradesh seeds, Kumaon seeds, Ajeet seeds, and Unicorn Seeds. They found that these firms have good financial health. Reddy (2012), examined the relationship between liquidity, profitability, and risk factor. To evaluate the financial distress of Dr. Reddy's Laboratories Ltd. The Altman Z Score model was used and considering the period from 2005-to 2011. The study revealed positive results i.e. the company was

financially sound and would be viable in the days to come. Vijayalakshmi & Sailaja (2013) analyzed the financial health of selected Indian telecom companies. They used the data from 2008 to 2012. With the help of ratio analysis and Z score, they found that the financial health of the all-selected telecom companies, in India was poor. They suggested that all the telecom companies take innovative steps for survival & betterment of financial health and to keep key strategies to face out the competition. Jagannayaki, Dr. K. & Reddy, G. Anoosha (2019), analyzed the Z score value of ten selected Indian companies. They found that maximum companies were in the gray zone or distress zone. Only three companies were in the safe zone. And also found that all companies were facing a decrease in sales due to more competition and new technology in the market. Soni (2019), tried to predict the possibility of bankruptcy of Ruchi soya Industries Ltd. For the period 2012 to 2017. The study revealed the company was in the gray zone from the year 2012 to 2015 and in the distress zone in the years 2016 and 2017. Also found that the company was facing financial problems and management was also unable to manage this situation.

Objectives of the Study
➢ To analyze the financial performance of the selected IT companies in India.
➢ To predict the bankruptcy of the selected IT companies in India.

III. Research Methodology

The study has been based on secondary data. The data has been collected from the published annual reports of selected IT companies, from their official websites, etc. To know the financial performance of selected Indian IT companies Edward Altman Z score model ratios have been used to predict the distress level or bankruptcy position. The data has been taken from 2017 to 2021 for study. To achieve these objectives, the top five Indian IT companies based on profit, market capitalization, sales, and Total Assets in 2021 have been selected as a sample. These are:

• TCS Ltd.
• Infosys Ltd.
• Wipro Ltd.
• HCL Tech Ltd.
• Tech Mahindra Ltd.

Table 1 Market Capitalization, Net Profit, Net Sales and Total Assets of Selected IT Companies 2021 (Amt in Crores)

Selected IT Companies	Market Capitalization	Net Sales	Net Profit	Total Assets
TCS Ltd.	1,448,474.54	135,963.00	30,960.00	1,09,381.00
Infosys Ltd.	785.483.27	85,912.00	18,048.00	93,939.00
Wipro Ltd.	340,553.94	50,299.40	10,060.90	65,736.00
HCL Tech Ltd.	325,409.15	35,673.00	8,743.00	55,361.00
Tech Mahindra Ltd.	162,017.49	29,640.90	4,239.10	33,374.70

Source: Compiled from Annual Reports

Edward Altman Z-Score Model (Source: Altman 1968)
The broadly popular Edward Altman Z Score model used for assessing and predicting bankruptcies was first published by Edward I. Altman in 1968. This model determines the probability that a firm is close to bankruptcy or not by using five key financial ratios of that company: profitability, leverage, liquidity, solvency, and activity. Revised Altman Z score model has been published in 2012 that can be used to assess both manufacturing & non-manufacturing firms and public & private firms. The revised model is also used to predict the financial strength and credit risk of the firm by investors before deciding on investment i.e. whether to buy or sell particular shares.

Original Altman Z Score formula for manufacturing companies
= (1.2XA) + (1.4XB) + (3.3XC) + (0.6XD) + (0.999XE)
Altman Z Score formula for private companies
= (0.717 XA) + (0.847 XB) + (3.107 XC) + (0.42 XD) + (0.998 XE)
Altman Z Score formula for non-manufacturing companies
= (6.56 XA) + (3.26 XB) + (6.72 XC) + (1.05 XD) Where,

Table 2. Z Score formula explanation

Financial Ratio	Formula for financial ratio	Explanation
A	Working Capital/ Total Assets	Measures liability of the firm
B	Retained Earnings/ Total Assets	Measures accumulated profits compared to assets
C	Earning Before Interest and Taxes/Total Assets	Measures productivity of the company's assets
D	The market value of Equity/Total Liabilities(in case of manufacturing companies) Book Value of Equity / Total Liabilities (in case of private and nonmanufacturing companies)	Compares the value of the company to its liabilities
E	Total Sales/Total Assets	Measures ability of company's assets to generate sales

To assess the bankruptcy in a non-manufacturing private firm, the Z Score is compared with the below table

Table 3. Z Score Zones and Indicators

Z Score	Zone	Indicator
Less than 1.1	Distress Zone	Distress/ Bankruptcy is very much likely to occur
1.1< "Z" > 2.6	Gray Zone	Bankruptcy cannot be easily predicted
More than 2.6	Safe Zone	Bankruptcy is unlikely to occur

According to table 3, when Z value is greater than 2.6 they are classified as nonbankrupt firms if their Z score ranges between 1.1 to 2.6 they are classified as in the gray area, and if Z score value is less than 1.1 companies are in a difficult situation and classified in the high risk of bankruptcy.

Analysis and Interpretation:

Table 4. The z Score value of TCS Ltd. IT Company

Financial Year	6.56 XA	3.26 XB	6.72 XC	1.05 XD	Z - Score
2021	3.276671	2.218139	2.587711	2.270613	10.35313
2020	3.447507	2.297854	2.688064	2.551260	10.98468
2019	3.964745	2.572713	2.749122	4.021110	13.30769
2018	3.902168	2.709327	2.356531	5.244194	14.21222
2017	4.220025	2.826595	2.250981	6.980496	16.27810

Source: assessed from secondary data
An analysis of TCS Ltd. Company shows positive values of Z score during the study period. Altman's model Z score of TCS Ltd. is ranging from 16.27810 to 10.35313.

Table 5. The z Score value of Infosys Ltd. IT Company

Financial Year	6.56 XA	3.26 XB	6.72 XC	1.05 XD	Z - Score
2021	2.141066	2.395539	1.750981	3.334387	9.621974
2020	2.315075	2.405870	1.697973	3.457960	9.876878
2019	2.559256	2.500159	1.696559	4.059840	10.81582
2018	2.803586	2.681400	1.763140	5.388048	12.63617
2017	2.947709	2.728834	1.593082	6.017682	13.28731

Source: assessed from secondary data
An analysis of Infosys Ltd. Company shows positive values of Z score during the study period. Altman's model Z score of Infosys Ltd. is ranging from 13.28731 to 09.621974.

Table 6. The z Score value of Wipro Ltd. IT Company

Financial Year	6.56 XA	3.26 XB	6.72 XC	1.05 XD	Z - Score
2021	2.719060	2.189282	1.296724	2.317852	8.522919
2020	2.940109	2.261859	1.132688	2.587236	9.921891
2019	3.092668	2.344600	0.990024	2.945661	9.372953
2018	3.117949	2.297996	1.149293	2.704403	9.269641
2017	3.623674	2.385734	1.137125	2.980973	10.12751

Source: assessed from secondary data

An analysis of Wipro Ltd. Company shows positive values of Z score during the study period. Altman's model Z score of Wipro Ltd. is ranging from 10.12751 to 8.522919.

Table 7. The z Score value of HCL Tech Ltd. IT Company

Financial Year	6.56 XA	3.26 XB	6.72 XC	1.05 XD	Z – Score
2021	2.096768	2.532696	1.506389	3.872853	10.00871
2020	1.175443	2.238901	1.403521	2.414502	7.232367
2019	2.159111	2.625686	1.781726	4.554788	11.12131
2018	2.149820	2.710375	1.868487	5.507355	12.23604
2017	2.472539	2.586972	1.718041	4.262527	11.04004

Source: assessed from secondary data

An analysis of HCL Tech Ltd. Company shows positive values of Z score during the study period. Altman's model Z score of HCL Tech Ltd. is ranging from 12.23604 to 7.232367.

Table 8. The z Score value of Tech Mahindra Ltd. IT Company

Financial Year	6.56 XA	3.26 XB	6.72 XC	1.05 XD	Z – Score
2021	2.763362	2.351548	1.112782	3.617356	9.845048
2020	2.667377	2.298363	1.181729	3.366508	9.513977
2019	2.177888	2.165522	1.202107	2.561827	8.107344
2018	1.979006	2.317550	1.230342	2.827088	8.353985
2017	1.983827	2.253214	1.098263	2.591809	7.927114

Source: assessed from secondary data

An analysis of Tech Mahindra Ltd. Company shows positive values of Z score during the study period. Altman's model Z score of Tech Mahindra Ltd. is ranging from 09.845048 to 7.927114.

Table 9 Z Score value of the selected IT Companies

Financial Year	TCS Ltd.	Infosys Ltd.	Wipro Ltd.	HCL Tech Ltd.	Tech Mahindra Ltd.
2021	10.35313	9.621974	8.522919	10.00871	9.845048
2020	10.98468	9.876878	9.921891	7.232367	9.513977
2019	13.30769	10.81582	9.372953	11.12131	8.107344
2018	14.21222	12.63617	9.269641	12.23604	8.353985
2017	16.27810	13.28731	10.12751	11.04004	7.927114
Average	13.02716	11.24763	9.442983	10.32769	8.749494
Zone	Safe Zone	Safe Zone	Safe Zone	Safe Zone	Safe Zone

Source: assessed from secondary data

Figure 1 Financial Health of Companies- Altman Z Score Value

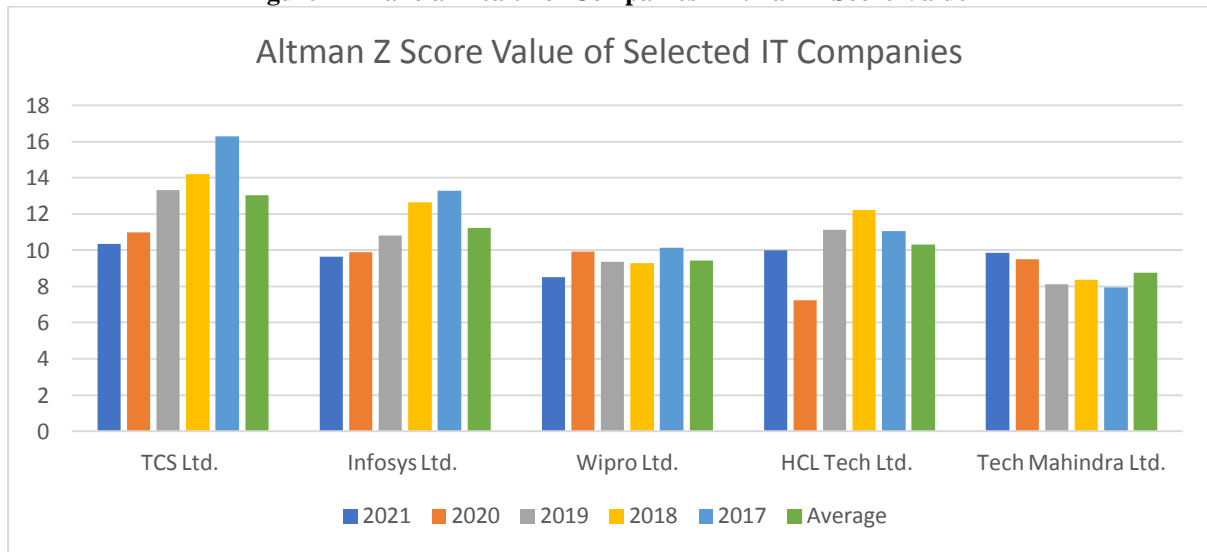Altman Z Score Value of Selected IT Companies

Table 9 and Figure 1 showed overall Z score values of all selected Indian IT companies for the five years from 2017 to 2021. The average of Altman's model of Z score of five years of study is 13.02716 of TCS Ltd. Company, 11.24763 of Infosys Ltd.,9.442983 of Wipro Ltd., 10.32769 of HCL Tech Ltd., and 8.749494 of Tech Mahindra Ltd... Additionally, the result reveals that all companies have a Z score value of more than 2.6. All companies are in the safe zone and financially very healthy. Further, there is no scope for bankruptcy and also may not going to bankrupt in the coming years. TCS Ltd. and Infosys Ltd. company shows a decreasing trend in Altman Z score value from 2017 to 2021. Wipro Ltd. has a high z score value in the year 2020, and also tried to make their position in a competitive market. And also found fewer fluctuations in the Z score values during the study period as compared to other selected IT companies. In the year 2020, HCL Tech Ltd. has less Z score value as compared to other study periods. Only Tech Mahindra Ltd. shows an increasing trend in Z score values.

IV. Conclusion

An attempt has been made in this study to bring an insight into the analysis of the financial strength of the selected Indian IT companies. Altman's Z score model can help the management for forecasting firms' bankruptcy problems at the initial stage to avoid financial distress by taking necessary action at the earliest. Z Score model can also be used by the management of the companies in their financial planning and investors' decision-making related to their present and future involvements with the company. Overall, the study found a good financial position of all the selected IT companies during the study period. The positive value of all the companies showed that they are competent enough in using their assets to keep their solvency. Additionally, it is also found that all selected companies have a decreasing trend in Z score values from 2017 to 2021 respectively except Tech Mahindra Ltd. The reason behind this may be demonetization and after that COVID- 19 lockdown. In the last two years, the effect of lockdown can be seen on every company's financial position. After that, all companies struggle to bring their position in a competitive market. Hence, it can be concluded that the selected IT companies are financially healthy and there is no scope for bankruptcy in the coming years. In these selected IT companies, the investment of Investors' can consider as a safe zone. The management also has no reason to worry as regards the financial position of these selected IT companies.

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